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LOGARITHMIC METHOD OF GROUNDWATER QUALITY INDEX IN PALAR BASIN AT CHITTOOR DISTRICT, ANDHRA PRADESH

Anil.A[1], K. Chandrasekhar Reddy[2], R.Bhavani[3]

[1]*Research scholar, department of civil Engineering, JNTUA, Ananthapuramu.*
[2]*Professor, Department of Civil Engineering, Siddhartha Institute of Engg&Tech, Puttur.*
[3]*Associate Professor, Department of Civil Engineering, JNTUA, Ananthapuramu*

Abstract*— Logarithmic method of Water Quality Index (WQI) was applied in Palar basin, chittoor district, Andhra Pradesh for calculating WQI and assesses the groundwater quality, total 50 groundwater samples were collected. Using eleven water quality parameters (pH, Total hardness, chlorides, Dissolved solids, calcium, Magnesium, sulphate, Nitrate, Flouride, Alkalinity, and sodium).Groundwater Quality Index (GWQI) a congregate parameter representing the quality and suitability of groundwater for drinking purpose is computed using logarithmic method. The WQI value 63.83 is maximum and the value 14.28 is minimum in the study area. The computed WQI shows that 94% of water sample fall in the 'good' to 'excellent' water category. On the other hand, 16% of water samples fall in the 'fair' to 'poor' category indicating that the water is not suitable for direct consumption and require treatment. After treatment, the water can be used for drinking purpose.

Keywords—: Physico-chemical analysis, Logarithmic method Water Quality Index (WQI), Palar basin.

I. INTRODUCTION

Ground water occurs almost everywhere beneath the earth surface not in single widespread aquifer but in thousands of local aquifer systems and compartments that have similar characters. Knowledge of the occurrence, replenishment and recovery of groundwater has special significance in arid and semiarid regions due to discrepancy in monsoon rainfall, insufficient surface waters and over drafting of groundwater resources. Groundwater, of late, has become an important source of water to reckon with to meet different needs of an individual and also of society. Ascertaining the quality is crucial before its use for various purpose such as drinking, agricultural, recreational and industrial use. Till recently, ground water assessment has been based on laboratory investigation, but the advent of satellite Technology and Geographical Information system (GIS) can be a powerful tool for developing solutions for water resources problems assessing water quality[1-3].
Water Quality Index (WQI) is an important tool to find the groundwater quality and its suitability for drinking purpose. WQI is defined as a technique of rating that provides the composite influence of individual water quality parameters on the overall quality of water for human consumption [4-6]. WQI is a mathematical equation used to transform large number of water quality data into a single number. The standards for drinking purposes as recommended by WHO [7] has been considered for the calculation of WQI. Water quality index is one of the most effective tools to communicate information on the quality of any water body [8-10]. It is simple and easy to understanding of water quality issues by integrating complex data and generating a score that describes water quality status.

A. Study Area:
Chittoor District is one of the chronically drought affected rayalaseema district of Andhra Pradesh. Administratively the district is divided into 3 revenue divisions which are further subdivided in to 66 mandals. The important drainage basins are Bahuda, Pincha, swarnamuki, palar , ponnai and araniyar. Palar basin lies between north Latitude 13052' to 13038' and East Longitude 79054' to 790 45' with a total drainage 703 km2(Figure 1). It cover five mandals that is Chandragiri, somala, Puthalapattu.Irala and Pakala.This region is influenced by semi arid climate. The mean temperature lies between to 30 ºC to 42 ºC . The Normal annual rainfall over the study area is about 860 mm. The district is underlain by rocks of Archaean, proterozoic, jurassiic- caraceous and Tertiary-Quaternary ages. The oldest rock in the area belongs to Migmatite Complex, representing by migmatised quartzo-feldspar gneiss and are exposed in the northeastern part of the district. Older metamorphic comprise amphibolites, hornblende-talc-mica-schist, fuchsite quartzite, calcium sillicate rock, marble and banded ferruginous quartzite. The older matamorphics occur as enclaves with peninsular Gneissic Complex (PGC). The study area majorly covers granite gneiss rock type and dolerite dykes and quartz vanes are present. There are mainly two types of soils present in the basin they are Red loamy soils and Stream courses are covered by black clay soils.

Assessment of Physico Chemical Parameters of Groundwater Quality Index of Palar Sub Basin using Remote Sensing and GIS

A.Anil, K. Chandra Sekhar Reddy, R.Bhavani

Abstract: ***The present project work is aimed toward assessing the water quality index (WQI) for the floor water of Palar Sub bowl. This technique has been picked by strategy for social affair groundwater tests and presenting the guide to an absolute physico engineered examination. The physico-engineered examination have been stood out from the extraordinary needed characteristics as empowered by technique for method for the field health relationship for ingesting and general prosperity that lets in you to possess unique a summary of this groundwater satisfactory assessment. For finding out Groundwater best in class Index following eleven parameters were thought about: pH, Totalhardness, chlorides, Dissolvedsolids, calcium, Magnesium, sulfate, Nitrate, Flouride, Alkalinity, and sodium. The Water wonderful record for the ones sampl characteristics ranges from fifty 5.85 to 191.26. The most rate of Water first rate record has been explicitly from the better estimations of normal hardness, chlorides, Dissolved solids, Magnesium and alkalinity inside the ground water. using GIS forming strategies with ArcGis 10.1 Spatial movement maps of pH, in vogue hardness, chlorides, Dissolved solids, calcium, Magnesium, sulfate, Nitrate, Flouride, Alkalinity, sodium and WQI were made. Water dumbfounding rundown changed into used to assess the suitability of groundwater from the look at an area for human confirmation. From the WQI appraisal over 90% of the water tests fall in loathsome water bearings. The examinations most likely comprehended that the groundwater of the district dreams some acknowledgment of treatment before confirmation.***

Index Terms:*Physico-chemical analysis, Water Quality Index (WQI), Geographical Information system,Spatial analysis, Palar Sub basin.*

I. INTRODUCTION

Ground water happens virtually everywhere beneath the earth surface now not in single huge spread topographical arrangement anyway in a huge quantity of nearby aquifer frameworks and compartments that have comparative characters. records of the occasion, renewal and restoration of groundwater has superb criticalness in dry and semiarid districts because of disparity in rainstorm precipitation, poor surface waters and overabundance drafting of groundwater property.. bodily modifications within the beginning and constitution of the revived water, hydrological and human variables, may additionally purpose intermittent changes in groundwater excellent. figuring out the excellent is essential earlier than its usage for distinctive cause, as an instance, drinking, agrarian, recreational and present day use.till as of overdue, floor water assessment has been founded on studies center examination, yet the method of satellite tv for pc generation and Geographical records framework (GIS) may be a very helpful tool for creating solutions for water belongings problems surveying water nice[1,2,3].

Water Quality Index (WQI) is a maximum truthful technique for differentiating specific nature of groundwater and its appropriateness for exclusive cause. Water fine Index(WQI) is spoken to as an instrument of studying that gives the composite effect of person water nice parameters on the overall nature of water for human usage. WQI is a numerical condition used to trade massive wide variety of water high-quality records right into a solitary point[5].The gauges for drinking functions as prescribed by using WHO[4,5] has been taken into consideration for the estimation of WQI. Water satisfactory list is the most considerable apparatuses to impart facts on the character of any water body. It is straightforward to comprehension of water best administration and issues via incorporating gadget records and developing a score that portrays through and big water first-class popularity.

The principle quantity of this paintings is to speak approximately the appropriateness of groundwater for human utilization dependent on processed water quality list esteems and age of GIS maps.

II. EXAMINE AREA

Chittoor District is one of the industrious dry season motivated area of rayalaseema place of Andhra Pradesh. officially the region is isolated into 3 earnings divisions that are moreover subdivided in to 66 mandals. The precept seepage bowls are Bahuda, Pincha, swarnamuki, Palar, ponnai and araniyar. Palar Sub bowl lies between north latitude 13052' to 13038' and East Longitude 79054' to 790 45' with an all out waste 703 km2(determine 1). It spread five mandals that is Chandragiri, somala, Puthalapattu.Irala and Pakala. The suggest temperature lies among to 30 ^{0}C to 42 ^{0}C. The place is underlain by rocks of Archaean, proterozoic, jurassiic-caraceous and Tertiary-Quaternary ages. The maximum hooked up shake within the territory has an area with Migmatite complex, speakme to via migmatisedquartzo-feldspar gneiss and are uncovered in the northeastern piece of the locale. greater pro metamorphiccompriseamphibolites, hornblende-powder mica-schist,fuchsit quartzite, calcsillicate shake, marble and united ferruginous quartzite. The extra pro matamorphics

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A.Anil, Research scholar, Department of Civil Engineering, JNTUA, Ananthapuramu, A.P, India (anilachyutha@gmail.com)

K. Chandra Sekhar Reddy, Professor, Department of Civil Engineering, Siddhartha Institute of Engg&Tech, PutturA.P, India (kamasani.kcr@gmail.com)

R.Bhavani, Associate Professor, Department of Civil Engineering, JNTUA, AnanthapuramuA.P, India (rbhavani77@yahoo.com)

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WATER QUALITY ASSESSMENT IN TERMS OF WATER QUALITY INDEX IN SATHYAVEDU AREA, CHITTOOR DISTRICT, SOUTH INDIA

MADASI.MURALI[*1], G. VEERASWAMY[1,] A. ANIL[2]

[*1]*Research Scholar, Department of Environmental Studies S.V University*
[1]*Department of Geology S.V University*
[11]*Research Scholar, Department of civil, JNTUA, Ananthapuramu*

Abstract:
The aim of the present is to observe ground water suitable for drinking in Sathyavedu area, Chittoor district, Andhra Pradesh examining by the water quality index method. From that study area 40 groundwater samples have been collected and analyzed the different physico chemical parameters with standard methods. A water quality index provides a single number (like a grade) that expresses overall water quality at a certain location and time based on several water quality parameters..The present analysis denotes the study area fall in 50% good, 10% excellent, 39% poor and 0.1% unsuitable for drinking. In over all the study area contains suitable for drinking and less percentage were fall in unsuitable.

Keywords— Water Quality Index

1.0 Introduction:

Ground water plays a crucial role as a source of drinking and irrigation water for millions of rural and urban family. Water is important for the survival of any form of life. The three percent of global fresh water large satisfy to meet the requirements of man for millions of years etc., Water pollution is that characterized by the deterioration of its quality as a result of various human activities. In India only 12% of people get good drinking water. Inadequate management of water resources as directly or indirectly resulted in the degradation of hydrological environment. Therefore, a continuous periodical monitoring of water quality is necessary so that appropriate steps may be taken for water resource management practices (V. Golla et al. 2018).

The water quality index is one of the most effective tools to communicate information on the Quality of ground water to the concern and policy makers. The objective of the present work is to assess the suitability of ground water for human consumption based on the computed water quality index values, ground water characterisation and quality assessment. Twenty five samples at ten places were collecting using standard procedural methods and analyzed for pH, TH,Ca, Mg, Cl, TDS, Fe, F, No3, So4(Nagaraju et al 2018). Groundwater resources are dynamic in nature and are affected by such factors as the expansion of irrigation Activities, industrialization and urbanization; hence monitoring and conserving this important resource is essential. The quality of water is defined in terms of it Ascertaining the quality is crucial before its use of various purposes such as drinking; agricultural, recreational and industrial uses etc [Mohanbabu et.al, 2013].

The WQI was first developed by Horton in the early 1970s, is basically a mathematical means of calculating a single value from multiple test results. The index result represents the level of water quality in aim study area, such as Bore wells, ponds or stream. After Horton a number of workers all over the world(veeraswamy et al, 2018).

The water samples from the water body were collected and analyzed for 40 samples physico chemical parameters by following the established procedures. pH, electrical conductivity, total dissolved solids, bicarbonate, chloride, sulphate, calcium, magnesium, sodium, potassium, and total hardness. The results were evaluated and compared with world health organisation (WHO) ,Indian council of medical research and Bureau of Indian standard (BIS) water quality standards (Imran Basha, et al., 2018,Veeraswamy Golla, et al 2019).

2.0 MATERIALS AND METHODS

The water quality index (WQI) was calculated for evaluating influence of natural and anthropogenic activities based on several key parameters of groundwater chemistry. Calculate the WQI; the weight has been assigned for the physico-chemical parameters according to 11 parameters relative importance in the overall quality of water for drinking water purposes (Krishna Kumar et al., 2014). In this study, for the calculation of water quality index, 11 important parameter have been chosen .the WQI has been calculated by using the standards of drinking water quality recommended by the world health organization, Bureau of Indian standards and Indian council for medical research.

The Weighted Arithmetic Index Method has been used for the calculation of WQI of the water body. Further quality rating or sub index was calculated using the following expression (Yogendra et al., 2007).

Quality Rating (Qn) =100[Vn-Vio]/[Sn-Vio]

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Full Text PDF

Flexural studies on reinforced geopolymer concrete beams under pure bending

C. Sreenivasulu, J. Guru Jawahar and C. Sashidhar

Abstract

The present investigation is mainly focused on studying the flexural behavior of reinforced geopolymer concrete (RGPC) beams under pure bending. In this study, copper slag (CS) was used as a partial replacement of fine aggregate. Sand and CS were blended in different proportions (100:0, 80:20, 60:40 and 40:60) (sand:CS) by weight. Fly ash and ground granulated blast furnace slag (GGBS) were used as binders and combination of sodium hydroxide (8M) and sodium silicate solution were used for activating the binders. The reinforcement of RGPC beam was designed as per guidelines given in the IS 456-2000 and tested under pure bending (two-point loading) after 28 days of ambient curing. After conducting two point load test the flexural parameters viz., moment carrying capacity, ultimate load, service load, cracking moment, cracking load, crack pattern and ultimate deflection were studied. From the results, it is concluded that RGPC beams have shown better performance up to 60% of CS replacement.

Key Words

reinforced geopolymer concrete beams; copper slag; two-point loading; flexural parameters

Investigation on Ternary Blended Self Compacting Concrete using fly ash and Alccofine

Bode VenkataKavyateja, J. Guru Jawahar, C. Sashidhar

Abstract: ***Self compacting concrete is one of the new concepts, without using any external vibrations and labors can easily fill the formwork even in difficulty places without segregation. For such cases, SCC possesses good flowability and cohesiveness. In this study, two mineral admixtures were used to improve the required quality of concrete. The main aim of this study is to evaluate the workability and compressive strength property of SCC containing mineral admixtures such as fly ash and alccofine. In this study the replacement of cement with fly ash was kept at 30% for all concrete mixes with varying dosages of alccofine (0%, 5%, 10% & 15%). Different tests such as slump flow, V-funnel & L-box tests were conducted to check the workability of SCC. Compressive strength values of SCC mixes were determined at different curing periods. From the test results, it is observed that the optimum replacement of alccofine can be taken as 10%. The test results indicate that the combination of fly ash and alccofine in cement replacement produce M25 grade concrete.***

Index Terms: Self Compacting Concrete, Fly Ash, Alccofine 1203, Super Plasticizer and Compressive Strength.

I. INTRODUCTION

Concrete used as a construction material throughtout the world. In the world, by the fast improvement of construction technology concrete properties have been changed. For the advance technology, concrete requires more durable and good quality throughout the construction [1]. Nowadays various concretes are available for the enhancement of properties of concrete.

Self-compacting concrete is one of the innovative concrete, was firstly developed by Okamura in Japan in late1980s, to overcome the problems on congested reinforcement structures. It has more advantages compared to conventional concrete like it attains homogeneity without bleeding and segregation and it can easily pass through the congested reinforcing bars under its self-weight without considering any mechanical vibrations [2]. This type of SCC was fulfilled by considering the passing ability, filling ability and high segregation resistance of fresh state SCC. SCC was prepared as same as conventional concrete, used materials are cement, aggregate, and water. With the addition admixtures are used to enhance the properties of SCC, this is the main difference to made of SCC compared to conventional concrete [3]. SCC was prepared with reducing the volume of coarse aggregate so to minimize the risk of flow through the congested bars. Usage of chemical admixtures into the SCC, its cost is increased and also due to high amount of cement most heat of hydration is produced. For the overcome of these problems, mineral admixtures those are byproducts or waste products are used to improve the properties of SCC. Most of the studies shown that mineral admixtures used in concrete were cost effective and reduce the cement content with an improved workability. mineral admixtures used in concrete not only reduce the cost, heat of hydration is controlled due to this thermally induced cracking of concrete is to be reduced [4 & 5]. Previous studies proved that different mineral admixtures including fly ash, GGBS, rice husk ash, silica fume are effect as enhance the properties of both fresh and hardened concrete and reduce water content with good homogeneity.

Bletty Baby and Jerry Anto (2017) investigated on self-compacting concrete containing micro steel fibers and alccofine with partial replacement on cement. They studied on alccofine with 5%, 10% & 15% replacement of cement and they get 10% as the optimum for both fresh and hardened state. Further with 10% alccofine they include micro silica fibers with 0.5%, 1% & 1.5% replacement on cement, they conclude that SCCA-10, M1% gives good results than normal mix SCC [6]. TusharBansal, Shilpa pal & Jaya Maitra (2018) studied on the performance of partial varying the alccofine and Metakoaline percentages (3%, 6%,9%, 12% &15%) on M60 grade of SCC with constant fly-ash. They conduct the tests on fresh property (slump flow, v funnel, l-box tests) of mix SCC with different retention times of 30, 60, 90 mins, mechanical properties like compressive test were conducted at 7 & 28 days. Their experiment results showed that with increasing percentage from 3% to 15% of Metakaoline, slump flow, blocking ratio decreases and flow time increases with different retention times as compared to normal AF1mix. It is not acceptable for SCC.And with increasing percentage (3% to 15%) of alccofine, slump flow, blocking ratio increases and flow time decreases with different retention times as compared to control mix, acceptable for workability improvement of SCC.The compressive strength was increased to 72.43 MPa to 80.2 MPa up to 12% replacement of alccofine and Metakoaline on SCC further it decreased [7]. M.S. Pawar and Saoji (2013) investigated on alccofine as partial replacement and fly ash keep constant into the cement. They concluded that the physical characteristics of SCC,

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Bode VenkataKavyateja, JNTUA college of Engineering, Kalikiri.
Dr. J. Guru Jawahar, Annamacharya Institute of Technology and Sciences, Tirupati.
Dr. C. Sashidhar, Jawaharlal Nehru Technological University, Anantapur

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Research paper

Experimental Investigation on Fly Ash and GGBS Based Geopolymer Concrete Incorporate Black Marble Waste Aggregate

S. Pradeep Kumar[1*], B. Kameswara Rao[2], J. Guru Jawahar[3]

[1]Research Scholar, [2]Professor, [1,2]Department of Civil Engineering,
KoneruLakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, India.
[3]Professor, Dept. of civil engineering, Annamacharya Institute of Technology and sciences, Andhra Pradesh, India.
*Corresponding Author Email: [1]pradeepkumar.ksrm@gmail.com

Abstract

In show development area usage of common assets is expanded, this cases to decrease in accessible natural assets. Then again high volume of creation has produced a lot of waste materials which have antagonistic effect on the environment. Natural coarse aggregate is one of the material used in concrete, it causes a shortage in future and causes environmental damage. Several studies have been carried out to reduce the utilization of natural coarse aggregate (NCA) in concrete. There is need to supplementary material like demolished concrete waste aggregate, recycle aggregate, marble and granite aggregates, which are by-products from stone industries. In this experimental work, black marble waste aggregate (BMWA) was used as coarse aggregate at different replacement levels (0%, 50% and 100%) in geopolymer concrete (GPC). The compressive quality of GPC mixes was determined after 28 days of curing and then compared with GPC using natural coarse aggregate.

Keywords: *Natural Coarse Aggregate, Black marble waste aggregate, GGBS, Fly ash, and ambient room temperature.*

1. Introduction

Aggregate is the major ingredient in concrete nearly it occupies 70 % to 80 % of concrete volume. Aggregate is a non-sustainable natural resources, utilization of the natural resources is expanding day by day. Meanwhile the production of cement also releases large amount of Co_2 to the atmosphere that essentially adds to ozone harming substances outflows[1]. In this connection geopolymer Concrete is comes out for alternative to OPC it is a sustainable material produces by utilisation of industrial by-products like fly ash Silica fume, rice-husk ash, metakaolin and ground granulated blast furnace slag (GGBS) [2-3]. Therefore GPC is alternative for OPC, there is a need to replace Natural coarse aggregate in OPC as well as GPC, and many thinks about have been done to decrease the utilization of conventional aggregate to protect natural resources. These include the utilization of waste aggregate in concrete that is black marble waste aggregate, these are by-products from marble and granite stone industries. Preeti Tiwari et. al. [4] shown an tentative effort on behaviour of concrete by moderately substituting coarse aggregate with granite tiles waste and fine aggregate with quartz sand stone powder. They recommended that 20% of replacement of natural coarse aggregate with polished granite. H.Hebhoubet. al. [5] studied the possibilities of using marble wastes as a substitute rather than natural aggregate in concrete manufacture. In their investigation they confirmed that the substitution of natural aggregate by waste marble total up to 75% of any plan is gainful for the concrete obstruction.

G.Murali, et. al. [6] directed a trial examination on concrete with different waste stone as aggregate. They used rock stone concrete (GSC), recycled aggregate concrete (RAC) and shabath stone concrete (SSC) in concrete specimens as replacement on natural coarse aggregate (NCA). The results showed that strength of GSC better performance than NCA and SSC, they concluded Granite stone can be utilized as a coarse aggregate in construction industries relies on the waste stone accessibility. D.Gopinath, et. al [7] examined the mechanical properties of concrete with ceramic waste aggregate. The outcomes demonstrated that the mechanical properties of concrete specimens produced by utilizing the ceramic waste were imperceptibly higher than that by stone aggregate concrete. N.Venkata Ramana [8] conducted experimental work on compressive strength of concrete using marble stone waste aggregate with crimpled steel filaments. The outcomes demonstrated that the level of marble stone waste aggregate substance expanded in the blend the strength are diminished with consolidation of steel strands, the strength are upgraded. Subba Reddy Singam, et.al. [9] considered the utilization of black marble waste aggregate (BMWA) concrete. The exploratory outcomes demonstrated that, workability of BMWA is expanded when contrasted and Natural coarse aggregate (NCA) and they inferred that the utilization of dark stone marble squander is advantageous for concrete works up to 75 % replacement of black stone marble waste and with 2 % fiber. N.Venkata Ramana, et.al [10] exhibited the specialized possibility way to deal with use of stone waste for construction works.

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Experimental Investigation of Exterior Mechanbical Precast Beam Column Connections using Internal Dissipators under Seismic Loading

K. Thulasirajan* &Revathi.

Department of Civil Engineering, Pondicherry Engineering College, Puducherry, India.

*Email: kthulasirajan@pec.edu

ABSTRACT: This paper investigates the development and testing of the proposed one-third scaled precast beam column specimens using cleat angle and unbonded threaded rod connection (internal dissipator) under reverse cyclic loading. One monolithic specimen for reference and two precast specimens were studied. The parameters considered in the precast specimens were the presence of stiffener and the action of cement grouting in the predetermined gap of the beam column interface region. The load and displacement were measured for the cyclic loading and thereby strength, hysteretic behaviour, energy dissipation, stiffness, ductility and stiffness degradation were computed and compared. The experimental results showed that the performance of monolithic specimen was superior to precast specimens. The performance of precast specimen with cleat angle and stiffener was found to be superior to precast specimen without stiffener.

KEYWORDS: Precast beam column connection, Seismic loading, Cleat angle, Stiffener, Internal dissipator.

1 INTRODUTION

Precast concrete construction plays a vital role in construction industry due to the benefits such as economy, quality and speedy construction. The major task in the design and construction of precast structures are the connection of beam and column elements, especially in seismic prone regions. The precast beam column connections are classified as wet and dry connection based on the presence of cast-in-situ concrete [1-3]. Wet connections are connections in which huge amount of fresh concrete are used at the field to cover the exposed reinforcement in the connection region which emulates the cast-in-situ construction [4]. Dry connections are connections in which external mechanical devices such as cleat angles, tie rods, post tension strands, threaded rods, steel plates etc. are used to connect the precast beam and column members with bolts or welds. Many studies have been conducted on the wet connections and are in field practice. But the demerits of these type of connections are higher reinforcement congestion in the joint core regions, use of extensive formwork and increased construction time and cost. Limited studies have been conducted on dry mechanical connections. Some of the construction details and performance of dry connections reviewed are as follows.

Metelli & Riva (2008) developed a precast beam column dry connection using high strength tensioned steel bars, fibre reinforced concrete grouted in a "Z" shaped beam column interface and studied for the cyclic behaviour. Although the performance was satisfactory up to 2.5% drift value, pull out of conical fracture radiated from the anchored end of the column was noticed [5]. French et al investigated on seven different type of connection with the plastic hinges determined to form inside and outside the connection regions. It was concluded that the tapered threaded splice connection was found to be the most suitable connection to fabricate and recommended to practice in the moderate to high seismic regions [6, 7]. Vidjeapriya & Jaya (2012) conducted experimental studies on two type of dry connection namely "J" bolt and cleat angle with grouted bolts under reverse cyclic loading. It was revealed that "J" bolt connection was more ductile and energy dissipation as compared to cleat angle connection as the failure occurred at the anchorage region [8]. The load carrying capacity, ductility and energy dissipation capacity were studied for connections using cleat angle with single stiffener and double stiffener. The connection bolts were anchored by grouting and corbel for the support purpose. The performance of cleat angle with double stiffener was superior and recommend to use in low-rise moment resisting frames [9]. Rodriguez & Torres-Matos (2013) verified on the seismic resistance of typical welded reinforcement connection which was currently practiced in urban areas of Mexico. It was concluded that the welded reinforcement connection resulted in brittle failure and unsafe for seismic regions. Further, it was recommended to revise the Mexican building code [10]. Ozden & Ertas (2013) studied on unbounded, post-tension precast

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An Experimental Investigation on Concrete Using Flyash as Partial Replacement to Cement and Steel Fibers as Admixture

K Chakravarthy[1], M.Sri Priya[2]

M.Tech. Student, Department of Structural Engineering, SVTM Engineering College, Madanapalle, A. P, India[1]

Assistant Professor, Department of Structural Engineering, SVTM Engineering College, Madanapalle, A. P, India[2]

ABSTRACT: The present Investigation deals with M-50 grade concrete investigate about the mechanical and durability properties of concrete by using Fly ash as a replacement to cement and Steel fibers as admixture. The concrete specimen were study the compressive strength, split tensile strength, Flexural strength and Durability test of RCPT tests are conducted of steel fiber reinforced concrete (SFRC) containing concrete mix with steel fibers at 0%, 0.5%, 1%, 1.5% and 2.5% to the volume of fraction and 50 aspect ratio were used. The percentage of Fly Ash by weight is to be increased by 10% to 20% for the replacement cement. The result shows 15.76% increase in compressive strength at 10% flyash with 2% of steel fibers, 37.39 % increase in Tensile strength at 20% flyash with 2.5% of steel fibers, Also 48.65 % increase in flexural strength at 20% flyash with 2.5% of steel fibers in SFRC. By the durability test the chloride ions penetration shows the highest replacement had the lowest chloride ion penetration and Comparing the results shows the analyzed the sensitivity of the fibers and fly ash with plain concrete.

KEYWORDS:Flyash, Steel fibers, steel fiber reinforced concrete (SFRC).

I. INTRODUCTION

Fly ash is the one of the fine powder major waste material produced from many thermal power plants. the utilization of fly ash as a low cost mineral admixture in concrete instead of dumping it as a waste material can have great beneficial effects.

Fig: 1 Fly Ash

A fiber is a small piece of reinforcing material posses certain properties by its own, where as comparing to different types of fibers, Steel fibres are most common used fiber.

Researchon Impact Resistance of Fibre Reinforced Concrete

K. SaiAbhinav, C.Sreenivasulu, P.Ukesh Praveen, K.Salini

Abstract: ***in this exam, an undertaking is needed to bear in mind the impact restriction of fiber bolstered concrete. on this exam, a easy, rational and reasonable drop weight test become finished on fiber invigorated cement as indicated with the resource of ACI board 544. Fibers containing steel, polypropylene, sisal have been used because the invigorating in four unmistakable quantity components, for instance, 0%,0.five%,1%,1.five%. The results validated that developing the quantity part of fiber prolonged the impact deterrent of sturdy version stood out from customary bond. The outcomes moreover shown that steel fibers are greater dominant at extending the impact test than severa strands.***

Keywords: ***About Fibre reinforced concrete, Steel, Polypropylene, Sisal, Drop weight test, Impact energy.***

I. INTRODUCTION

Concrete is the most for the maximum element used development fabric in this world. commonly concrete has low flexibility and impact resistance on augmentation decks, Aircrafts, and so forth., for this reason steel, polypropylene, sisal strands are included with sturdy blend. due to an extending use of FRC (fiber-strengthened bond) being advanced like framework decks and army businesses against effect stacks, this robust has noteworthy career in human lifestyles. including strands to strong grows its pliability, unbending nature, flexural nice and obstacle towards dynamic and impact loads. so far now metallic and polypropylene are used being advanced industry. gift research, sisal fiber, metallic and polypropylene fibers are delivered to the strong. the brink volume (L/d) and extent department (Vf) are crucial fiber parameters in FRC. right while breaks are begun in FRC, the fibers endure the associated weights, when the pile grows the strands will through and massive transmit the excess stresses to the framework. In case these nerves outperform the fiber-matrix bond satisfactory, which as a result is motivated with the aid of fiber residences the smash device may incite strands pullout or unevenly burst of the fibers. As such, fiber invigorated concretes are extra adaptable than diverse bonds.

extraordinary hints are prescribed by way of diverse impact test techniques, for instance, shot impact test, drop weight check and dangerous take a look at and they may be used for the exam of effect obstacle of concrete [1-2]. among these systems the Drop weight test proposed by way of the ACI (American strong status quo) board 544 is the most clean technique for surveying the effect drawback of Fibre[3]. test outcomes from robust models containing 0.five% to 1.5% of strands confirmed that the impact obstacle of bond prolonged both for beginning ruin and last component distinction and undeniable concrete. Marar et al. [4] exhibited that for FRCs containing zero.5%, 1%, 1.5% and a pair of% trapped quit metal strands with aspect extents of 60, seventy five and 83, the fashions with a higher fiber content material (in all of perspective extents) had a better effect first-class; moreover for models with 2% fiber substance and point of view extents likeness 60, seventy five and 83, the wolfed energies extended via 38, 55 and on numerous occasions, independently. Ramakrishnan et al. [5] uncovered that metallic strands prolonged the impact limitation of FRCs as much as numerous events differentiated and the effect restrict of undeniable concrete. using a drop hammer mechanical collecting, Nataraja et al. [6] investigated the effect nature of metal fiber-invigorated concrete with a angle extent of forty and two exceptional kinds, 30MPa and 50MPa. The effects showed that the effect nature of most of the models for the precept smash and remaining cut up prolonged as the quantity a part of fibers extended. They discovered that a 0.five% fiber substance provoked the impact insurances of the FRC check at the leader break and final split developing three and four (times gradually substantial) than the effects from the obvious concrete solely. The foremost attention of this challenge is to recall the effect limit parameter of fiber sustained bond with blend degree of fibers for M30 assessment concrete and performing otherwise with regards to the standard concrete and with understand the precise measurement of extension of strands to concrete and locating maximum outrageous extents

II. TEST STUDY

The take a look at examination become based totally on the impact of various fiber quantities on impact resistance of FRC. blend degree turned into organized using IS 10262-2009 and IS 456-2000 with imply goal nature of 38.25MPa (M30) for control mix.

fundamentalportland bond (kind 1) become used in this examination. a coarse aggregate with a most outrageous apparent length of nineteen mm and a first-class aggregate with a fineness modulus of 3.four were used inside the exam. Polypropylene, sisal and trapped stop steel strands had been used; their geometry and clean shape are confirmed up in Fig. 1,2,three and their homes are recorded in table 1. first rate plasticizer of SP-430 became used to change the usefulness of mixes.

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K. SaiAbhinav, Annamacharya Institute of Technology and Sciences,Tirupati, A.P, India. (saiabhinav.sai9@gmail.com)

C.Sreenivasulu, Annamacharya Institute of Technology and Sciences,Tirupati, A.P, India (chitralasreenivas@gmail.com)

P.Ukesh Praveen, Annamacharya Institute of Technology and Sciences,Tirupati, A.P, India (Praveen.neo38@gmail.com)

K.Salini, Annamacharya Institute of Technology and Sciences,Tirupati, A.P, India (snehashalini.38@gmail.com)

Mechanical Properties of Recycled Coarse Aggregate Concrete by Partial Replacement of Cement with GGBS and Fly Ash

N. Janardhan, T.Venkaiah, S.Sameer

Abstract— - in this examinations, it is made to test the power spots of reused coarse mix by methods for inadequate overriding of bond with GGBS and fly ash. on this examination, compressive power, split versatile power and flexural intensity of the reused bonds by techniques for the usage of partial shot of cement with outstanding potential results of GGBS and fly blazing remains. The results got is as differentiated and the regular bond.

Key Words —Compressive strength, Split tensile strength, Flexural strength, Recycled aggregate.

I. INTRODUCTION

The use of concrete is prolonged to uncommon degree. Concrete exhausts limitless massive measures of sums. for the purpose that sums are non feasible so utilization of proportion of all out might adversy have an effect on the earth. Plus, the improvement and obliteration waste dumping transforms into a giant problem. in this way, it subsequently ends up critical to reuse the development and destruction waste and reuse it.

All development sports activities calls for a couple of materials, as an instance, square, stone, glass, earth, robust, metal, mud, timber, and lots of others. Regardless, the robust stands as the rule development fabric used being advanced companies. Concrete installation itself because the maximum versatile improvement cloth in all the requests of auxiliary making plans because of its immoderate compressive exquisite.what is more, trademark assets are depleting astoundingly due to expansive enthusiasm for brand spanking new upgrades. it's far surveyed that the development commercial enterprise in India makes usage 10-12 million masses of waste each year. The reused all out use in concrete is grabbing predominance all through the world due to the sensible improvement.

India is ultimately delivering development and destruction (C&D) waste to the song of 23.seventy five million masses continually and people figures are maximum possibly going to twofold inside the accompanying 7 years. C&D wastes were considered as a benefit in made worldwide locations. Wears down reusing of C&D wastes have highlighted that if old bond ought to be used in second duration concrete, the aspect must have the specified compressive amazing. Many research works famous that the compressive first-rate essentially is based upon at the pursued mortar, water ingestion, size of combination, figure robust's excellent, alleviating duration and extent of substitution, degradations gift and condition.

The fundamental roles behind addition in extent of C&D waste are consistent with the accompanying:

i. Many augmentations and crushed structures.

ii. The structures which are tasteful to apply may be overwhelmed as they now not serving the necessities in current-day circumstance wishes.

iii. constructing waste effects because of from counterfeit failure.

The reusing and reuse of C&D wastes appear, with the aid of all payments, to be a probable response for every deficiency of unrefined materials and waste dumping troubles. Reusing C&D waste turn out to be noteworthy usually for the international locations wherein skip of C&D wastes with heading, disciplines, requests, and so on.

The shortage of speedily available combination and developing price of delivery, which makes constant stress to apply reused substances as substitution to the trademark all out.

The development agency is one of the cash related fragments that are gradually responsible for using normal assets. within the aspect the sports activities related to using using ordinary sources. within the place the sports related to using C&D waste anticipate a important hobby. the use of one of a kind kinds of waste substances for cutting-edge things is a creating as an normal instance.

Close to the crowning glory of the presence cycle, a fabric breezes up waste, which can be changed into a few other fabric to make new topics or to be used in helper applications.appropriate reusing of waste material is used to make any other cloth of relative tendencies, as such achieving better profitability in its lifestyles cycle.

II. MATERIAL RESIDENCES

On this gift exam coarse combination, stable, quality mixture, water, Recycled Coarse mixture, fly blazing remains and GGBS had been used. tremendous all out is gotten from community Swarnamuki flow. common coarse entire is tested from network quarry near Chandragiri. Reused entire is gotten from the squashed sturdy shapes from assistant making plans exploration attention. adjoining consuming water is used for mixing and diminishing.

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N. Janardhan, Annamacharya Institute of technology and sciences,Tirupati, A.P, India (jana.fire@gmail.com)

T.Venkaiah, Annamacharya Institute of technology and sciences,Tirupati, A.P, India (venkaiah.thummuru@gmail.com)

S.Sameer, Annamacharya Institute of technology and sciences,Tirupati, A.P, India (sameercivil123@gmail.com)

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2-D STRESS ANALYSIS OF KOYNA DAM BY FINETE ELEMENT METHOD

K.Narasimhulu[1], K.Manjula vani[2], G.Madhu Sudan[3], A.Vinodh kumar[4]

[1,2]Professor, [3,4]Assistant Professor
[1,2,3,4] Department of civil engineering
Annamacharya institute of technology & Sciences, Tirupathi, India.

ABSTRACT

Numerical methods allied to powerful digital computers give to-day the possibility of solving almost all well defined physical problems with desirable accuracy. The finite element process of discretizing and approximating continuous problems has proved itself to be one of the most general and useful procedures. In the design of gravity dam's gravity method of analysis is widely used all over the world the gravity method of analysis of dams is based on many simplifying assumptions and cannot take into actual site conditions. Finite element method used in analysis of gravity dam because it gives more accurate results than conventional methods. In my thesis two dimensional finite element analyses is carried out because 1) in three dimensional analysis some loads are distributed to dam abutments so stresses are less compared to two dimensional analysis. 2) three- dimensional analysis is costlier, tedious than two dimensional analyses.

FEM requires the domain of interest be subdivided into a mesh of discrete elements or sub-domains. The accuracy and the expense of the calculations are strongly affected by the "goodness" of the underlying mesh.

Ideal mesh is characterized by finer elements at curved boundaries and also where stress concentration is high. To develop finer elements and data preparation for smaller elements by manually is very tedious, time consuming and error prone. Automatic mesh generation is used for creation of a well- conditioned mesh in two dimensions with a minimum of user interaction using isoperimetric quadrilateral elements.

Present work deals with the finite element method and it has been studied for both plain stress and plain strain condition. The convergence of the problem is checked with three different mesh types of 36 elements, 73 elements and 160 elements for all the cases stresses are worked out. The graph has been plotted for the normal and shear stresses. According to IS: 6512-1984 the analysis is carried for load combinations A and B. for all load combinations according to saint venant's principle foundation interaction of dam is included in stress analysis. Analysis is done for including and excluding the foundation interaction. It is observed that the stresses including foundation interaction are more compared with the stresses when foundation interaction not considered.

A programme in 'C' for analysis and BASIC programme for the mesh generation is used in the present thesis.

KEYWORDS: stresses, abutments, discrete elements, isoperimetric.

1. INTRODUCTION

It has been found that the results of the finite element method do not tally with the results of the conventional method of analysis and finite element results are closer to measured stresses in prototypes. It is further noted that the gravity analysis underestimates the tensile stresses on the upstream face and over estimates the compressive stresses on the downstream face in comparison to those obtained by finite element analysis.

Efficiency of Natural Zeolites in Concrete

K. Narasimhulu, K. Ganesh Babu, Pavan Kumar,Ukesh Praveen

Abstract: ***Everyday zeolite is a mineral admixture containing huge measures of responsive silica and alumina. due to this zeolite is used as a partial pozzolanic exchange material for bond, as, silica smoke and fly powder. In like way, being an amazingly best material, zeolite like the case with silica seethe, add to the nature of concrete both via the filler sway and the pozzolanic reaction. the existing paper attempts to survey this first-rate adequacy of trademark zeolites in bond. like the case with the various pozzolans, the excellent functionality become visible to be a mix of the general profitability factor that's a segment of the age and the rate adequacy element which vacillates with the substitution fee. the general profitability thusly evaluated declines the water to cementitious cloth extents of zeolite bonds at the various substitution degrees to that of the common robust, getting ready for a normal blend plan at a particular substitution price.***

Keywords: ***Natural zeolite, efficiency, compressive strength, w/c ratio.***

I. INTRODUCTION

Zeolite tuffs as combos with lime have been normally utilized in coming considering that Roman events. Zeolites are hydrated aluminosilicate minerals with a case like structure that offer huge floor zone and furthermore consolidate an immense proportion of responsive silica and alumina. this is chargeable for its better pozzolanicity, which allows in improving the compressive power further to the strength characteristics of the strong. The pozzolanic reaction urges to diminish the permeability, refine the pore structure, basic to a refund inside the dispersal of dangerous particles. The goal of this examination is to investigate the parameters that influence the power lead concrete containing remarkable odds of zeolite.

II. FAVORING REPUTATION

Facts to be had at the dedication of zeolite to even the nature of concrete, the best conventionally thought about parameter, is correct now for all intents and purposes no. Feng et al. [1-4] have verbalized a couple of examinations concerning the lead of zeolite in concrete. emphatically clearly one of their underlying examination have exhibited that a five to 10% shot of bond with the advantage of zeolite in concrete on the w/c extents of 0.31 to 0.35 made a ten fifteen% higher compressive power stood out from the traditional concrete. In particular, a ten% substitution of zeolite in strong (50 kg/m3) with 450 kg/m3 of run of the mill Portland bond (OPC) and at a water bond extent of zero.35 understood a compressive intensity of around eighty MPa, while the contrasting intensity of an ordinary concrete and 500 kg/m3 of OPC wound up least troublesome 70 MPa [1]. Zeolites have been moreover used in making spilling concretes, in which about 10% of bond was changed. With a fitting measure of superplasticiser and at a water bond extent of generally zero.32, an extreme power gushing strong (hang of around 160 to 2 hundred mm) with a compressive essentialness of approximately eighty MPa become gotten [2]. It changed into other than affirmed that joining of zeolites in bond decreased kicking the bucket, widened the thickness of the strong , detachment in shining strong, thusly superb the necessities of siphoning concrete for creation [3]. Zeolites have been likewise undeniable to be appropriate for stopping the acid neutralizer silica reaction by techniques for the use of cutting down the dissolvable base molecule center in the pore game plan in concrete through molecule change, adsorption and pozzolanic response of the zeolite [4]. Chan and Xihuang [5] as took a gander at the general execution of zeolites in bond with different pozzolans like silica fierceness and pulverized fuel red hot remains (PFA) at the bond substitute periods of five to 30% in concrete with water to standard cementitious surface extent [w/(c+z)] saved steady at 0.28. Their outcomes demonstrate that zeolite lessened depleting and extended the consistency of concrete without extensively choosing the hunch. in like manner at 15% elective degree it provoked a 14% extension in strong quality at 28 days conversely with the direct concrete. besides, an appraisal of zeolite, silica smoke and PFA at 10% overriding of bond in concretes with [w/(c+z)] inside the kind of zero.27 to 0.45 certified, that zeolite performed higher than PFA in any case was not too incredible as silica seethe the extent that working up the power, cutting down the preliminary floor maintenance and chloride spread. regardless, the microstructural consider on concrete with zeolite found that, the pozzolanic impact of zeolite propelled the microstructure of hardened bond stick and decreased the substance of the gigantic pores, along these lines made concrete increasingly unmistakable impermeable.At this stage it can best be appropriate and is in like way conceivable basic to suggest tolerable unimportant specs for the characteristics of the zeolites which is probably bolstered for use in bond, as in case of the opposite mineral admixtures, in light of on the bits of knowledge to be had inside the composition. it very well may be urged that zeolites for cementitious programming system should, by using and immense, have the total of SiO2+Al2O3+Fe2O3 content in the spot of eighty%, a fineness with a center atom size of around five to 7µm and an incident on begin (LOI) of about 10% most. it may be seen that the 10% LOI that is referenced by methods for

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K. Narasimhulu,Professor, Annamacharya Institute of Technology and Sciences, Tirupati, A.P, India Tel.: 9640001285, (E-mail: simha7@gmail.com)

K. Ganesh Babu,Retired Professor ,Indian Institute of Technology Madras, Chennai, T.N, India

Pavan Kumar,Professor, Madanapally Institute of Technology and Sciences, Madhanapally, A.P, India

Ukesh Praveen,Assistent Professor, Annamacharya Institute of Technology and Sciences, Tirupati, A.P, India

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Data Article

Data sets on spatial analysis of hydro geochemistry of Gudur area, SPSR Nellore district by using inverse distance weighted method in Arc GIS 10.1

Veeraswamy Golla [a,*], Nagaraju Arveti [a], Balaji Etikala [a], Sreedhar Y [a], Narasimhlu K [b], Harish P [b]

[a] Dept.of Geology, Sri Venkateswara University, Tirupathi, Andhra Pradesh, India
[b] Dept.of Civil Engineering, AITS, Tirupathi, Andhra Pradesh, India

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ABSTRACT

The data represent on specific water quality monitoring parameters for 40 sampling points at Gudur area and Hydro geochemistry showed as spatial variation diagrams such as pH, TH, EC, TDS, SO_4, HCO_3, Ca, Mg, Na and F of Gudur area. The spatial maps show that high concentrations of physicochemical parameters in the North-East (NE) and South-East (SE) directions have been observed. The proper planning and various management activities were carried out with the help of these maps. The Gibbs diagram indicates the rock water interaction and bivariate plots data indicates the silicate weathering processes.

Specification table

Subject area	Environmental science
Specific subject area	Water quality
Type of data	Tables, Figures

* Corresponding author.
E-mail address: veeraswamygolla33@gmail.com (V. Golla).

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Data Article

Data sets on delineation of groundwater potential zones identified by geospatial tool in Gudur area, Nellore district, Andhra Pradesh, India

Veeraswamy Golla [a,b,*], Balaji Etikala [a,b], Ala Veeranjaneyulu [a,b], M. Subbarao [c,d], A. Surekha [c,d], K. Narasimhlu [c,d]

[a] Dept. of Geology, Sri Venkateswara University, Tirupathi, Andhra Pradesh, India
[b] Dept. of Geology, Acharya Nagarjuna University, Guntur, Andhra Pradesh, India
[c] Dept. of Geography, Sri Venkateswara University, Tirupathi, Andhra Pradesh, India
[d] Dept. of Civil Engineering, AITS, Tirupathi, Andhra Pradesh, India

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ABSTRACT

The data deals with the preparation of the groundwater potential zone map of gudur area, with the help of data like geology and geomorphology, structure/lineament, slope and drainage and the thematic layer were prepared through the Survey of India toposheet Nos. N/12,N/15,N/16 and IRS-P6 LISS-III(RESOURCESAT-2) satellite data. The groundwater potential zones were obtained and classified into four categories, viz., very poor, poor, good, and very good zones. The data explains lateritic plain moderate basement with poor potential zones whereas secondarily occupies alluvial plain contains the good prospecting zone.

Specification table

Subject area	Hydro Geology and Remote sensing and GIS
Specific subject area	Remote Sensing and GIS
Type of data	Table, Geospatial data and SRTM DEM, Toposheet

* Corresponding author at: Dept. of Geology, Sri Venkateswara University, Tirupathi, Andhra Pradesh, India
E-mail address: veeraswamygolla33@gmail.com (V. Golla).

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GROUND WATER QUALITY ASSESSMENT FOR DRINKING AND IRRIGATION IN YERPEDU AREA CHITTOOR DISTRICT, ANDHRAPRADESH, SOUTH INDIA

* GOLLA VEERASWAMY[1], ETIKALA BALAJI[1] AND MARAPATLA SUBBA RAO[2]

[1]*Dept.of Geology, Sri Venkateswara University, Tirupathi, Andhra Pradesh*
[2]*Dept.of Geography, Sri Venkateswara University, Tirupathi, Andhra Pradesh*

Abstract: ***The aim of present investigation is to determine the ground water resource has useful for drinking and irrigation purpose of Yerpedu area, Chittoor district. From that 25 water samples have been collected with different intervals. The physico chemical parameters were analyzed with help of ICP-OES instrument, determine the physicochemical parameters like cations and anions. Based on that, Evaluation of the irrigation parameters like such as the residual sodium carbonate, percent sodium, potential salinity, Kelly's ratio, chloro-alakaine indices, magnesium ratio, SAR and permeability index. The Gibbs diagramme was represented the rock-water interaction. The Prominent water type was Ca-Mg-Cl facies.***

keywords: Physico chemical parameters, USSL diagram, Wilcox diagram, Chada's diagram and Gibb's diagram

1.0 Introduction

water is one of the most important commodity to survival of living organism on the Earth surface . Survival of human beings for various need such as agriculture, drinking and irrigation where the developing without water there is no life on the earth and it is a elixir for all living organisms(1-2). The quality of water play vital importance for survive countries in all over the globe(3). The increasing of the urban population may leads to the pollution and increase in chloride in ground water and 20% percent of sample s may leads to exceeding of the dirking water for the Yerpedu area(4). This work is helpful for better understanding the Ground water quality and upcoming for management of ground water resource in the study area.

2.0 Study Area

Yerpedu mandal lies between latitude 13° 40′ 59.88″ N and longitude of 79° 36′ 0″ E. It is a important Mandal in Chittoor District of Andhra Pradesh and Head Quarters is Yerpedu town and belongs to Rayalaseema region. It is encircled by Renigunta Mandal towards west, Srikalahasti Mandal towards NorthVadamalapeta Mandal towards South, Tirupati (Urban) Mandal towards west. It is consist of 97 Villages and 40 Panchayats. Among All, the smallest Village is Vedulla Cheruvu and the biggest Village is Vikruthamala. It receives the rainfall from the north east and south east monsoons and the highest temperature is 30º to 39º, average temperature lies 25ºc. The study area map is shown Figure-1.0.

Figure 1.0 The Study Area map

Article

ASSESSING GROUNDWATER HYDROCHEMISTRY OF ATMAKUR, SPSR NELLORE DISTRICT, ANDHRA PRADESH, INDIA

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Authors:

Balaji Etikala
Sri Venkateswara University

G. Veeraswamy Yadav

M. Prasad
Central Tribal University of Andhra Pradesh

Groundwater Potential Zones Identification in Palar Sub-Basin using Geomatics

Mrs. Y.Vineela[1], Mrs. T.Hemalatha[2]

[1]*Annamacharya Institute of Technology and Sciences, Tirupati, Chittoor district, AP,*
[2]*Assistant professor, Sri Venkateswara University, Tirupati, Chittoor district, AP.*
[1]*viniyarava@gmail.com*
[2]*Thoti.latha@gmail.com*

Abstract: *Groundwater is a dynamic and replenishable natural resource which plays a significant role in meeting the fresh water needs of mankind. The sustainable development and management of groundwater resource requires precise quantitative assessment based on scientific principle and modern techniques. In the present study, groundwater potential zone are delineated using remote sensing, geographical information system (GIS) and multi-criteria decision making techniques in palar sub watershed lies between 13°20' to 13° 50' N latitudes and 79° 5' to 79° 30' E longitudes which is small tributary of pennar River in chittoor district of Andhra Pradesh. The delineation of groundwater potential zones of palar sub-basin was carried out by developing thematic maps of slope, soil, geomorphology and land use/land cover were developed, rasterized, grouped into classes and assigned appropriate weights. The integration of thematic layers was carried out using Analytic Hierarchy Process (AHP) to obtain groundwater potential zone map. From the results, the map showed excellent (76.23 Km^2) and very good (131.17 Km^2) and good (161.61 Km^2) groundwater potential zones occurring in Irala and Puthalapattu (W4), Somala (W1) and Pulicherla (W3) sub-basins. The groundwater potential zone map was finally verified using groundwater level fluctuation map overlaid with groundwater potential zone map the results was found satisfactory and it is facilitated to identify suitable sites for artificial recharge structures.*

***Keywords*:** **Groundwater recharge, compact factor analysis, RS, GIS, AHP**

1. INTRODUCTION

Water is one of the essential natural resource, without which life cannot exist. Demand of water is increasing with the increase of population. We need water for agriculture, industry, human and cattle consumption. Therefore it is very important to manage this very essential resource with sustainable manner. Hence, we need proper management and development planning to restore or recharge water where runoff is very high due to various topographical conditions. Remote sensing is the acquisition of information about an object or phenomenon without making physical contact with the object and thus in contrast to on site observation. In modern usage, the term generally refers to the use of aerial sensor technologies to detect and classify objects on Earth by means of propagated signals.

2. STUDY AREA

Study area is located in the palar sub-basin which includes ponnai river. The major part of the study area is covered by chandragiri, somala and puthalapattu mandals of chittoor district. It is located 13°20' to 13° 50' N latitude and 79° 5' to 79° 30' E longitude and covering an area of 655 sq.km. It is included in the survey of India topographical sheets of 57k/15, 57o/2, 57o/3 on a scale of 1:50,000. The location map of study area is as per figure1 below.

An Experimental Investigation on Strength Properties of Concrete by Partial Replacement of Cement with Fly Ash and Fine Aggregate with Stone Dust

A. Vinodh Kumar, G.Madhusudhan, P.Vijay Kumar

Abstract— Cement production leads to CO2 emissions generated during calcinations of CaCO3 and by burning of fuel, is responsible for about 5% of the CO2 emissions in the world. This can be reduced if the pozzolanic materials such as a flyash replacecement within the limits. Now-a-days river sand availability is also reduced and becomes difficult to find due to which there was a need to find an effective alternative. Stone dust, is found as an economic substitute material for river sand as it is a waste material which is obtained from the crusher plants. It can be used to replace river sand partially in concrete. In the present investigation, we have investigated the strength properties of the concrete made with stone dust as partial replacement of fine aggregate in concrete and fly ash as cement. M30 grade mix design is developed using IS design for conventional concrete and replaced mix. Cube specimens (150mm X 150mm) were prepared for both conventional and 30%, 60%, 100% replacement with quarry dust which were further modified by partially replacing cement with 10%, 20%, 30% and 40% of low calcium fly ash. Tests carried on specimens after 3days, 7days, 28days, 56days and 90 days curing to attain its maximum compressive strength. Graphs were drawn and results are compared with the controlled concrete.

Index Terms— Compressive Strength, Flexural Strength, Replacement and Split Tensile Strength.

INTRODUCTION

Cement industries are already facing the shortage of good quality raw materials to produce cement. Many industries are producing unmanageable amounts of wastes as by-products. A variety of these unwanted materials can be used as mineral admixture in concrete. Though, huge volume of natural mineral admixtures is to be used as ingredients for cement, concrete etc. So, continuous investigations are require to be carried out to utilize these greater amounts of by-products as natural mineral admixtures in cement and concrete.

Concrete is widely used in making foundations, pavements, bridges, architectural structures, motorways, dams, reservoirs, pipes, fences and poles. The present day concrete demands high performance with economy. Concrete is a material with which any shape can be cast. It is very hard to find other construction materials like concrete.

The concrete properties mainly depend on its constituents. The main important materials used in making concrete are coarse aggregate, cement and fine aggregate. The properties of cement, sand, stone dust and water effects the concrete quality.

After hardening, the strength and stability remains the same even under water. The most important area of application is therefore the mortar and concrete production.

The formation of these compounds is not simultaneous. Tricalcium silicate is responsible for imparting strength to cement in early period of setting. Dicalcium silicate is responsible for later strength development.

MATERIALS

Different tests on the materials used in this present study is done and the material properties is mentioned below in the following sub-sections.

2.1 Cement

Initial experiments like standard consistency, final and initial setting time, specific gravity, soundness and fineness of cement were conducted on Ordinary Portland Cement. Hence, OPC was used in the present investigation. The chemical composition of the OPC was analyzed as per the standard procedures mentioned in IS 4032:1968. The results of the analysis of the Ordinary Portland cement are presented in 2.1 Table

Table 2.1 Physical Properties of Cement

Sl. No.	Property	Result
1	Standard consistency	30%
2	Specific Gravity	3.12
3	Setting times (minutes) a) Initial b) Final	 90 min 650 min

2.2 Sand

The sand used in the whole investigation was obtained from the Swarnamukhi river near Tirupati, Chittoor district. The properties of sand were analysed as per the procedures mentioned in IS 2386: 1963 and were represented in 2.2 table.

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A. Vinodh Kumar, Annamacharya Institute of technology and sciences,Tirupati. (vinodh.kumar4444@gmail.com)
G.Madhusudhan, Annamacharya Institute of technology and sciences,Tirupati. (gcivil11@gmail.com)
P.Vijay Kumar, Annamacharya Institute of technology and sciences,Tirupati. (vijaykumar1a8@gmail.com)

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Effect of Magnetized Water on the Properties of Concrete

S.R. Sraddha[1] Y. Vineela[2]
[1,2]Assistant Professor
[1,2]Department of Civil Engineering
[1,2]Annamacharya Institute of Technology & Sciences, Tirupati, India

Abstract— Concrete is the majority of widely used man-made building material As water is one of the major ingredients of concrete which leads to more consumption of water. In this research study, the effect of magnetized water on properties of concrete was studied, in order to obtain operative concrete at a lower cost. The magnetized water was prepared using the magnetic treatment system. Five concrete mixes were prepared, one without magnetized water and four with. The Compressive strength of M25 concrete cubes and split tensile strength of concrete cylinders are tested. From the results it is concluded that the compressive strength increased up to 25% for magnetized water of 48 hours for curing of 28 days. The split tensile strength for magnetized water for 48hours also increased to 25 % than conventional concrete. It is also concluded that water consumption also reduces when water is magnetized compared to normal water.

Key words: Concrete, Magnetized Water

I. INTRODUCTION

Concrete is the majority of widely used man-made building material on the universe and cement is used to produce around 2.5 t (over one cubic meter) of concrete per person per year. One essential thing for the word concrete to acquire strength is hydration or some other reactions by usage of water for mixing the ingredients, so water is very essential for the hydration process to take place in the concrete made with OPC. Water consumption is rising as the population and human needs grow. Industrial sector comes in the second place with 20 % water consumption after the agricultural sector which accounts for 70 % of water use. In concrete production practice there is more than one billion tonnes of water consumed each year. Water used in concrete production plays a vital role in the concrete mix, starting from governing the hydration process of cement, along with proper curing in order to reach the desired strength, not to mention managing workability and durability of the concrete structure. Drinking water or tap water is usually used in concrete production to avoid the appearance of impurities. This constraint along with the limited availability of drinking water across the planet raised the important issue of optimizing the use of water in concrete constructions. Using magnetized water has promising potentials in saving water amount used in concrete construction.

A. Magnetized Water:

When water passes through a magnetic flux it is known as magnetized water. The structure of water is aligned in one direction after magnetization, and the molecule sizes change after the bond angle changes, therefore viscosity and surface area increases by magnetization, hence the hydration rate increases. The level of magnetization is controlled by the method used and water purity. Fig. 1.1 illustrates water molecules arrangement in normal temperature. Due to the smaller size of magnetized water molecules, the water layer surrounding the cement is thinner than normal water molecules, therefore less water demand which has positive effect of hardened concrete properties.

Matter is made up of atoms & that atoms are made up of a main core of matter called the nucleus. Small particles are known as electrons which rotate on their axis and orbit all-around the nucleus and these electrons convey electric currents when they go by means of materials and metals, so electrons might be called as tiny particles of electric power. In the 19th century, researchers concluded that the heading electricity makes magnetism and in the 20th century, it switched out to be clear that magnetism was induced by electrons moving inside atoms and generating the magnetic fields surrounding them. Domains are actually groups of atoms in which spinning electrons develop an overall magnetic field. Magnetism is generated by electrons spinning and orbiting inside the atoms. A big portion of an atom is void inside and the electrons are really much farther from the nucleus and majority of the electrons in an atom is available in pairs that spin in opposite directions matches that turn in inverse bearings, so the magnetic impact of one electron in a pair counteracts the impact of its accomplice. Yet, in the event that an atom has a few unpaired electrons, these produce net magnetic fields that line up with each other and transform the entire atom into a tiny magnet. The atoms have practically no magnetism and are less affected by outside magnetic fields due to lack of unpaired electrons in case of diamagnetic materials. When water is exposed to the magnetic field the water clusters breaks and the size of water cluster reduces by which the surface area of water per unit volume increases compared to non-magnetic water. The magnetized structured water is noticed to have better bioavailability and is due to the reason that the clusters formed in magnetized water are of smaller size.

Thus water when subjected to magnetic field has better distribution or in simpler terms improves specific area. Hydration process depends on the surface areas of water and cement, when cement come and get in touch with water, the hydration process begins as more water is obtainable for hydration more number of cement particles are hydrated and this results in better quality and density of hydration products of cement.

Effect of Temperature on Strength Properties of Geopolymer Concrete

S.Gowrisankar[1] C.Sreenivasulu[2]
[1]M.Tech Student [2]Assistant professor
[1,2]Annamacharya Institute of Technology & Sciences, Tirupati, India

Abstract— Generally ordinary Portland cement is using in concrete for construction. It results in the increase of cement demand. Production cement results in the emission of carbon dioxide (CO_2) in equal amount from the industries. About 7% of world emission CO_2 was produced from cement industries. Which shows serious effect on environment results in global warming and greenhouse effect etc. To overcome this issues replacing concrete with geopolymers which are rich in silica and alumina. Fly ash and GGBS based geopolymer concrete of different molarities (6M, 8M & 10M) was casted. Sample cubes (150mmx150mmx150mm) of GPC were placed in oven immediately after demoulding for curing up to 20hrs duration. Cubes were cured at different temperatures (50ºC, 60ºC, 70ºC, 80ºC & 90ºC) for a constant period. After curing in oven cubes moved room for normal curing period. Workability test, NDT, compressive strength test were performed. Workability decreases with increase in molarity of alkaline solution. Different molarity GPC has different optimum strength and optimum temperatures. No extra water other than alkaline solution was used. Strength increases in curing period for ambient cured GPC. Strength increases up to optimum temperature for oven cured GPC.

Key words: Fly Ash, GGBS, Molarity, Oven Curing, Curing Period, Curing Temperature, Compressive Strength

I. INTRODUCTION

In 1978, Davidovits Joseph [1] introduced geopolymers which are rich silica and alumina. Geopolymers are non-disposal waste materials from thermal and steel plant industries. Materials like fly ash, ground granulated blast furnace slag, silica fume, rice husk ash etc.., are used in the manufacturing of GPC. Geopolymers used in place of cement in concrete, that concrete known as geopolymer concrete. Generally geopolymer concrete attains more strength than normal concrete. GPC doesn't require any water curing. Curing of GPC can be done under ambient condition. Strength of GPC increases with increase in curing period.[2]

Geopolymer concrete exhibits unique nature under temperature effect. Generally ordinary Portland concrete is cured by water treatment method. Geopolymer concrete is cured in room temperature. After casting geopolymer concrete, it doesn't require any water curing. Generally geopolymer concrete attains good strength under room temperature condition. In geopolymer concrete, the alkaline solution act as accelerator when exposure in room temperature. The polymerization is the main reaction, which results in good strength. The strength of geopolymer concrete increases when cured at high temperature conditions. Geoplymer concrete can attain strength >70N/mm^2 under high temperature conditions [2&3]. Geopolymer concrete can attain higher strength in 24hrs under high temperature curing conditions. Strength, durability, heat resistance increases when geopolymer concrete cured at high temperature conditions.

The present work is aimed to study about effect of temperature on strength properties of geopolymer concrete. The study carried on low calcium fly ash and GGBS based geopolymer concrete. Alkaline solution is a combination of sodium silicate and sodium hydroxide solution. Fly ash, GGBS, alkaline solution, coarse aggregates, fine aggregate & super plasticizer were used in manufacturing of GPC. GPC of different molarities was casted. Curing of GPC carried in oven at different temperature (50ºC, 60ºC, 70ºC, 80ºC & 90ºC) condition for constant period of 20hrs duration. Samples cubes of different molarity GPC were moulded. 3 sample cubes were casted for each molarity for every temperature condition. Samples were placed in oven immediately after demoulding. Samples were cured in oven [4] for a period of 20hrs at each temperature condition. After completion of oven curing period samples were in room for period 7days and 28days period. Workability test performed at fresh stage of concrete. Compressive strength test, non-destructive test performed after completion of curing period of 7days & 28days.

II. EXPERIMENTAL STUDY

A. Materials

In this project, fly ash & GGBS were used as binders whose chemical and physical properties are tabulated in Table1 & Table2. According to ASTM C 618 (2003)[6] class F fly ash produced from Rayalaseema thermal plant, Andhra pradesh and GGBS imported from AASTRA chemicals, Chennai, Tamilnadu were used in the manufacturing of GPC.

Chemical composition	
Particulars	% of composition
Silica(Sio2)	65.6
Alumina(Al2O3)	28.0
Iron Oxide(Fe2O3)	3.0
Lime(Cao)	1.0
Magnesium(MgO)	1.0
Titanium Oxide(TiO)	0.5
Sulphur Trioxide(So3)	0.2
Loss on Ignition	0.29
Physical properties	
Specific gravity	2.15
Fineness(m^2/kg)	360

Table 1: chemical and physical properties of fly ash

Chemical composition	
Particulars	% of composition
Chemical moduli $CaO+MgO+SiO_2$ $(CaO+MgO)/SiO_2$ CaO/SiO_2	 76.3 1.30 1.07
Magnesia	7.73
Sulphide Sulphur	0.50
Sulphite	038
Manganese	0.12

An Experimental Study on Flexural Behaviour of Geopolymer Concrete Beams

A.Lakshmi priya[1] K. Shalini[2] C.Sreenivasulu[3] J. Guru Jawahar[4] K.Narasimhulu[5]
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Abstract— Geopolymer binders have been proved to be green building materials that can totally replace OPC by an alkaline reaction between silica and alumina are presented in source material. This paper mainly focused on the Flexural behaviour of geopolymer concrete beams with partial replacement of silica sand as natural sand at different proportions like 100:0, 90:10, 80:20, and 70:30 (natural sand: silica sand). The grade of conventional concrete was made as M40, which is equivalent to grade of geopolymer concrete. The beams were cured for 28 days at ambient room temperature and tested for two point loading. The parameters under flexural behaviour like First crack load, Ultimate load, service load, yield load, Ultimate deflection, bending stresses, Load deflection characteristics, Moment characteristics are presented. The study has given a final conclusion that at 20% replacement level of silica sand as natural sand gives better results at 8M. By increasing the replacement level decreasing the strength, hence the silica sand used as a filler material for well graded geopolymer concrete which is more sustainable.

Key words: Geopolymer Concrete, Silica Sand, Two-Point Loading, Flexural Parameters

I. INTRODUCTION

Geopolymer binder which was introduced by Davidovits1978 is an inorganic polymer binder, rich in silica and aluminium. In the process of polymerization of materials, alkaline substances are to be added [1]. The source material for silica and aluminium are Fly ash (FA), which is produced from thermal power plants as a waste and ground granulated blast furnace slag (GGBS), which is produced from AASTRA Chemicals, Chennai. Alkaline substances used for obtaining Polymerization reaction are alkaline grade sodium silicate solution (Na2Sio3) and sodium hydroxide solution (NaOH) as an alkaline activator, were taken as 8M. Geopolymer concrete made with only fly ash as a source material for silica and aluminium has shown poor results [2]. Geopolymer concrete require curing under ambient room temperature itself. Results are already concluded that GGBS and FA blended GPC mixes attained enhanced mechanical properties at ambient room temperature itself [3-6]. The load deflection characteristic at mid span of the reinforced geopolymer concrete beams and OPC controlled beams were found to be similar and shows slightly more deflections at same load than the reinforced OPCC beams [7]. Research is being conducted on the flexural behaviour of reinforced geopolymer concrete beams (RGPC). The first cracking load and service load of RGPC beams shows slightly high performance when compared to reinforced cement concrete beams [8]. Ultimate load for Geopolymer concrete beams with 75% fly ash and 25% GGBS were found to be higher than the Ultimate loads for reinforced geopolymer concrete beams with only fly ash, irrespective of the quantity of tensile strength [9].

The present investigation is aimed to find the flexural parameters viz. Load deflection characteristics, moment characteristics, cracking load, ultimate load, service load, maximum moment resistance capacity and ultimate deflection under the flexural behaviour of geopolymer concrete beams at different replacement levels of silica sand after 28 days ambient room temperature curing.

II. EXPERIMENTAL STUDY

A. *Materials:*

In this respect, FA, GGBS and silica sand were used as binders whose chemical and physical properties are tabulated in Table1. According to ASTM C 618 (2003) [10], class F fly ash produced from Lanco Industry, srikalahasti, A.P and GGBS produced from AASTRA chemicals, Chennai, A.P were used in the manufacturing of GPC.

Particulars	Class F fly ash	GGBS	Silica sand
Chemical composition			
% Silica(Sio2)	65.6	30.61	81.5
% Alumina(Al2O3)	28.0	16.24	0.64
%Iron Oxide(Fe2O3)	3.0	0.584	0.76
% Lime(Cao)	1.0	34.48	0.14
% Magnesium(Mgo)	1.0	6.79	0.99
%Titanium Oxide(TiO2)	0.5	-	-
%Sulphur Trioxide(So2)	0.2	1.85	-
Loss on Ignition	0.29	2.1	-
Physical properties			
Specific gravity	2.12	2.94	2.60
Fineness(m2/kg)	360	400	-

Table 1: chemical and physical properties of class F flyash, GGBS and silica sand

The alkaline liquid used was a combination of sodium silicate solution (Na2O = 13.7%, SiO2 = 29.4% and water = 55.9%) and sodium hydroxide (NaOH) in pellets form with 97% - 98% purity was purchased from local suppliers. The sodium hydroxide (NaOH) solution was prepared with a concentration of 8M. The sodium silicate solution and sodium hydroxide solution were mixed together one day before prior to use. Crushed granite stones of size 20mm and 10mm used as coarse aggregate, river sand used as fine aggregate and silica sand used as replacement of natural sand at different levels 100:0, 90:10, 80:20 and 70:30. The bulk specific gravity in oven dry condition and water absorption of the coarse aggregate 20mm and 10mm were 2.66 and 0.3% respectively. The bulk specific gravity in oven dry condition and water absorption of the fine aggregate were 2.62 and 1% respectively. The bulk specific gravity in oven dry condition and water absorption of silica sand were 2.60 and 0.4% respectively.

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Seismic Analysis and Design of RC Framed (G+10) Building using ETABS Software Package

C. Prudhviraj Chouhan[1] Dr. P. Abhilash[2]
[1]M. Tech Student [2]Associate Professor
[1,2]Department of Civil Engineering
[1,2]Annamacharya Institute of Technology and Sciences, Venkatapuram, Renigunta, Tirupati, India

Abstract— This scenario represent the construction analysis of G+10 RC framed building in a pollution less areas and also for eco-friendly environment with the consideration of seismic forces along with different load combinations as well, people also focusing on the rural areas to be developed in several regions around the country in this era, as up to this the developing rural regions also fall under different seismic zones in India. So, the importance of analysis of a structural behaviour of different elements in this type of structure is utmost essential, so as to eradicate the failures. This could be achieved here by using recent Structural design software package of ETABS under the conditions on wind and earthquake parameters. The title as" Seismic analysis and design of Rc framed (G+10) building using ETABS Software package.

Keywords: ETABS Software Package, RC Framed (G+10) Building

I. INTRODUCTION

A. *General:*

Earthquake, trembling or shaking movement of the earth's surface. Most earthquakes are minor tremors. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The subterranean point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter.

Each earthquake generates four different types of waves namely P-waves, S-waves, L- waves, R- waves. Among the following the large intensity of earthquake load is carried by the P-waves which have high velocity compared to the other waves.

On average about 1,000 earthquakes with intensities of 5.0 or greater are recorded each year. Great earthquakes (magnitude 8.0 or higher) occur once a year, major earthquakes (magnitude 7.0–7.9) occur 18 times a year, strong earthquakes (magnitude 6.0–6.9) 10 times a month, and moderate earthquakes (magnitude 5.0–5.9) more than twice a day. Because most of these occur under the ocean or in under populated areas, they pass unnoticed by all but seismologists. Moderate to strong earthquakes can cause more significant destruction if they occur closer to the earth's surface.

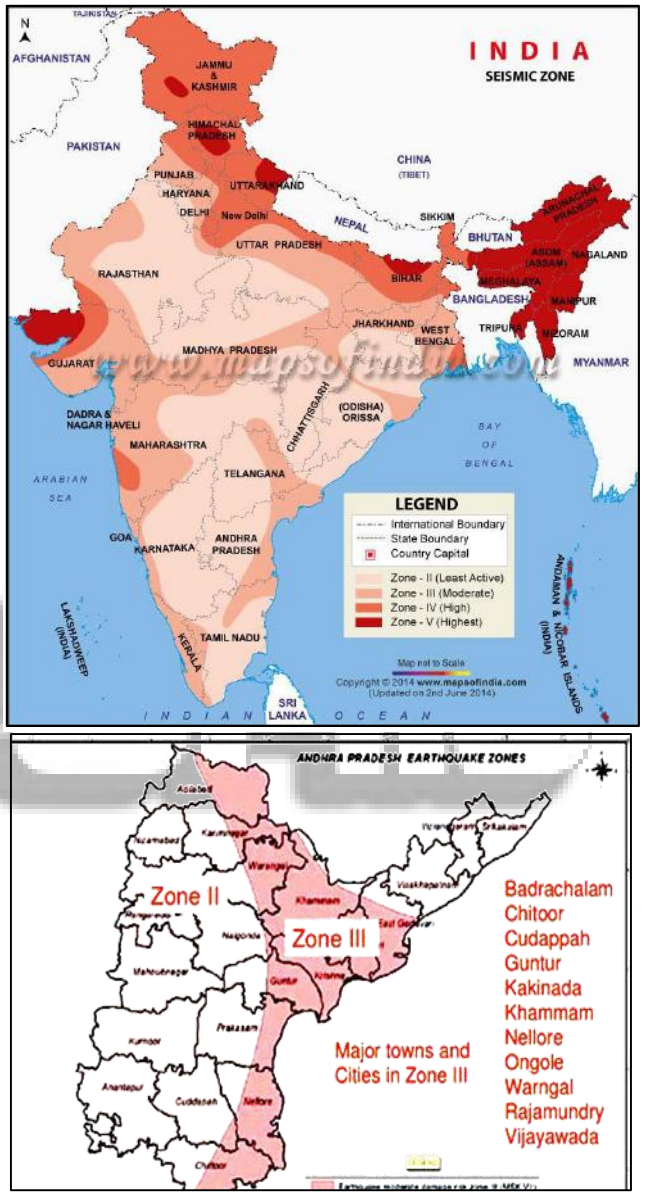

Fig. 1: Location of the Site.

B. *Scope of Present Investigation:*

The main reasons for construction related accidents are carelessness, technical faults, inappropriate use of tools, wrong reaction of workers, abuse of alcohol, and most important no proper awareness about potential sources of accidents. A construction site is the place where people come together for mainly money to support their families. A place where people come together for doing a living must be safe; no economical consideration justifies an accident. What a great tragedy for a family, if for the reason of a preventable working accident, no more income is available. Knowing the sources of potential and predictable accidents means that we

Experimental Study on Fresh Properties of Self Compacting Geopolymer Concrete on Replacement of Fine Aggregate with Copper Slag

B. Rohin[1] J. Guru Jawahar[2]
[1]PG Student [2]Professor
[1,2]Department of Civil Engineering
[1,2]Annamacharya Institute of Technology and Sciences, Andhra Pradesh, India

Abstract— An investigation is carried out on the development of Self Compacting geopolymer concrete , to the study the effect of molarity (8M) on strength properties of class F fly ash (FA) and ground granulated blast furnace slag (GGBS) blended geo polymer concrete (GPC) at 10%,20%,30%,40%, 50% replacement level (FA50-GGBS50). Sodium silicate (Na2SiO3) and sodium hydroxide (NaOH) solution has been used as alkaline activator. In the present investigation it is proposed to study the fresh properties and flyash based SCGC replaced with various percentages of copper slag. Hence the results showed that the Self-compacting geo polymer concrete was suitable for room temperature curing with copper slag as replacement to fine aggregate based GPC.

Key words: Fly Ash, Ground Granulated Blast Furnace Slag (GGBS), Copper Slag

I. INTRODUCTION

The economic strength and even degree of civilization of any country is mirrored by the expansion rate of the infrastructures and highlighted by the assembly rate of concrete. Concrete is one in every of the foremost so much used construction resources within the world. Portland cement (PC); a vital constituent of concrete isn't associate environmentally friendly material. The assembly of Portland cement not solely depletes important quantity of natural resources however conjointly liberates a substantial quantity of carbonic acid gas (CO_2) and alternative greenhouse gases into the atmosphere as a results of de carbonation of sedimentary rock and therefore the combustion of fossil fuels. It's reported that the world wide cement trade contributes around one.65 billion heaps of the greenhouse emission annually. Due to the assembly of Portland cement, it's calculable that by the year 2020, the carbonic acid gas emissions can rise by regarding five hundredth from the present levels. Therefore, to preserve the worldwide atmosphere from the impact of cement production, it's currently believed that new binder's area unit indispensable to exchange Portland cement. during this regard, the geopolymer concrete (GC) is one in all the revolutionary developments associated with novel materials leading to inexpensive and environmentally friendly material as an alternate to the laptop. Gig cycle is AN innovative binder material and is created by whole exchange the laptop. it's incontestable that the geopolymer cement generates 5–6times less CO_2 than PC .

Geopolymer concrete is new technology because it utilizes industrial waste and by products. Geopolymer concrete is emerging as a new environmentally friendly construction material for sustainable development, using Slag and alkali instead of PC as the binding material. This results in two benefits. i.e. reducing CO_2 releases from production of PC and also utilisation of industrial waste like fly ash, slag etc. Ground granulated blast furnace slag (GGBS) is a by-product from the blast-furnaces used to make iron. During the process, slag formed and it is then dried and ground to a fine powder.

FA, which is rich in silica and alumina, has full potential to use as one of the source material for Geopolymer binder. Many research studies have manifested the potential use of solfa syllable primarily based rate. For this reason, low-calcium solfa syllable has been chosen as a base material to synthesize geopolymer so as to higher employ this industrial waste.

In fact, all concretes nearly believe basically on being totally compacted. Just in case of huge and sophisticated structures; it's generally become troublesome to confirm full compaction. Despite the great combine style, inadequate compaction considerably lowers final performance of concrete. Placement of the contemporary concrete needs good operatives to confirm adequate compaction to realize the total strength and sturdiness of the hardened concrete .As concrete is created and placed at construction sites, underneath things distant from ideal, standard vibratory concrete in such things could cause risk to labour and there are continuously doubts regarding the strength and durability of concrete placed in such locations. One in every of the solutions to beat these difficulties is that the employment of Self- Compacting Concrete (SCC).

SCC may be a form of concrete which may be compressed into each corner of the shape work strictly by means that of its own weight. It's usually accepted that SCC was developed initial in Japan within the late Nineteen Eighties in response to the dearth of good labour and therefore the want for improved sturdiness. In line with Out, the requirement for SCC was initial known by Okamura in 1986 and therefore the initial model was developed in 1988. SCC offers several advantages and blessings over ancient concrete. These embody Associate in Nursing improved quality of concrete, reduced construction time, easier placement in full reinforcements, uniform and complete consolidation, enhanced bond strength, reduced noise levels because of absence of vibration, lower overall prices, and safe operating environment.. SCGC is an innovative type of concrete that does not require vibration for placing it and can be produced by complete elimination of ordinary Portland cement.

II. SELF-COMPACTING GEOPOLYMER CONCRETE MIX DESIGN PROCEDURE

8M:

1) Step 1: The wet density of geopolymer concrete=2400 kg/m^3
2) Step 2: Mass of combined aggregate = 72.8% of the mass of concrete

Study and Evaluation of Fresh and Mechanical Properties of Self Compacting Geopolymer Concrete on Replacement of Fine Aggregate at Various Percentage Levels with Copper Slag

K. Roja[1], J. Guru Jawahar[2]

[1]P.G Student, Associate Professor[2]
Department of Civil Engineering[1]
Annamacharya Institute of Technology and Sciences,
Andhra Pradesh, India

Abstract: **This paper presents the study of fresh and mechanical properties of self-compacting by geopolymer concrete(SCGC) to the effect 8 molarity on strength properties of classF flyash(FA)ground granulated blast furnace slag(GGBFS)and copper slag blended geopolymer concrete(GPC) At 10%,20%,30%40%and50% at varies levels of replacement of copper slag and chemical admixture are sodium silicate(Na2SiO3), sodium hydroxide(NaOH), this solution has been used as alkaline activator. In the present investigation to study the fresh properties test conducted as shown in below slump, L-box, V-funnel, and T50and same as the investigation to study the mechanical properties are compressive strength, ultrasonic pulse velocity and split tensile test at different curing periods after 7, and 28 days of curing at ambient room temperature. From the results, it is conducted that the increased replacement level of copper slag(CS)from0%to 50% increased the mechanical properties of self-compacting by geopolymer concrete(SCGC) the rebound hammer and UPV values also increase from 0%to50% replacement levels of copper slag(CS).**

***Keywords*: Fly Ash, Ground Granulated Blast Furnace Slag (GGBS) copper slag, alkaline activators**.

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MAXIMUM POWER POINT TRACKING OF PHOTOVOLTAIC (PV) ARRAY USING PSO

Shaik Nazia Tabassum
PG. Student
Department of EEE
AITS, Tirupati.A.P, India

S Supraja
Assistant Professor
Department of EEE
AITS, Tirupati A.P, India

Abstract
This Project presents Particle Swarm Optimization and Incremental Conductance-ANN methods is used to find the optimum operating parameters of a solar photovoltaic panel under varying atmospheric conditions. A fast and dynamic MPPT technique is desirable to track environmental variations without losing too much energy gains. In order to track the maximum power, an intelligent controller based MPPT algorithm for a standalone PV system is presented in this paper. For that purpose, hybrid techniques based Particle Swarm Optimization (PSO) and Incremental Conductance Artificial Neural Network (INC-ANN) are proposed and comparative analyses are made. In addition to that, mathematical modeling of PV array is analyzed using a single-diode model using MATLAB/Simulink environment. It is evident from the results that the control scheme based on the hybrid INC-ANN with MPPT method is promising in tracking the maximum power with less oscillations under variable climatic conditions and load variations compared to other available techniques.

Index Terms: Particle Swarm Optimization, Maximum power point tracking, Constant power generation control, PV systems, Perturb and Observe, Incremental conductance.

1. INTRODUCTION :

A rapid growth of industries and population needs energy to maintain the economic development. The combustion of fossil fuels to generate electricity is one of the largest sources of CO2(is a heat-trapping “greenhouse” gas) emissions, which will cause the increasing hazard of global warming and climate changes. During the last decade, non-conventional energy sources such as wind, solar, bio-mass, geothermal and hydro power showed penetration growth al around the world. The absence of CO2emission and free availability made these energy sources more attractive in the recent years. Owing to low installation cost and sun light throughout the year, solar PV energy system is of high interest and most promising energy source for future energy demand. However, it suffers

SEPIC CONVERTER BASED HYBRID ENERGY MANAGEMENT SYSTEM

[1]Botla Gnapika, [2]Dr.C.Sasikala Ph.D
[1]M.tech Student (PS), Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
[2] Professor & HOD, Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati

Abstract-

Renewable energy technologies offers clean, abundant energy gathered from self-renewing resources such as the sun, wind etc. As the power demand increases, power failure also increases. So, renewable energy sources can be used to provide constant loads. A converter topology for hybrid wind/photovoltaic energy system is proposed. Hybridizing solar and wind power sources provide a realistic form of power generation. Renewable energies have advantages of zero fuel cost and reduced environmental impacts.This project proposes a SEPIC converter topology for the hybrid power sources.

Two inputs, one from wind energy and another from solar PV panel are given to the converter and maximum power is extracted by using fuzzy logic maximum power point tracking method. This configuration allows the two sources to supply the load separately or simultaneously depending on the availability of the energy sources. The output is given to inverter which converts dc to ac and then applied load. This hybrid energy is given to the three phase inverter. It will convert that DC voltage into AC voltage. This AC voltage is given to the load. The sinusoidal PWM technique is applied to the inverter to control the output voltage and the PI controller compensates reactive power in the grid. Simulation is carried out in MATLAB 2013a / SIMULINK.

Index terms –Renewable energy, Solar, PMSG Wind, Fuzzy, controller, P&O.

I. INTRODUCTION

Renewable energy sources (RES) such as Solar, Wind, Geothermal, Tidal, Hydro etc. are inexhaustible by nature. The RES have been found promising towards building sustainable and eco-friendly power generation. Due to the limitation of conventional resources of fossil fuels, it has compelled the evolution of hybrid power system. Therefore, new ways to balance the load demand is by integrating RES into the system. Hybrid system enables the incorporation of renewable energy sources and transversals the dependency on fossil fuels, while sustaining the balance between supply and demand. The significant characteristic of hybrid power system includes, system reliability, operational efficiency [1].

The hybrid power system enables to overcome the limitations in wind and photovoltaic resources since their performance characteristics depends upon the unfavorable changes in environmental conditions. It is probable to endorse that hybrid stand-alone electricity generation systems are usually more reliable and less costly than systems that depend on a single source of energy [2]. On other hand one environmental condition can make one type of RES more profitable than other. For example, Photovoltaic (PV) system is ideal for locations having more solar illumination levels and Wind power system is ideal for locations having better wind flow conditions [3].

For RES especially the variable speed wind energy conversion systems, Permanent Magnet Synchronous generator (PMSG) is gaining popularity. PMSG have a loss free rotor, and the power losses are confined to the stator winding and stator core. A multi-pole PMSG connected to power converter can be used as direct driven PMSG in locations with low wind speed there by eliminating the gearbox which adds weight, losses, cost and maintenance [4]. A gearless construction of wind conversion system represents an efficient and reliable wind power conversion system. In a PV system, a solar cell alone can produce power of 1 to 2 watt [5]. The solar cell is modeled by two diode model [6]. The solar cells are connected in series and parallel to form a PV panel or module. The PV modules are connected in series and parallel to form a PV array in order to generate appropriate amount of power.

Thus a PV system consisting of PV array, Maximum Power Point Tracking (MPPT) boost converters, and Wind power system consisting of wind turbine, PMSG, rectifier and MPPT boost converter is integrated into Solar Wind hybrid power system (SWHPS). The efficiency and reliability of the SWHPS mainly depends upon the control strategy of the MPPT boost converter. The solar and wind power generation cannot operate at Maximum power point (MPP) without proper control logic in the MPPT boost converter. If the MPP is not tracked by the controller the power losses will occur in the system and in spite of wind and solar power availability, the output voltage of the hybrid system will not boost up to the required value [7]. The

HESS Micro Grids Integration for Power Quality Improvement using Fuzzy logic controller

[1]Chillakuru Supriya, [2]Dr.C.Sasikala Ph.D
[1]M.tech Student (PS), Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
[2] Professor & HOD, Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati

Abstract:

This project proposes a fuzzy based for HESS micro grids integration for power quality improvement. The system incorporates clean energy generation along with power quality improvement thus increasing functionality of the system. Rising demand for distributed generation based on Renewable Energy Sources (RES) has led to several issues in the operation of utility grids. The microgrid is a promising solution to solve these problems. A dedicated energy storage system could contribute to a better integration of RES into the microgrid by smoothing the renewable resource's intermittency, improving the quality of the injected power and enabling additional services like voltage and frequency regulation. However, due to energy/power technological limitations, it is often necessary to use Hybrid Energy Storage Systems (HESS).In this paper the use of a 4-Leg 3L-NPC power converter topology to interface a RES with a HESS (formed by a two Li-Ion batteries) in a microgrid context has been investigated. A new model of the structural limits is presented and implemented to exploit the entire capability of the 4-Leg 3L-NPC converter to insure a maximum power division between the two ESS. A non-linear 2-SMC scheme has been designed and tuned to control the zero sequence injection in the modulating signals in order to control the power flow of the HESS. Simulation and experimental results proved the capacity of the proposed control strategy to manage a HESS in order to improve the power quality and stability as well as to control the renewable energy injected into a microgrid. The investigation of the limits of the topology showed a power exchange capability among this fuzzy enables its application to control in conditions of distorted voltages. Threshold values of existing and proposed methods has been compared and the proposed threshold value is less than the existing system. Hence by using the fuzzy logic controller in proposed system reduced the voltage and current threshold values. So that improves the performance of operation in proposed system. The proposed method is verified by simulating the system in Matlab 2013a Simulink with combination of linear and nonlinear loads.

Index terms –DC-AC power converters, Energy storage, Microgrids, Power quality, Sliding mode control

I. INTRODUCTION

The increasing penetration of DG is changing management of the grid from centralized to decentralized schemes, creating several challenges that must be carefully addressed in order to keep the electrical grid's proper operation. High penetration of renewable energy can lead to stability and power quality issues due to the stochastic nature of RES, such as wind and solar energy. The microgrid concept, which can be defined as a small scale weak electrical grid that is able to operate both in connected and islanded mode, has been extensively studied as a solution for RES integration. The weak nature of a microgrid implies the use of an Energy Storage System (ESS) to increase RES penetration and insure its stability [1]–[3].

The use of an ESS integrates constraints such as admissible bandwidth, maximum ratings, current/power maximum gradient and the number of cycles. If these constraints are not respected it can lead to a dramatic lifetime reduction of the ESS, or in certain cases, to its destruction. [4], [5]. The use of a Hybrid Energy Storage System (HESS) offers the necessary trade-off for increasing the lifetime of each ESS while also increasing the global specific energy and power of the whole system [6], [7]. Fig. 1 shows the main structures currently found in the literature to integrate a HESS into a grid.

The passive topology a) shows a lack of control of the power flow as well as the ESSs State of Charge (SOC) [8], [9]. The floating b) and parallel c) topologies are active topologies that use DC/DC converters to manage energy flows directly. They are already being used within the industry and fulfill a high standard (stress reduction and specific power/energy enhancement [7], [10]–[12]). Parallel topology offers the best flexibility but the use of several DC/DC converters affects the global efficiency [13]. Finally, despite a lower flexibility when compared to the parallel topology, the 3L-NPC topology d) can be used as a single power converter able to manage the power flow of a HESS, acting as an interface between the RES and the grid.

A 31 Level Inverter with 24 switches Topology circuit Suitable for PV Applications

[1]Shaik Rehana, [2]Dr.C.Sasikala, Ph.D
[1]M.tech Student (PS), Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
[2] Professor & HOD, Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati

Abstract-

A new asymmetrical multilevel inverter topology is reported that is capable to operate satisfactorily with wide variation in dc link voltage, while feeding power to the ac grid. A topological building block is first introduced that has one full bridge inverter connected in series with a level doubling network. Following this, the interconnection of such building blocks is attempted to increase the number of levels at the output voltage waveform. The investigation reveals that for a 3-phase system, a converter configuration with two such building-blocks is capable to generate a nominal asymmetry of 14:7:2:1 using only four voltage sources. In solar PV applications, one main source may be fed by PV array and the other three auxiliary sources may be fed through separate dc/dc converters, each having power rating of 3.2% of the peak power rating of PV-arrays. The proposed converter can implement in 31 levels. Asymmetrical hexagonal decomposition is modified (to ensure satisfactory operation of LDN and to eliminate any dc component in the phase voltage waveform) to control such converter. Hence in proposed system we can implement inverter model using 24 switches. This proposed method leads the threshold voltage is 4.79 than existing system. Hence proposed method improved the performance of the inverter models. The converter is extensively simulated in MATLAB/Simulink. 2013a vesion.

Index terms* – Grid *connected photovoltaic inverter; central inverter; multilevel inverter; level doubling network; inverter topology.

I. INTRODUCTION

Photovoltaic inverter is in the core of a grid connected PV system. Leakage current (due to stray capacitance between the terminal and frame of PV module) is a key issue that influences selection of topology for such inverters. Energy yield from a PV power plant depends on both *efficiency* and *reliability* of these inverters [1]. While a great attention is paid to increase the efficiency to enhance energy capture, a considerable loss in the evacuation of power is observed due to inverter failure. The main reason for inverter failure is high frequency switching of few hundreds of ampere of output current. This current could be reduced by elevating the voltage level of the PV arrays. However, this is not recommended due to several issues such as potential induced degradation (PID) [2], dielectric breakdown [3] etc., those limit the PV array voltage to a maximum of 600-900 volts. This leaves no other alternative but to have a central inverter with rated current of hundreds of ampere. The key design constraints for a PV inverter are:

- Leakage current must be below recommended standards,
- Peak dc bus voltage has to be limited to 600-900 V,
- Power quality has to be maintained as per grid code,
- the solar park should not inject unbalanced current in to the grid.

To satisfy the above requirements, many PV converter topologies came up in last three decades. This section briefly highlights the merits and limitations of few potentially important topologies. To increase the efficiency, it was attempted to reduce iron losses by removing the transformer. Many transformer-less topologies were evolved [4]. None of these topologies are suitable for central inverter applications. Neutral point clamped (NPC) structures were proposed and analyzed for transformer-less PV inverters in [5]-[7]. However, as shown in [8], NPC structures also require due attention to mitigate leakage current in its three-phase version, which reduces its peak voltage by a factor of 0.866 rejecting certain space vectors. This introduces additional loss in filter/coupling inductor. Moreover, any stray inductance in the neutral line may cause leakage current higher than the limit.

Z-source inverters or its derived topologies [9]-[11] are reported for solar PV applications. This has the advantage of having higher range of MPPT operation. However, this is achieved at the cost of high frequency switching. Additional loss of energy is obvious in the passive components (mainly in the inductors) in these converter topologies.

The other approach to develop grid connected PV inverter is to explore cascaded multilevel inverter topologies to maintain power quality with reduced switching and inductor losses [12]-[18]. In [12]-[14], cascaded H-bridge is directly used as PV inverter. Due to inter-array capacitance, these topologies will have leakage current even in case of transformer isolation from the grid. This issue is addressed in [15] by using common mode choke or by providing a parallel lower impedance path to effectively bypass leakage

BLDC Motor Fed Seventeen-Level Inverter Formed by Cascading Flying Capacitor and Floating Capacitor H-Bridges

P.Kavitha[1] C.Sasikala[2]
[1]PG Student / Department of Electrical & Electronic Engineering, Annamacharya institute of technology and science, Thirupati, A.P. India
[2]Professor / Department of Electrical & Electronics Engineering, Annamacharya institute of technology and science, Thirupati, A.P. India

Abstract

In his paper presents a multilevel inverter for generating 17 voltage levels utilizing a three-level flying capacitor inverter and fell H-connect modules with coasting capacitors has been proposed. Different angles of the proposed inverter like capacitor voltage adjusting have been exhibited in the present paper. The security of the capacitor adjusting calculation has been confirmed both amid homeless people and enduring state operation. Every one of the capacitors in this circuit can be adjusted promptly by utilizing one of the post voltage mixes. Another preferred standpoint of this topology is its capacity to produce every one of the voltages from a single dc-link control supply which empowers consecutive operation of converter.

I. INTRODUCTION

WITH the approach of multilevel inverters, the execution of medium and high-voltage drives have changed radically. As the quantity of voltage levels expands, the output voltage is nearer to sine wave with decreased symphonious content, enhancing the execution of the drive significantly as exhibited. One of the pioneering works in the field of multilevel inverters is the unbiased point clipped inverter.

Then again, the utilization of various disconnected dc sources utilizing H-bridges for plasma adjustment creating different voltage levels was exhibited. The work exhibited examines the issues with the plan of falling numerous rectifiers what's more, proposes an answer for adjusting the capacitors. The work exhibited produces different voltage levels by switching the load current through capacitors. Here, the voltage throughthe capacitors

can be kept up at wanted an incentive by evolving the bearing of load current through the capacitor by picking the excess states for a similar post voltage. Here, the drifting capacitor H-bridge is utilized to create different output voltages. The voltages of the capacitors are kept up at their planned values by switching through repetitive states for a similar voltage level. The works introduced in address parts of utilizing fell H-bridges and propose different effective control calculations. Secluded multilevel converters which are extremely prevalent in HVDC applications are another type of multilevel converters which can be utilized for engine drive applications as displayed. The idea of falling flying capacitor inverter with impartial point cinched inverter is exhibited. Comparable idea has been made accessible economically as ABB ACS 2000. The idea of expanding the quantity of levels utilizing flying capacitor inverter with cross connected capacitors has been introduced. An intriguing design to create 17 voltage levels utilizing various capacitors is exhibited. However the capacitor voltages can't be adjusted immediately. They can be adjusted just at the basic frequency. A single-phase seventeen-level inverter series is exhibited in utilizes huge number of power supplies and has a coasting stack. This is more reasonable for STATCOM applications. An alluring calculation for working seventeen level inverter has been displayed.

In the present paper, we propose another 17-level inverter framed by falling three-level flying capacitor inverter with coasting capacitor H-spans which utilizes a solitary dc supply and determines all the required voltage levels from it. The execution of the proposed series is tentatively confirmed both for steady state operation and amid homeless people and the outcomes are exhibited.

II. POWER CIRCUIT TOPOLOGY

The proposed converter is a crossover multilevel topology utilizing a three-level flying capacitor inverter and falling it with three coasting capacitor H-Bridges. The three-phase control schematic is appeared in Figure 1. The voltages of capacitors AC1, BC1, and CC1 are kept up at Vdc/2. Capacitors AC2, BC2, what's more, CC2 are kept up at voltage level of Vdc/4. Additionally capacitors AC3, BC3, and CC3 are kept up at voltage level of Vdc/8 and capacitorsAC4, BC4, and CC4 are kept up at voltage level of Vdc/16. Each fell H-extension can either include or subtract its voltage to the voltage produced by its past phase. Notwithstanding that, the CHBs can likewise be avoided. The subsequent inverter post voltage is the number-crunching total of voltages of each series.

Three-Phase Symmetrical Multilevel Inverter with reduced switches

M.Naresh[1] C.Sasikala[2]
[1]PG Student / Department of Electrical & Electronic Engineering, Annamacharya institute of technology and science, Thirupati,A.P. India
[2]Professor / Department of Electrical & Electronics Engineering, Annamacharya institute of technology and science, Thirupati,

Abstract: ***This paper presents a new design and implementation of a three-phase multilevel inverter for distributed power generation system victimization low FM and curving pulse dimension modulation additionally. It's a standard sort and it are often extended for further range of output voltage levels by adding extra standard stages. The impact of the planned topology is its proficiency to maximize the amount of voltage levels using a reduced range of isolated dc voltage sources and electronic switches. Moreover, this paper proposes a big issue that is developed to outline the amount of the desired components per pole voltage level. A close comparison primarily based on is provided so as to categorize the various topologies of the s addressed within the literature. Additionally, an example has been developed and tested for varied modulation indexes to verify the management technique and performance of the topology. Experimental results show a well-matching and smart similarity with the simulation results.***

Keywords—Low frequency modulation, multi-level inverter, multi-level inverter comparison factor, sinusoidal pulse-width modulation (SPWM), symmetrical DC power sources, three-phase.

I. Introduction

Recently, multi-level inverters (MLIs) have gotten incredible consideration as a solitary stage inverter. Despite the fact that, they require high number of segments, yet because of their points of interest for example, creating yield voltage with to a great degree low distortion factor (DS), low dv/dt, little yield channel measure, low electromagnetic interface (EMI), and low total harmonic distortion (THD), still have awesome consideration [1]– [6]. For all intents and purposes, all of these points of interest seem emphatically as the quantity of dc-control sources expanded as on account of sustainable power source frameworks. The general idea of is to use separated dc sources or then again a bank of arrangement capacitors to create air conditioning voltage waveforms with higher abundance and close sinusoidal waveform. There are three ordinary sorts of named as Neutral point diode (NPD) clipped [7], flying capacitor [8], furthermore, fell H-Bridge [9]. All of them are experiencing expanded segments number per level, and complex control engineering [9]. Among the diverse topologies for, they can be grouped into two principle classifications: 1) single dc-source inverter such as, and inverters; 2) multi-dc sources inverters such as inverter [10]. While, multi-dc sources inverter is partitioned into symmetrical and nonsymmetrical topologies. Mainly, nonsymmetrical topologies create more voltage levels contrasted with symmetrical topologies. All of these topologies can be reached out for more voltage levels by expanding the number of the essential setup (fundamental cell). Numerous topologies were displayed in the most recent decade centering on limiting the essential multilevel topologies disadvantages. The creator in introduced a topology named multilevel dc interface. It comprises of a gathering of essential cells associated in arrangement design. Every cell produces or 0 voltage over the associated cells, there is an H-extension to change the extremity of the combined voltage. The required number of dynamic switches for yield voltage levels is for the inverters. Be that as it may, this topology requires expanded number of parts contrasted with the traditional topologies, and high voltage stresses. In any case, the creators displayed a topology named transistor-braced H-connect. The essential cell can deliver a five-levels per shaft in the yield voltage. Notwithstanding, it experiences likewise the expanded segments checks, necessities of electrolytic capacitors, complex control approach. Then again, the creators introduced three-stage uneven multi-level course inverter. The yield voltage levels combined by arrangement associated cells. For two cells arrangement, it produces four levels for every shaft. Notwithstanding, rather than utilizing H-scaffold to getting the contrary voltage polarities, it utilizes just the stage move connection between the three legs, by subtracts every leg's voltage with the neighboring one to deliver the line voltage, a similar subtraction thought was exhibited. While, the creators displayed another single dc-connect control supply topology, the introduced topology creates seventeen voltage levels (0,E/16, E/8, 3E/16, E/4, 5E/16, 3E/8, 7E/16,E/2, 9E/16, 5E/8, 11E/16, 3E/4, 13E/16,7E/8, 15E/8, 15E/16 AND E) on the yield voltage by utilizing three level flying capacitor inverter and falls H-connect. Be that as it may, this topology uses a solitary dc-control supply. It utilizes expanded number of electrolytic capacitors as coasting dc-control supplies. The creators in [16] exhibited a twofold sub-module circuit. The exhibited cell produces a three yield voltage levels over its terminals utilizing eight switches and two capacitors. It made strides the voltage adjusting over capacitors at low exchanging frequencies, anyway an additional segments contrasted and the proportional half extension modules required. A few topologies, for example, were introduced for large scale application. They fundamentally utilize a dc-air conditioning inverter stage to change over the dc yield voltage from the PV modules to the required air conditioning voltages. That in transforms changed into three air conditioning confined voltages utilizing a medium recurrence transformer having three optional windings. This setup experiences numerous constraints like expanding segments tallies, surprising expense, commotion, low effectiveness, and enormous establishment measure. In view of a settled game plan, another sub-group of was exhibited. The settled really lay in multi dc-control sources topologies class. They have two arrangements; one delivers an odd number of yield voltage levels furthermore, the other is having a place with much number of yield voltage levels. Keeping in mind the end goal to produce a four voltage levels, it requires

Grid Voltage and Current Harmonics Reduction usingFuzzy logic control of Dual interfacing converter

M.Neelima[1], Dr.C.Sasikala[2]
[1]PG Student / Department of Electrical & Electronic Engineering, Annamacharya institute of technology and science, Thirupati, A.P. India
[2]Professor / Department of Electrical & Electronics Engineering, Annamacharya institute of technology and science, Thirupati, A.P. India

Abstract

In this project the compensation of neighborhood load harmonic current utilizing a single DG interfacing converter may make the intensification of supply voltage harmonics delicate burdens, especially when the fundamental grid voltage is very mutilated. Dissimilar to the op generation tion of unified power quality conditioners (UPQC) with arrangement converter, another harmonic current supply voltage and grid current harmonic pay methodology is proposed utilizing facilitated control of two shunt interfacing converters. In particular, the primary converter is in charge of neighborhood load supply voltage harmonicsuppression. The second converter is utilized to alleviate the harmonic current created by the communication between the primary interfacing converter and the nearby nonlinear load. To understand a basic control of parallel converters, an altered mixture voltage and current controller is additionally created in the paper. By utilizing this proposed controller, the grid voltage stage bolted circle and the identification of the heap current and the supply voltage harmonics are pointless for both interfacing converters. In this way, the computational heap of interfacing converters can be fundamentally lessened.

I. Introduction

There are developing requests of utilizing power molding circuits in low and medium voltage control circulation system. Contrasting with massive detached filters that are very touchy to circuit parameters varieties, the dynamic power molding hardware including dynamic power filter (APF), dynamic voltage restorer (DVR), and unified power quality conditioner (UPQC) is favored due the quick element reaction and the great resistance to system parameter changes. Then again, the high entrance of distributed generation (DG) unit with power devices interfacing converter offers the likelihood of power appropriation systemharmonic current compensation utilizing multi-utilitarian DG interfacing converter.

Past research predominantly centered around the control of a single DG shunt interfacing converter as an APF, as their energy devices circuits have comparative topology. To understand an upgraded dynamic separating objective, the ordinary current control techniques for grid tied DG interfacing converter might be adjusted. To start with, the wide data transfer capacity current controllers are utilized so that the frequencies of harmonic load current can fall into the transmission capacity of the present controller. On the other hand, the particular frequencyharmonic pay utilizing multi-resounding current controller has gotten a consider generation measure of constrictions, as detailed. In the killjoy controller is created for different DG units with dynamic harmonic separating capacity. In the neural system strategy is utilized to enhance the harmonic separating execution of DG interfacing converters that are associated with a grid with substantial variety of grid impedance. Notwithstanding the pay of harmonics at low voltage dissemination arranges, the dynamic separating of music in higher voltage circulation system utilizing multi-level converters. Nonetheless, it is critical to note that previously mentioned compensation strategies are primarily utilized as a part of grid tied converter systems. In late writing, the hybrid voltage and current control is likewise created to understand a fundamental voltage control for DG control direction and a harmonic current control for nearby load harmoniccompensation. Contrasted with the previously mentioned customary current control strategies, the crossover controller permits an interfacing converter to repay music in both network tied and islanding micro grids with help of the low transmission capacity interchanges between DG units, it likewise harmonic extraction to accomplish harmonic power sharing among parallel DG systems.

II. Review of Conventional APF and DVR

This area quickly audits the control of shunt APFs for network current harmonic alleviation and arrangement DVRs for supply voltage harmonic suppression. To contrast and the proposed parallel-converter utilizing adjusted half and half voltage and current controller as appeared in the following segment, the surely knew double-loop current control and voltage control are connected to APFs and DVRs, individually.

Enhancement of Power Quality of PMSG Based DG Set Feeding Three-Phase Loads using Fuzzy Controller

[1] G. Hemanth, [2]S. Nyamathulla, [3] Dr. C. Sasikala

[2]Assistant Professor,[3]professor & Head

[1,2,3]Anamacharya Institute of Technology & Science (AITS)

ABSTRACT: This Project presents power quality improvement of PMSG (Permanent Magnet Synchronous Generator) based DG (Diesel Generator) set feeding three-phase loads using STATCOM (Static Compensator). A 3-leg VSC (Voltage Source Converter) with a capacitor on the DC link is used as STATCOM. The reference source currents for the system are estimated using an Adaline based control algorithm. A PWM (Pulse Width Modulation) current controller is using for generation of gating pulses of IGBTs (Insulated Gate Bipolar Transistors) of three leg VSC of the STATCOM. The STATCOM is able to provide voltage control, harmonics elimination, power factor improvement, load balancing and load compensation. The performance of the system is experimentally tested on various types of loads under steady state and dynamic conditions. A 3-phase induction motor with variable frequency drive is used as a prototype of diesel engine with the speed regulation. Therefore, the DG set is run at constant speed so that the frequency of supply remains constant irrespective of loading condition.

Keywords- STATCOM, VSC, IGBTs, PMSG, PWM, DG Set, Power Quality.

I. INTRODUCTION

PMSGs have gained popularity in recent years because of their potential use in WECS (Wind Energy Conversion Systems) [1-4]. The advancement in the field of rare earth permanent magnet with high field intensity such as neodymium–iron–boron (Nd–Fe–B) has also shown great opportunities in the field of automobile industry [5-7]. These generators offer many advantages over wound field type synchronous generators such as brushless operation, no rotor winding, small size, no rotor copper losses, less maintenance and high efficiency. Because of these advantages PMSG are also being used in turbofan jet engine electrical power generation [8]. The main challenges in PMSG are voltage and frequency control under varying load conditions. These challenges can be easily addressed with advancement in power converters. In WECS, the voltage and frequency of PMSG can be controlled using AC-DC-AC power converters [9,10]. PMSG is compact in size so these generators have potential applications in DG (Diesel Generator) set based isolated supply systems. The diesel generator sets are run at a constant speed with the diesel engine as a prime mover. There is no issue of frequency control in these supply systems. The main task in DG sets based supply systems is to maintain the constant terminal voltage. There are consistent efforts of researchers to develop methods to improve voltage regulation of PMSG based isolated supply systems. Suitable design of rotor with Nd–Fe–B magnet can reduce the voltage regulation of PMSG.Chanet.al. have presented the analysis of PMSG with Nd-Fe-B permanent-magnet rotor feeding isolated resistive load to achieve zero voltage regulation. They have presented that the inverse saliency effect of PMSG helps in improvement of voltage regulation of the generator. Chen et. al. have reported use of fixed capacitor for assisting excitation of PMSG to improve the voltage regulation and useful capacity of the generator. Rahman et.al. have regulated the

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Soft Start Improvement of Induction Motor Using Photovoltaic Fed Switched Inductor Quasi-Z Source H-Bridge Multilevel Inverter

[1]R. Murugesan and [2]M. Manikandan
[1]Department of Electrical and Electronics Engineering, Saint Peter's University, Chennai, Tamil Nadu, India
[2]Department of Electronics and Communication Engineering, Anna University, Chennai, Tamil Nadu, India

Abstract: The general configuration of induction motor is generating a high initial current and high torque while it is undergone heavy load operation. The torque and current problems is depends on mechanical internal and external structure and control arrangement. In order to control of initial torque and motor performance via. current control an adequate circuit and control schemes are required to obtain desired motor performance. This study is proposes switched inductor based quasi Z source circuit is applied on dual source simplified H-bridge multilevel inverter for high step up PV power generation and controlled torque as well as stator current. Voltage control scheme is introduces to control of H-bridge circuit using reference voltage generation for 3 phase proposed circuit. The present circuit is used to control of over voltage and over current in proposed topology. This control loops is not required any complex control, here, we control and generate reference signals using direct sensing of DC-link voltage circuit. Dual power supply based switched inductor quasi Z source on simplified H-bridge multilevel inverter is controlled by single carrier multi-reference Phase Opposition and Disposition (POD) pulse width modulation. The 0.5 Hp induction motor is undergone for this circuit to verify about soft start and torque-current control using MATLAB/Simulink Software.

Key words: Switched Inductor Quasi Z Source (SIQZS), Simplified H-Multi level Inverter (SHMLI), Phase Opposition Disposition Pulse Wdth Modulation (POD-PWM), floating capacitor, Induction Motor (IM), India

INTRODUCTION

The generalized reason for induction motor acceleration, a high starting current is generated across phase or stator terminals. An integrity of motor and control parameters are varied is depends on stator starting current variation. The high starting current results a voltage magnitude variation, stator insulation failure by generation of magnetic failure across induction motor drive (McElveen and Toney, 2001; Gomez and Morcos, 2002). The frequent operation of induction motor causes high starting current andhigh starting torque creates a stator insulation failure via. stator current (Melfi and Umans, 2012). In literatures explain about soft starting of induction motor and it is given bellow as electromechanical solid state variable frequency drive (Gastli and Ahmed, 2005; Giannoutsos and Manias, 2015; Djokic *et al*., 2005; Pires *et al*., 2016; Zhang *et al*., 2009). In recent days, an impedance source inverter circuit is introduces across induction motor for soft start operations via. limiting initial stator current and smoothing voltage (Amudhavalli and Narendran, 2012, 2013). Z source inverter circuit is combined application of voltage source inverter and current source inverter and also single stage high step up operation by utilizing of shoot through states. Multilevel inverter circuit was added in Z source circuit for induction motor control in order to improving soft start performance (Kwak and Toliyat, 2006; Guruprasath and Dhivya, 2013) and stator current control using harmonics minimization of angle control over Z source circuit without multi-level inverter circuit. High step up using less number of passive components is obtained by switched inductor quasi Z source network. It has high step up and less number of passive components even it has low range of passive elements (Ellabban and Abu-Rub, 2016). Cascaded multilevel inverter scheme is used with quasi impedance source circuit for grid interface application for the aim of high step up operation and minimizing of load current.

The proposed multilevel inverter circuit is utilizes on switched inductor quasi Z source circuit for high step up

Corresponding Author: R. Murugesan, Department of Electrical and Electronics Engineering, Saint Peter's University, Chennai,Tamil Nadu, India

DDSRF Theory Based DSTATCOM for Power Quality Enhancement in Distribution System

[1]Priyanka Jakkala, [2]Balaji Nanda Kumar Reddy M.Tech, (Ph.D)
[1]M.tech Student (PS), Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
[2] Assistant Professor, Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati

Abstract-

This paper deals with the combined least mean square-least mean fourth (LMS-LMF)-based control algorithm for distribution static compensator (DSTATCOM) in three-phase distribution system to alleviate the power quality problems caused by solid-state equipments and devices. The combined LMS-LMF-based algorithm is simulated using Sim Power System (SPS) toolbox in MATLAB for obtaining the corresponding active and reactive weights and supply reference currents. The proposed control algorithm has advantages of both LMF- and LMS-based control algorithms, which helps in fast and accurate response with a robust design. Depending on the value of error signal obtained in any of the phases either of LMS- or LMF-based control is used to minimize the error. The developed combined Decoupled double synchronous reference frame(DDSRF) theory based implemented on the prototype of the proposed system and responses obtained are found satisfactory with harmonic spectra of the supply currents meeting the power quality standards. The proposed algorithms is simulated in MATLAB 2013a and simulink

Index terms **–LMF based algorithm, LMS based algorithm,LMS-LMF based algorithm, DSTATCOM, power quality, DDSRF.**

I. INTRODUCTION

Comport and sophisticated lifestyle has been on aexponential run since the invention of the solid statedevices. The recent inventions and the new technologies insolid state equipments and devices have led to a very peacefuland smooth life but it increases the power quality problems dueto these solid state devices based loads. Power qualityproblems are of major concern in the distribution system whichleads to decrease in efficiency of the system and a seriousattention is to be given to the increasing power pollution. Theabundant uses of nonlinear loads such as solid state powerconversion devices, medical equipment, fluorescent lighting,renewable energy systems, office and household equipment,HVDC (High Voltage Direct Current) transmission, electrictraction, arc furnaces, high frequency transformers, etc injectharmonics into the system and decline the quality of power.Moreover, due to unbalance three phase or single phase loads,the nature of waveforms in the distribution system is disturbedwhich eventually affects the equipment and users nearby.Recent research on power quality focuses on mitigation ofcurrent quality problems like harmonics elimination, powerfactor correction, load balancing, noise cancellation andvoltage quality problems like sag, swells, impulses, voltageunbalances, fluctuations and various other aspects.

Custom power devices (CPD) i.e. DVR (Dynamic VoltageRestorer), DSTATCOM (Distribution Static Compensator),and UPQC (Universal Power Quality Conditioner) are alternatives to mitigate theses current and voltage based powerquality problems [1]. As the current based power quality issuesare major concern in the distribution system due to solid statebased loads, voltage source converter (VSC) basedDSTATCOM is the suitable technology and/ or solution tomitigate all these problems in addition to classical or existingmitigating technology like static Var compensators, powercapacitors etc. Various topologies of DSTATCOM have beendiscussed in the literature and a wide area of research is opento work on the power quality issues [2]. DSTATCOM alsofinds applications in electric ship power systems [3], microgrid[4], distributed generation [5-7] etc.

For the appropriate operation of VSC based DSTATCOM,a proper control is required. So one builds algorithm forgenerating the appropriate pulses for VSC to overcome thecurrent based power quality problems. These algorithms aredesigned either in frequency domain or in time domain basedon the type of process they choose to generate the pulses forthe devices of VSC. Singh et. al. [2, 8-10] have well explainedvarious configurations and control algorithms such as: unittemplate, PBT (power balance theory), CSD theory(Current Synchronous Detection), IRPT (InstantaneousReactive Power theory), SRF (Synchronous Rotating Frame)theory, ISC (Instantaneous Symmetrical Components) theory,single PQ theory, single DQ theory, neutral network LMS(Least Mean Square) adaline based control algorithm for
DSTATCOM in both PFC (power factor correction) and ZVR(zero voltage regulation) mode. Singh et. al. [11] have alsodesigned new control for the DSTATCOM with improvedperformance with conventional algorithm such as leaky LMSalgorithm, composite observer algorithm [12], adaptive theorybased improved linear sinusoidal tracer algorithm [13], SPD(simple peak detection) theory

Fuzzy logic based transformer-less inverter with PV Negative Terminal and Grid Neutral point

T.Thirupal[1] , K. Balaji Nanda Kumar Reddy[2]
PG Scholar[1] , Assistant Professor[2]
Department of EEE
Annamacharya Institute of Technology &Science, Tirupati, India

Abstract:

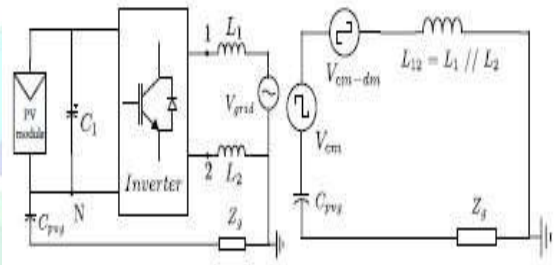
For the sheltered activity of transformer a mess significantly less network associated PV inverters, the issue of normal mode (CM) spillage bleeding edge wishes to be tended to warily. In this paper, a solitary staggered transformer parts substantially less inverter topology is proposed which unmistakably disposes of CM spillage contemporary through interfacing lattice autonomous factor promptly to the PV terrible terminal, consequently bypassing the PV stray capacitance. It gives a low-value arrangement which incorporates just four quality switches, capacitors and an unmarried get out inductor. When contrasted with 1/2 connect topologies, with this inverter no less than 27% and most extreme of a hundred% more yield voltage is gotten for the equivalent DC interface voltage. The proposed inverter is broke down in component and its changing example to produce staggered yield even as keeping the capacitor voltage is alluded to. Recreations and examinations results certify the achievability and proper generally speaking execution of the proposed inverter.

Index Terms —Multilevel inverter, transformer less inverter, common mode current, photovoltaic (PV) system.

I. INTRODUCTION

In an era where there is growing concern over climate change, higher oil prices and sustainability of energy from nonrenewable sources, many countries globally are adopting new regulations to promote clean and renewable energy. This has led to a first-rate boom of hobby in photovoltaic (PV) power systems. There has been amazing drop in the rate of PV modules in the remaining decade, consequently the reduction of manufacturing costs of PV inverters turns into a need. PV inverters that lease an isolation transformer, are bulky and tough to put in. Although thru employing a excessive frequency transformer along a DC-DC converter can lessen the scale of the inverter, it reduces the overall overall performance due to the leakage in the immoderate frequency transformer. As the call indicates, the transformer less inverters are without the cumbersome isolation transformer which now not only makes them compact however additionally makes them cheaper and especially green. Therefore, the popularity of transformer less PV inverters is growing each day. However, as there may be no galvanic isolation between the PV panel and the grid,

it is able to bring about the waft of commonplace mode leakage currents through the PV panel parasitic capacitance [1], [2]. This can compromise the safety of the consumer operating the inverter. In [3], it is mentioned that this leakage capacitance value depends on various factors; such as surface of cells, module frame, distance between cells, PV panel and frame structure, humidity and dust covering the PV panel and weather conditions. Typical values of this parasitic capacitance lies between 10-150 nF [2], [4].



(a) transformer less inverter (b) common mode circuit

Fig. 1: Common mode equivalent circuit of a generalized transformer less inverter [4] The magnitude of these leakage currents between the panel terminals and ground depends mostly on the value of thisStray capacitance and the amplitude And frequency Content material of the not unusual-mode voltage variations which are present at the PV panel terminals [4]. Common mode equal circuit of a generalized transformer less Inverter is shownin Fig. 1. Where Vcm and Vcm-dm is given by (1) and (2) respectively.

$$V_{cm} = {}^{V_{1N} + V_{2N}}/_{2} \quad (1)$$

$$V_{cm-dm} = (V_{1N} - V_{2N}) \, {}^{L_2 - L_1}/_{2(L_2 + L_1)} \quad (2)$$

Based on this circuit it is evident that there exists two rules to eliminate leakage current [6].

- Symmetrical inverter topologies with zero Vcm-dm and constant Vcm. (invalid for half -bridge topologies)
- Matching circuit parameters to ensure sum of Vcm and Vcm-dm is zero (invalid for full -bridge topologies)

Therefore, from (1) and (2) it is Glaring that, the 1/2-bridge family of inverters with , 3 or greater output voltage stages are without fluctuating CM voltage. These consist of the NPC inverter [3], ANPC inverter [7], [8], Co-power NPC

THREE PHASE FIVE LEVEL INVERTER BASED DSTATCOM USING FLC CONTROL

Lavanya[1], P.Sreenivasulu[2]
[1]M.tech Student (PS), Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
[2] Assistant Professor, Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati

Abstract-

STATCOM can provide fast and efficient reactive power support to maintain power system voltage stability. In the literature, various STATCOM control methods have been discussed including many applications of PI controllers. However, these previous works obtain via a trial-and-error approach or extensive studies with a tradeoff of performance and applicability. Hence, control parameters for the optimal performance at a given operating point may not be effective at a different operating point. This project proposes a new control model based on fuzzy logic control, which can self-adjust the control gains during a disturbance such that the performance always matches a desired response, regardless of the change of operating condition. Since the adjustment is autonomous, this gives the plug-and-play capability for STATCOM operation. In the simulation test, the fuzzy logic control shows consistent excellence under various operating conditions, such as different initial control gains, different load levels, and change of transmission network, consecutive disturbances, and a severe disturbance. Here in STATCOM three phase five levels cascaded multilevel inverter is used as a voltage source converter. A threshold value of existing and proposed methods has been compared and the proposed threshold value is less than the existing system. Hence by using the fuzzy logic controller in proposed system reduced the threshold current and voltage values. So that improves the performance of operation in proposed system. The proposed method is simulated in 2013a MATLAB/SIMULINK.

Index terms **–Cascaded multilevel converter, distribution, STATCOM (DSTATCOM), distribution transformer, winding taps, passivity-based control.**

I. INTRODUCTION

In recent years, distribution static synchronous compensators (DSTATCOMs) become more and more attractive in distribution network due to their fast response and small size [1], [2]. They are connected to the utility grid either directly or via a step-up transformer to provide isolation and voltage matching. Three common connection types of DSTATCOM system are summarized in Fig. 1 [3], [4].The attainable capacity of type-I and type-II may reach mega volt-ampere. Therefore, they are suitable for centralized reactive power compensation in medium voltage (MV) or high voltage (HV) systems. However, the coupling transformer in type-I accounts for nearly forty percent of the total weight and its losses can be nearly half of the total losses [5], which make it less favorable than transformer-less structure of type-II. Type-III is popular in customer-side and its typical connection voltage is low, which limits its compensation capacity (kilo volt-ampere).

Hence, it is only suitable for decentralized compensation. With the development of power switches technology, the transformer-less DSTATCOM of type-II seems to be more and more popular. A variety of cascaded multilevel converter (CMC)-based transformer-less DSTATCOM topologies have been proposed in the literatures [5]-[8]. However, a compromise between the cascaded count and the sizing of a CMC module must be made due to the high AC line voltage. If the HV insulated gate bipolar transistors (IGBTs, 3300V, 4500V, 6500V) are chosen, the cascaded count will be decreased and the attainable capacity can be improved. In practice, the HV IGBTs are not so cost-effective. They are not always available on the markets. On the contrary, if we choose the most cost-effective LV IGBTs, the cascaded count, system complexity and unreliability will increase. One way to reduce the number of H-bridges is to decrease the connection point voltage of voltage source converter (VSC) indirectly. The idea is that VSC is connected in series with the passive power filter (PPF) instead of the points of common connection (PCC). A small-rating VSC in series with a tuned *LC* passive filter is proposed in [9] and [10]. A hybrid structure that consists of a thyristor-controlled *LC* (TCLC) in series with VSC is proposed in [11] and [12]. In [13], an improved hybrid DSTATCOM topology where the *LCL* filter followed by the series capacitor is applied.

These kinds of topologies proposed in [6]-[10] are called hybrid-STATCOMs. The voltage rating of the active part (APF/STATCOM) is significantly reduced, because most of the voltage drops on the passive part (*C* or *LC*). However, the coordination control of the active parts and

Enhancement of Grid Connected Four Leg PV Inverter Using Adaptive Neuro Fuzzy Interface System

Masapalli Asha, V. E. Sowjanya
M.tech Student (PE), Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
Email: masapalliasha@gmail.com
Assistant Professor, Department of EEE, Annamacharya Institute of Technology and Sciences, Tirupati
Email: esthersowjanya@gmail.com

ABSTRACT: A grid supportive two-stage three-phase three-wire SPV (Solar Photovoltaic) system with ANFIS controller is presented in this paper, wherein a boost converter is used as a first stage to serve the function of MPPT (Maximum Power Point Tracking) and a 3-leg VSC (Voltage Source Converter) is used to feed the extracted SPV energy along with supporting distribution system for improvement in the power quality. The harmonics elimination, grid currents balancing and compensation for non-active part of the load currents are extra features offered by proposed system other than conventional features of the solar inverter. The true power reflecting part of load current is estimated using an improved adjustable step adaptive neuron based control approach. The output of which is current component reflected on grid side to instantaneously regulate the DC link voltage. In the proposed approach, the load, PV array and loss contributions are kept decoupled. The feasibility of proposed control algorithm is confirmed via MATLAB/SIMULINK results.

Keywords— ANFIS, Solar PV; Two-stage; Power Quality; MPPT.

I INTRODUCTION

The electricity can be considered as one of the primary needs for human beings. The demand for electricity is increasing day by day. However, the conventional fuels for generation of electricity are getting depleted. Moreover, the environmental pollution is also a prime concern. Therefore, renewable energy based systems are getting importance. Solar thermal, SPV (Solar Photovoltaic), wind power generations are few such renewable energy systems. The SPV is gaining importance as it is reaching the grid parity [1]-[2].

Grid connected solar PV (Photovoltaic) systems do not require a battery energy storage hence these systems are gaining more popularity. Several researchers have proposed grid connected PV inverters [3]-[6]. These systems collect power from solar panel and feed that power into the grid without any big energy storage. A review of topologies for single phase converters is shown in [3]. A single stage topology based PV inverter for grid tied application is shown in [4]. A current source inverter based transformer less PV inverter is proposed in [5], wherein a 4-leg CSI (Current Source Inverter) is proposed for reduction of ground leakage current.

The solar PV characteristics are nonlinear due to which the peak power can be extracted only at a unique voltage from a given PV array. A classification of MPPT (Maximum Power Point Tracking) techniques is presented in [6]. An evaluation of P&O (Perturb and Observe) based MPPT technique is shown in [7]. The P&O based technique is simple and easy to implement, however, it has drawbacks of poor dynamic response and oscillation near MPP point in steady state conditions. An INC (Incremental Conductance) based MPPT technique is used in [8], which is used in here also, as it offers simple and easy to implement structure along with fast dynamic response and high steady state accuracy.

The nonlinear loads using power electronic converter at front-end are getting popular day by day as they offer high efficiency and occupy comparatively low space. However, the harmonics drawn by these systems cause several problems in the distribution

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Enhancement of Voltage stability and Transmission Congestion management with UPFC

A. Yuva Kishore[1*] and B. Guru Mohan[3]

[1*]*Assistant professor, Department of Electrical and Electronics Engineering, YITS, Tirupathi*
[2]*Research Scholar, School of Electrical Engineering, Vellore Institute of Technology, Vellore*
[1*]*a.yuvakishor@gmail.com*, [2]*gurumohanbaleboina@gmail.com*

Abstract

In the expanding transmission network, Congestion management and voltage stability are significant issues to be handled. Congestion management can be improved by increasing the power transfer capability or by reducing the system losses. With proper VAR support, the issue of voltage instability can be vanquished. Adaption of Flexible AC Transmission System (FACTS) devices is a techno-commercial manner to overcome the above issues. Unified Power Flow Controller (UPFC) is a pliable FACTS device which can control active power, reactive power and voltage injections concurrently in an efficient manner. In this paper power flow model of UPFC is described, location of UPFC is determined by Line Utilization Factor (LUF) and Line Voltage Stability Index (L_{mn} index) in order to find out the lines which are more vulnerable for congestion and voltage instability. The effectiveness of UPFC is tested on IEEE-14 bus system using MATLAB software. The results are compared with Placement and without placement of FACTS device.

Keywords: *Voltage stability, Congestion, FACTS device, UPFC, security, loss reduction, LMP*

1. Introduction

With the significant increase in power demand in the few past decades, the size of the power transmission network have been improved in vertically integrated environment as well as deregulated power sector. However, the Congestion management and voltage instability problems are challenging issues for the secured and reliable operation of power system.

Congestion in transmission refers to inability of transmission line to deliver power to the desired customer due to simultaneous transactions or insufficient transmission capacity of transmission line [1]. In deregulated power market congestion management is very complex task for system operator when compared to regulated system [2]. The literatures [3-4] have explained different methods and techniques of congestion management. Different problems due to congestion and congestion management by FACTS devices are explained in [5].

We have variant definitions for Voltage stability in literature, as per IEEE/CIGRE voltage stability is defined as ability of a system to take care of voltage in order that once load admittance is raised, load power can increase and that each power and voltage square measure manageable [6]. Voltage instability problem raises due to heavily loads, inability to meet VAR demand, line outages *etc.*, [7]. Voltage stability analysis, assessment techniques and control methods are explained in references [8-10].

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Load Frequency Control in Deregulated Power System by Grey-Wolf Optimization Algorithm

A. Yuva Kishore[1*], P. V. Naresh Babu[2], J. Chinnaraj[3] and E. Murali Raghava[4]

[1*]*Assistant professor, Department of Electrical and Electronics Engineering, Annamacharya Institute of Technology and Sciences, Tirupathi*
[2,3]*Graduate student, Department of Electrical and Electronics Engineering, YITS, Tirupathi*
[4]*Industrial trainer, Department of Electrical and Electronics Engineering, Sree Vidyanikethan Engineering college, Tirupathi*
[1*]*a.yuvakishor@gmail.com*, [2]*nareshnaren222@gmail.com*,
[3]*chinnaraj509h@gmail.com*, [4]*emuraliraghava@gmail.com*

Abstract

Load frequency control (LFC) is one of the key issues in the operation of power systems under deregulated conditions. In this paper Grey-Wolf Optimization (GWO) algorithm is implemented in optimal tuning of Proportional, Integral and Derivative (PID) controller with Integral Time Absolute Error (ITAE) based fitness function. The performance of this system is tested under different market conditions like Poolco, Bilateral and contract violation scenarios. Here we consider Distribution company (DISCO) Participation Matrix (DPM) and Area Participation Matrix (APM) in order to incorporate the market dynamics. Also Generation Rate Constraints (GRC) and external load disturbances are also taken into account. The analysis and simulations is carried out in inter-connected two-area deregulated power system and the effectiveness is compared with Genetic Algorithm (GA) tuned PID controller. The comparative results are presented which shows the superiority of proposed GWO algorithm.

Keywords: *Load Frequency control, Area control error, Poolco model, bilateral transaction, fitness function, Meta-heuristic optimization, Grey-Wolf algorithm*

1. Introduction

Load frequency control problem mainly arises due to intermittent load demand variations causing power imbalances between generation and demand. It is considered as one of prominent ancillary services in deregulated power system [1]. The main objectives of LFC problem are to minimize the frequency deviations from nominal frequency and to maintain the scheduled tie-line oscillations [2]. In conventional or Vertically Integrated Units(VIU), the whole operations of generation, transmission and distribution were under control of single utility. Due to deregulation unbundling happened and given rise to separate entities like generation companies (GENCO), Transmission companies (TRANSCO), Distribution companies (DISCOM) and Independent system operators(ISO). The role of GENCO and TRANSCO are very important in maintaining the scheduled power values, limiting the frequency deviations and control power exchange variations.

Extensive literature surveys over load frequency control under deregulated environment have been presented by A. Pappachen [3]. This method includes intelligent control techniques like Fuzzy gain [4], Artificial neural networks using reinforced

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* Corresponding Author

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Analysis of Femur Bone at various loads by using Finite Element Analysis

[1]B. Sreehari & [2]M. Vijay Kumar Reddy

[1&2]Assistant Professor, Department of Mechanical Engineering

Annamacharya Institute of Technology & Sciences, Tirupati, Andhra Pradesh, India.

[1]haribathala642@gmail.com

Abstract— Biomechanics is a field that combines with disciplines of biology, engineering mechanics, and mathematics, utilizes the tools of physics, computer aided design, computer aided manufacturing, and engineering to describe the properties of biological materials. In this work, Three dimensional models of human femur bones from CT Scan data in terms of DICOM form are be modeled by using MIMICS software and analysis is done by using ANSYS 14.5 software with three different materials at different loading conditions. From these analysis, results from three different materials shows that the behavior of bones at different stages and comparison graphs were drawn for each material. This work may help to reduce the complexity in critical surgeries, it can predict type of bone fractures and also the surgeon can able to analyze the complexity of risk and to provide quick treatment to the patients. From these analysis the comparative statement drawn among the three different materials (Stainless steel,Ti-6Al-4V and PMMA). PMMA shows the minimum deformation.

Keywords—: Computer Tomography, MIMICS (Materialize Interactive Medical Image Control System), Ansys.

I. INTRODUCTION

The word "Tomography" comes from the Greek: Tomo means slice, Grapy stands for to write. So, tomography literally means "writing slices". A computed tomography (CT) scan is a medical image developer that utilizes computer-processed X-rays that produce Tomographic images or 'slices' [1] of required specific areas of the body. The patient will lie on a narrow examination table that slides into and out of this tunnel and also rotating around patient. The x-ray tube and electronic x-ray detectors are located opposite each other in a ring, called a gantry [1]. The femur is the thigh bone, this connects from the hip joint down to the knee joint. The femur bone is a very strong bone and tremendous force may be required to cause fracture of the femur. Femur fractures are divided according to anatomic location. Fractures at the upper end of the femur are referred to as "hip fractures". Fractures of the femoral shaft involve the long tubular portion of the femur between the upper end and the lower end of the femur, and these are the fractures generally require higher energy for occurrence. Fractures of the femur just above the knee are referred to as "supracondylar femur fractures".

II. METHODOLOGY

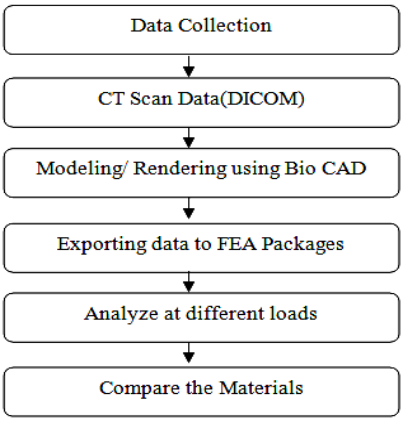

Fig.1 Methodology

2.1 DATA COLLECTION

Firstly need to understand the nature of the problem and its type. This first step in solving the problem to identify it. The general used material properties. Here the CT scan data is collected from different age groups. The CT scan Data is collected in the form of DICOM (Digital Imaging and Communications in Medicine) data sets (.dcm). Material properties of femur bone are collected from web and some information is collected from literature survey.

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CFD Numerical Simulation for Intake Flow Field Design and Effects on Combustion and Emissions of DI Diesel Engine

Balaji M, Hemachandra Reddy K

Abstract: ***The article takes a gander at inevitable results of logical leisure with whirl enhancing modifications on a right away Injection diesel engine. 4 holes at a diversion over every chamber with estimations of the outlet start from 2, 2.five, 3 and 3.5 mm are through within the chamber with affordable tendency concerning the chamber center factor Numerical guesses are the first-class change to provide clean enduring of the fluid circulate wonder in a DI Diesel Engine. outcomes discover that the unessential beginning of two.five mm (2nd) bypass on an unequalled begin and excessive weight. Spin development just motor vitality massiveness increment with the changing starting widths. The chamber with 2.five mm establishing make a most vital execution improvement while the chambers with excessive broadness than second hole bypass on a to a few diploma chop down execution. whilst the development in partition transversely over develops the move discipline characteristics like spin, the execution decays beyond 2.five mm. considering the execution attitude an ensuing hole gives improved ingesting and finally most outrageous load for the proportional gas implanted. alternate ultimate holes have to a few diploma more fiery debris launch. in view that numerical results exhibited that ensuing hole offers a transcendent. Of all of the splendid numerical modifications the resultant chamber gives stepped forward presentation and lessens the fee and dreary experimentation tests.***

Index Terms: Computational Fluid Dynamics, DI Diesel Engine, Swirl motion, Star CCM, Tangential holes.

I. INTRODUCTION

Ecological pollution as a result of chamber head have stream in advancing a whole deal in perspective on the expedient industrialization and related expansion in transportation fundamental utilizing chamber head as top quality verdure. The fuel engines rule the non-open transportation divisions however the diesel engines overpower the cash related transportation fragment. By and by a days there may be a business focus driven research style inside the course of to use diesel motors despite for non-open transportation which circuits explorer motors. that is so a result of reality diesel engines are comprehensively seen for their warm adequacy and lower CO and HC spread. in any case they have an issue of better particulate and NOx overflowing. The NOx and red hot garbage trade off is an issue that dependably influenced the sort of diesel engines. enormous asks generally were spoken to on the improvement of imbuement methodology, duplicating chamber structures, gas association frameworks and after-fix structures to adjust to the issues of execution, execution and discharge. For an impelled execution of DI diesel engine the embedded gas needs to expedient vanish and shape an ignitable mix at grouped locales of the expending chamber. for successfully benefit, diffusive expending should be as quick as can be typical underneath the events. for the reason that diesel automobiles guarantee a stores shorter quality for the blended globules to combo and vanish, the improvement subject basically due to the truth the drop degree picks the gainfulness of devouring. this may be performed through frameworks: a) with the guide of using a power injector, b) by methods for modification of the start chamber geometry with unequivocal bowl geometries to build up the spin and thus agitating impact. The basic need requires extra hardware and further parasitic calamities. other than the mounting issues with the present low speed mechanical implantation framework require colossal exchange inside the fuel circuit. accordingly a predominant open entryway is improve the unsettling influence by methods for techniques for higher chamber made squish and turn. Air development inside the motor barrel anticipate an essential interest, and that they in a general sense influence the expending wonderful. Turn is the extraordinary air advancement winning in a DI diesel motor and relying on the geometrical plans of the bowl, the turn improvement is seen inside the motor. different specialists have investigated the impacts of bowl geometry at the start. regardless, the moment sub-physical frameworks like exacerbation, fuel globules intrusion in the begin chamber, its dispersal may be unimaginably extraordinary gotten a handle on through technique for both with the accommodating resource of over the top non intruding methodology like PDV. The computational liquid earth shattering contraption gives a more affordable theoretical comprehension around the ideal frameworks for spread strategy and it's far assistance. With the presentation of extraordinary weight imbuement framework the begin capacity has stimulated in perspective on higher blending of fuel and air. With the presentation of adjusted chamber like torroidal, re-hopeful there's a possibility of impinging at the dividers. a couple of bosses have proposed impinging showers as giving predominant outcomes. Unevenness is key for talented mixing, vanishing and spread of permeated fuel dabs. alterations of chamber like presentation of digressively entered scores may besides in like way expand turn air advancement by methods for technique for empowering air to path by methods for the openings amidst the give up extents of strain methodology and growth blending. The geometry of the chamber bowl

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Balaji M, Research Scholar, JNTUA, Anantapur,A.P, India. (aebalu@gmail.com)

Dr. Hemachandra Reddy K, Professor, Department of ME, JNTUAAnantapur, A.P, India.

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UNMANNED AERIAL VEHICLE SPRAYING FERTILISERS AND PESTICIDES ON AGRICULTURE FIELDS

Chandbadshah S B V J*

R Rakesh*

Abstract

The paper objective was to design a semi-autonomous Quad copter capable of self-sustained flight via wireless communications while utilizing a microcontroller. The Quad copter was designed to be small enough so that costs would be minimized, which is why small motors and propellers are being used. While a PIC microcontroller, accelerometer, and gyroscope are communicating between each other to maintain control. The scheduler program arranges the following tasks: controller input, sensor data received from the accelerometer, Gyroscope, and Magnetometer. The wireless transceivers use SPI to send control signals to the microcontroller on the quad copter from the handheld controller unit. The accelerometer/gyroscope and magnetometer both use I2C to send the amount of acceleration, stabilization, and the direction vector. To achieve flight, two of the motors must apply downward force and the other two motors have to apply an upward force. To turn, one pair (left or right side) of motors slows down to turn the copter. To ascend, all motors will increase in speed, and will all decrease in order to descend. To move forward, the front two motors will decrease while the back two motors will increase. And vice versa in order to move in a backwards direction.

Keywords:

Agriculture;

Aerial Vehicle;

Fertilisers;

Quad copter;

Unmanned

* **Assistant Professor Dept of ME Annanacharya Institute of technology & science Triupati, India**

Study of Behavior of Optimal Replacement Model for a Block of Air Conditioners Using Markov Chains Considering the Influence of Inflation

Y. Hariprasada Reddy, Professor Annamacharya Institute of Technology and Sciences, Tirupati.

E-mail: prof.yhpr@gmail.com

C. Nadhamuni Reddy, Professor& Principal , Annamacharya Institute of Technology and Sciences, Tirupati.

E-mail:nadamuni_reddy@rediffmail.com

Abstract--- Mathematical and stochastic models are usually tailored to fit into specific real life problems. A known fact is that it is difficult to conceive a model that reflects the reality as close as possible and simple for analysis at the same time. Consequently, different models each representing one or more parameters associated with real life situations are developed. This paper focuses on development of discrete-time stochastic model (using Markov chain) with finite state space that helps in evaluating optimal replacement decisions for a block of items (Air conditioners) with intermediate repairable states viz. minor repair, semi-major repair, and major repair between functional and complete failure states that are more realistic in practice. Further to make the model more realistic, the effect of inflation and time value of money on 'replacement decision' is considered. Real interest rates are computed using Fisherman's relation that takes into account the inflation. First order Markov process, a stochastic process, is employed to compute the probabilities of transition from a given state to any other state for future time periods. Also, an attempt is made to develop block replacement model using higher (second) order Markov chains. To understand the behavior of the block replacement model, the influence of variable maintenance cost (High initial maintenance cost and lower increments during later periods, and Low initial maintenance cost and higher increments during later periods), and different trends in inflation (Rapid uptrend, Gradual uptrend, Rapid down trend, Gradual down trend, Sluggish uptrend and sluggish downtrend) are considered and the model is evaluated.

Index Terms--- Wholesale Price Index, Block Replacement, Markov Process, Inflation, Transition Probability Matrix, FOMC, SOMC.

I. Introduction

A model is a replica of a real or existing system. It demonstrates the inter-relationships between various decision variables in the system. Providing a path to analyze the system behavior for improving its performance should be the primary objective of a model. The mathematical model uses a set of equations, establishing a relation between the decision variables, to describe the system behavior. Deciding the replacement policy that determines the optimal replacement age of equipment, instead of using with higher maintenance costs for long time, is the main objective of replacement problem. Now-a-day Air Conditioning Equipment has become part and parcel of any business unit. Accordingly, the capital investment decisions happened to be more significant and a needs scientific approach to arrive at the most economical replacement decision.

II. Literature Survey

Maurice Sasienni et al. (1966) [1], *Richard Bronson* (1986) [2], *Hiller et al.* (2001) [3], *Kanti Swarup* (1992) [4], *Wagner* (1993) [5] and *Sharma S.D* (2004) [6] discussed the replacement policies for items that deteriorate gradually with different failure mechanisms, with and without considering the time value of money. They developed different conventional replacement models taking into account the various costs of maintenance. They also developed a model for replacement of sudden and complete failure items.

Sharma S.D (2004) [6] developed "Replacement policy for items whose maintenance cost increases with time, and money value is constant" and "Replacement policy for items whose maintenance cost increases with time, and money value is changed at constant rate". He also developed replacement model for items that fails completely.

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Structural and Modal Analysis of Simulation System for Dynamic Optimization of Mechanical Structures

Arkadu. Vamsi Krishna, Department of Mechanical Engineering, G. Pullareddy Engineering College (Autonomous), Kurnool, Andhra Pradesh, India. E- mail: prof.arkadu@gmail.com

Dr. Yedula. Hariprasada Reddy, Department of Mechanical Engineering, Annamacharya Institute of Technology & Sciences, Tirupati, Andhra Pradesh, India. E-mail: prof.yhpr@gmail.com

Abstract--- Structures pertaining to industrial, naval, automotive and aerospace applications will experience vibration during the service mount conditions. Three basic dynamic parameters namely Mass (M), Stiffness (K), and Damping (C) will influence the structure to the input vibration. These critical parameters needs to be configured properly for a particular structure, or else the input vibration energy gets intensified to a greater extent and drive the structure towards catastrophic failure. No practical means are available till now so as to evolve optimal combination of the said dynamic parameter. This paper proposes design and analysis of a dynamic simulation system which bids a capable solution to facilitate various inversions of quantity, rigidity and curbing over specific range. Further projected ploy can be agitated with desired rate and bounty by escalating it on a vibrator and retort of the device can be measured for an itemized input. The prime permutation of forceful parameters can be evolved with the offered simulator which becomes input to constitute the design of a particular structure. The planned system is intended for the purpose of intangible demo in order to begin with baseline configuration and also to detect the subsystems. By attaining the controls from design all the systems will be sized. Assembled configuration of the system is drove out using 3D CAD modelling software i.e. UNI GRAPHICS. Structural analysis is carried out so as to ensure design adequacy using ANSYS software.

Keywords--- Damper (C), Stiffness (K), Varying Mass (VM).

I. Introduction

So as to meet society's requests, the formation of fresher innovation and foundation must be met productively and cost-adequately. To achieve this, administrators and architects must have a shared way to deal with the predefined request within reach. This can prompt alternate routes in building configuration to lessen expenses of development and creation. Every so often, these alternate routes can prompt unforeseen structure disappointments. Numerous choices in configuration depend on designing judgment, in any case, not just on the comprehension of hypothesis or any computational apparatuses. Indeed, even involvement in broad plan in scholarly setting can give just constrained viewpoint in designing basic leadership.

Kim, O.M. Querin, G.P. Steven [1] investigated on the design and optimisation methods, along with their relevant for the application of the techniques in design process. M. Ramu, V. Prabhu raja, P. R. Thyla, M. Gunaseelan [2] studied the fundamental issues a raised in the streamlining of design processes and suggested a suitable design of experiment meta models and optimization techniques for the wide variety of structural applications. James Allison, Michael Kokkolaras, and Panos Papalambros [3] studied the coupling strength impact on single-level multi-disciplinary structure improvement definitions especially the Multidisciplinary Feasible and Individual Disciplinary Feasible details and finally concluded that the MDF and IDF are desirability tools for larger design organizations or as model structures for distributed decision making. Fabian Duddeck [4] studied multidisciplinary improvement of vehicle bodies as for noise, vibration, harshness and crash and evaluated stochastic algorithms for a current development problem and validated the results.

Kirk Martini [5] described a new version of harmony search method to support multi-modal optimization and implemented as an assembly which gives an effective results than the conventional harmony search for finding multiple good solutions. Hani M. Negma, Karam Y. Maalawi [6] formulated an optimization problem by using interior penalty function technique applied while designing of wind turbine and proved that the analysis saves much time which required by other approximate methods. Rebecka Domeij [7] suggested the most convenient way of solving non-coupled automotive structural multi-disciplinary design optimization problems and demonstrated by the suggested process.

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Optimization of Process parameters in formdrilling of Al 8011 using Taguchi Analysis

K.Suresh, Assistant Professor, Chadalawada Ramanamma Engineering College, Tirupati & India, kpsuresh3449@gmail.com.

S.Nishanthi, Assistant Professor, Annamacharya Institute of Technology and Sciences, Tirupati & India, nishanthi.sali@gmail.com

N.Rajesh, Associate Professor, Chadalawada Ramanamma Engineering College, Tirupati & India, raajesh06@gmail.com.

Abstract: This paper aims at optimizing the process parameters of formdrilling using Taguchi method and applying analysis of variance (ANOVA) for better surface quality of hole drilled using formdrilling method and to check the accuracy of hole drilled after formdrilling of Al 8011 alloy. The response parameters of hole drilled like surface roughness, accuracy are analyzed under varying cutting speeds, feed rates, and depth of drilling (material thickness/hole depth) and with different coolants. Orthogonal arrays of Taguchi, the signal-to-noise (S/N) ratio, the analysis of variance (ANOVA) were employed to find the optimal levels, combinations of process parameters and to analyze the influence of the formdrilling parameters on surface finish and hole diameter accuracy. Confirmation tests with the optimal levels of machining parameters are carried out in order to find the effectiveness of the Taguchi's optimization method.

Keywords — Formdrilling, Al 8011, Taguchi, ANOVA, Accuracy, Surface Roughness, Optimization. S/N ratio, Orthogonal Array

I. INTRODUCTION

Beyond the traditional machining processes, formdrilling is one of the most important metal cutting operations among all metal cutting operations. Formdrilling is a bush making process applied to thin walled products contrary to conventional drilling. Formdrilling also called as Thermal drilling, chip less drilling process, Friction drilling. In friction drilling there is no material removal but there is displacement of material and this is a no-chip or chip free machining process. The bush is formed from the parent material which is subjected to friction heating, but at the end bush material has a good surface finish because of the occurrence of dynamic recrystallization. In this process, generally hard drills are used extensively. On the other hand, as work material Al8011 is considered and investigated because of its importance in industrial applications. B.Latha Shankar [1] analyzed by machining of Al8011 upon adding graphite particles and tested their tensile strength, hardness, Machinability of Aluminum alloys which are used in many industries to make different products because of its wear resistance property. Dr. H. K. Shivanand [2] developed and characterized Wear Properties of Aluminum 8011 Hybrid Metal Matrix Composites and shown its good mechanical properties and is significant to the world economy too. According to this the components made from aluminum and aluminum alloys are vitally used in aerospace industry and are very important in other areas like transportation and building in which durability, strength, and light weight are desired. Although aluminum alloys are relatively soft materials that can be possible to machine easily, the material temperatures rise under dry conditions. Girish.G [3] attempted to study the influence of Friction Stir Welding process parameters on AA 8011 alloy and to optimize the process parameters by taguchi method. According to his work tool speed, traverse speed has influence. That's why to check the influence of tool speed in formdrilling as an input parameter considered for present work. Coming to the response variables (outputs) of interest they are important quality characteristics of holes in view of this formdrilling process. These include the accuracy of hole diameter, surface roughness inside the hole and diametrical error. In this process, drill performance and hole quality are mainly investigated and these are dependent on the cutting parameters, drilling tools and its material. Because of this, researchers have been focused on determining the best machining process in drilling technologies specifically. Many numerical and experimental techniques have been developed and used by researchers in the past days in order to predict and determine significant parameters which affect the formdrilling process and hole accuracy. Han-Ming Chowa [4] studied and developed a new type of thermal friction drill with sintered carbide. It then can be applied to drill the Austenite stainless steel (AISI 304) .The Taguchi method was applied to explore how the different parameters such as drill shape and

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Modelling And Analysis Of Femur Bone Implant By Using Finite Element Analysis

[1]S. Hari Prasad, [2]K. NarasimhaBabu, [3]M. T. Gowtham, [4]A. Chandan Kumar, [5]M. Vijay Kumar Reddy
[1,2,3,4]UG Student, [5]Assistant Professor, Department of Mechanical Engineering, Annamacharya Institute of Technology & Sciences, Tirupati, India.
[1]harivasu98@gmail.com, [2]narsi8860@gmail.com, [3]gouthamganga7368@gmail.com,
[4]chandhanakepati9009@gmail.com

ABSTRACT **- Biomechanics is a field that combines with disciplines of biology, engineering mechanics, and mathematics, utilizes the tools of physics, computer aided design, computer aided manufacturing, and engineering to describe the properties of biological materials. In this work, Three dimensional models of human femur bone from CT Scan data in terms of DICOM form are be modeled by using MIMICS and CATIAV5R21 software and analysis is done by using ANSYS 16.0 software with six different materials at different loading conditions. From these analysis, results were obtained from six different materials shows that the behavior of femur stem at different stages and comparison graphs were drawn for each material. From these analysis the comparative statement drawn among the six different materials (Titanium, Stainless steel, Tungsten, chromium cobalt, Aluminium oxide and Ti-6Al-4V). Aluminium Oxide and Tungsten shows the minimum deformation.**

Keywords: Femur Bone , Bio-CAD, CATIA, Finite Element Methods, Ansys.

I. INTRODUCTION

1.1 FEMUR BONE

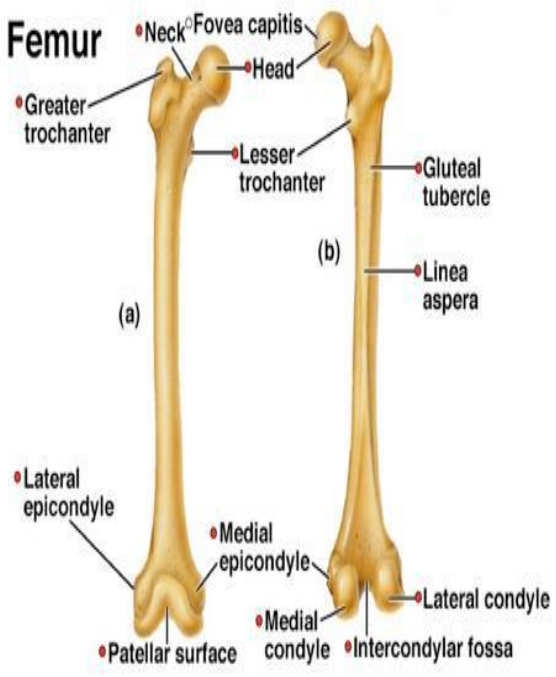

Figure. **1.1**Femur bone [11]

The femur is the thigh bone, this connects from the hip joint down to the knee joint. The femur bone is a very strong bone and tremendous force may be required to cause fracture of the femur.

It is connected from hip joint to the knee joint. In the human femur contains three parts namely:

- Upper extremity
- Body or femoral shaft and
- Lower extremity

1.1.1 UPPER EXTREMITY**:** The head of femur, which articulates with the acetabulum of the pelvic bone, composes two-thirds of a sphere. It has a small grove, connected through the round ligament to the sides of the acetabular notch. The head of the femur is connected to the shaft through the neck. The neck is 4–5 cm. long and the diameter is smallest front to back and compressed at its middle. The neck forms an angle with the shaft in about 130 degrees. This angle is highly variant. In the infant it is about 150 degrees and in old age reduced to 120 degrees in average. Both the head and neck of the femur is vastly embedded in the hip musculature and cannot be directly palpated. In skinny people with the thigh laterally rotated the head of the femur can be felt deep as a resistance profound (deep) for the femoral artery. In the transition area between the head and neck is quite rough due to attachment of muscles and the hip joint capsule. Here the twotrochanter, greater and lesser trochanter, is found. The greater trochanter is almost box-shaped and is the mostlateral prominent of the femur. The highest point of the greater trochanter is located higher than the neck and reaches the midpoint of the hip joint

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Material selection for Herringbone Gear through Modeling and Finite Element Analysis

[1] D.Ramakrishna, [2] S.Arul
[1,2] Department of Mechanical Engineering,
Annamacharya Institute of Technology & Sciences,Tirupati-517520.Andhra Pradesh, India.

Abstract : Herringbone gears are having two sets of helical teeth, one set inclined at an acute angle to the other and are used to transfer large loads without thrust load on the shafts. Owing to the higher load carrying capacity, larger total contact ratio and lower axial force, the herringbone gears are preferred over spur and helical gears in planetary gear trains. They are preferably suited for high shock and vibration applications. Modal analysis and Fatigue analysis have been carried out on herringbone gears of alloy steel and carbon fiber reinforced composite using ANSYS. The results show that the superior material for herringbone gear can be attained by comparing the material properties. This is substantiated by monitoring deformation and fatigue life.

IndexTerms **- Herringbone gear, FEM, Modal analysis and Fatigue analysis.**

1. INTRODUCTION

Gears are mechanical components that transmit rotation and power from one shaft to another in industrial machinery, automobiles, aircrafts, marine vessels etc. Owing to power losses amount to heat generation within the gearbox and gear failure modes such as scoring and fatigue can be directly influenced by the efficiency of the gearing system. To ensure the system operates reliably, the efficiency of these power transmission systems is an important design factor.

Herringbone gears are designed to transmit power through parallel and perpendicular axes. The unique tooth structure of this gear consists of two adjoining, opposite helices that appear in the shape of the letter 'V'. These gears are preferred over spur and helical gears due to higher load carrying capacity, larger total contact ratio, lower axial force, reliable transmission and smooth operation. Therefore, the herringbone gear train is useful for heavy machineries.
Many researchers have carried out the dynamic modeling and dynamic analysis of spur or single-helical gears. J. Lin and Parker (1-2) set up a translation-torsional dynamic model for a single-stage spur planetary gear to study the free vibration. Kahraman (3) developed a single-stage helical PGT dynamic model to investigate the dynamic behavior of a four-planet PGT system. However, the published literature on design and analysis of herringbone gears are limited.
Sondkar et al. (4) created a linear, time-invariant dynamic model of a single-stage double–helical planetary gear set to investigate the free and forced vibration characteristics. Bu et al. (5) developed a dynamic model for HPGT with journal bearings to only explore its modal properties, but they regard herringbone gears as the absence of axial force.
Bending stress, Permissible bending stress, contact stress, bending fatigue strength, allowable surface fatigue stress, tooth surface strength of gear and pinion etc. are to be carefully considered while designing them. To enhance the effectiveness of the gear design, all these metrics are controlled properly. In this paper, solid works is used to model and assemble herringbone gear. Modal analysis and Fatigue analysis have been carried out on herringbone gears of alloy steel and carbon fiber reinforced composite through ANSYS to verify the gear design rationality.

2.0 DESIGNING OF GEAR

- Power, P= 12.3KW (16.5 HP),
- Torque, T = 14.8 N-m,
- Speed, N = 8000 rpm
- Diameter of gear, Dg = 100 mm
- Dg = m x Tg
- Tg = 100/2 = 50 teeth,
- Face width,b = 4 π m = 4x3.14x2 = 25.133 mm
- Tangential force, Wt = 2000 T / Dg = 2000 x 14.8 /100 = 493.33 N
- Addendum = 0.943 x m = 0.943 x 2 = 1.886 mm
- Dedendum = 1.257 x m = 1.257 x 2 = 2.514 mm
- Tooth Height = 2.2 x m = 2.2 x 2 = 4.4 mm
- Tooth Thickness = 1.493 x m = 1.493 x 2 = 2.986 mm
- Fillet Radius = 0.4 x m = 0.4 x 2 = 0.8 mm

By considering all these dimensions, the double helical gear is designed by using CATIA modeler.

About CATIA

CATIA is a 3D mechanical CAD (computer-aided design) program that runs on Microsoft Windows and is being developed by Dassault Systems Solid works Corp., a subsidiary of Dassault Systems, S. A. Vélizy, France). Parameters refer to constraints whose values determine the shape or geometry of the model or assembly. Parameters can be either numeric parameters, such as line lengths or circle diameters, or geometric parameters, such as tangent, parallel, concentric, horizontal or vertical, etc. Numeric parameters can be associated with each other through the use of relations, which allow them to capture design intent. Operation-based features are not sketch-based, and include features such as fillets, chamfers, shells, applying draft to the faces of a part, etc.

GREEN CONGLOMERATE AND INVESTIGATION USING AQUEOUS EXTRACTION FROM DATURA METAL LEAVES FOR CUPROUS OXIDE NANOPARTICLES

Kalathur Kumar[a], S. Arul[b]
a Department of Mechanical Engineering, Sri Chandrasekharendra Saraswathi Viswa Maha vidyalaya , Kanchipuram, India.
b Department of Mechanical Engineering, Annamacharya Institute of Technology and Sciences, Tirupathi, India.

Abstract:-The Cuprous Oxide (Cu_2O) nanoparticles were synthesized by green synthesis method using copper as precursor and Ammonium chloride with Lactobacillus bulgaricus as reducing agent in presence of Datura metal leaf extract as bio-surfactant in an aqueous medium. The bio synthesized nanoparticles were describe the distinctive natured by X-ray diffraction (XRD) and the pattern unveil face centered cubic structure. The size of Cu_2O nanoparticles were observed by scanning electron microscopy (SEM). The results indicate that the Cu_2O nanoparticles have high purity and the average particles size is 32 nm. The elemental anatomy of matals has been identified by Energy Dispersive X-Ray Analysis (EDX). Also conducting Inductive Couple Plasma (ICP) for its propensity to identify and quantify all elements with the exception of Argon

Keywords: **Cuprous-Oxide, Nano-particles, Bio synthesis, Coating,Characterization, Tribological properties**

Introduction

Nanotechnology involves the study of matter at atomic and supramolecular level [1, 2]. This field includes its great achievement in the field of biomedical and biotechnology [3]. Nano-particles are the small particle having size range of 1-100 nm (1 nm = 10-9 m) [4]. Due to large surface to volume ratio, nanoparticles react in different manner than that of large particles having same composition [5]. Among all types of NPs, metallic NPs are most promising as they exhibits remarkable antibacterial properties, due to this property metallic nanoparticles are now great area of research because bacteria are now developing resistance against antibiotics [6-8]. NPs exhibit different properties than that of bulk materials. Specific physical (surface area, colour, temperature etc.), chemical, magnetic and optical property make them good for different applications [9]. Nano-particles can be classified as metallic, non-metallic, semiconductor, carbon based and nanoparticles can also be defined on the basis of number of dimensions i.e. 1-D, 2-D and 3-D [10-12].

There are number of application of Nanotechnology in various areas such as surface coating, cosmetics, electronic circuits, packaging industries and biomedical [13]. Nanotechnology provides antimicrobial packaging material [14]. Nano-particles loaded with plasmid DNA could be used for gene delivery [15]. Bone healing can be achieved by using PLGA nanoparticles [16]. Diagnosis can be done by using techniques like optical imaging (OI), ultrasound imaging (UI) and magnetic resonance imaging (MRI) etc. [17, 18]. Magnetic and luminescent NPs are used in MRI and optical imaging respectively [19, 20]. Blood sugar can be checked by using nanobots [21]. Gold nanoparticles are used for detection of cancer [22]. Iron oxide nanoparticles are used for tissue repair [23, 24]. Additives containing nanoscale materials have long been used in the production of lacquers and paints, for example, Copper oxide as colouring pigments and synthetic amorphous silica to influence the fluidity of lacquer [25, 26]. In recent years modern techniques have been developed to visualize and scientifically describe nanoscale materials and structures [27, 28]. It is therefore now possible to tailor the manufacture and use of nanomaterials and nanostructures in the coating industry to the specific needs of the various applications [29, 30].

Nanomaterials consist of definable structural components with a size range of 1 - 100 nanometers ($1nm = 10^{-9}$ m) in at least one dimension (See also the Commission's recommendation of 18 Oct 2011 for the definition of Nanomaterials (2014/696/EU)) [31, 32]. Nano-particles are a subset of nanomaterials having the above size range in all three dimensions [33, 34]. Both natural and anthropogenic nanomaterials occur in the environment [35, 36].

Nanotechnology uses engineered Nano-materials Cuprous oxide is a two-dimensional crystal consisting of carbon atoms that has excellent mechanical, thermal, and tribological properties. Additionally, the Nano size with properties of larger surface areas and rich oxygen containing functional groups can enhance the adhesive between the fillers and the chains in the polymer matrix [9], which is beneficial for improving the thermo-stability and wear resistance of the polymer composite. Meanwhile, Cu_2O can form a self-lubrication transfer film on the contact interfaces during the friction process, which endows the grapheme / polymer composite with a low and stable friction coefficient and wear rate [10, 12]. Nevertheless, Cu_2O Nano-particles prepared in ambient atmospheric pressure without inert gas protection are prone to oxidation because the oxides of Cu are thermo dynamically more stable than pure Cu. In addition, without proper protection copper Nano-particles are found to aggregate rigorously. Starch was used to control the growth of Nano-particles and protect them to avoid oxidation and aggregation. The

Experimental Investigations on Modified Combustion Chamber Geometry in Diesel Engine

ShaikHussain, Sanam Ravi Teja

Abstract: ***Today the two disturbing conditions in front of the engineers worldwide are to decrease the utilization of conventional fuels and to downscale the ever rising environmental pollution.The performance characteristics and emission characteristics of single cylinder water cooled diesel engine with the effect of piston crown geometries such as HCC (Hemispherical combustion chamber) and RCC (Re-entrant combustion chamber) are evaluated. The tests are conducted with diesel and Rice Bran Methyl Ester and Diesel blends as fuels with different loading conditions. Rice bran methyl ester is prepared by using transesterification process. Without modifying the compression ratio and cylindrical volume of the engine the baseline hemispherical type piston is replaced with Re-entrant type piston. All the engine tests were conducted with diesel and 20% blend with diesel [RBOME20] indiesel engine with HCC and RCC. From the investigations it is observed that the brake point thermal efficiency is increased and specific fuel consumption proportion is decreased for re-entrant combustion chamber. Further thenormal pollutants emissions are reduced. But slightly increase in nitrogen oxides is detected compared to base fuel for re-entrant combustion.***

Keywords: Diesel engine, biodiesel, re-entrant combustion chamber, Hemispherical Combustion chamber and Rice bran methyl ester.

I. INTRODUCTION

Conservation of energy and emissions have become of rising concern over last few decades. More stringent emission laws along with the need to conserve the limited resources of petroleum based fuels, engineers related are under notable pressure to enhance their energy efficiency and diminish the exhaust emission levels. In this circumstance, there has been developing the interest and immense research on the actions that take place in the IC engines and the alternative fuels such as biodiesel to supply a proper diesel oil use for the internal combustion engines. However the results of the first stage of this research plan and majority of the studies exploration on the performance of the biodiesel fuelled the diesel engine specified, reduces in power of engine and the thermal efficiency, raising in the specific fuel consumption and raising the in emissions especially NOx, when compared with theoperation ofstandard diesel.

The destitute performance of the biodiesel controlled diesel engines in comparison with the petroleum basedengines is mostly due to the changes in the properties of fuel, design of engine and operating parameter. The characteristics of p of the DI diesel engine are highly effects by the motion of air in the inner side of the cylinder. The mixing of air-fuel and the following combustion in the DI diesel engines are restrained by flow field inside the cylinder happened by the combustion chamber specifications. The motion of air in the diesel engine, in the course of compression stroke is causes by the combustion chamber. Hence, configurations of combustion chambers require a great attention to contact the global movements in the consumption of fuel, performance and emissions.

In this stage of exploratory work, without changing the engine's compression ratio, geometry of piston bowl was modified from the baseline HCC (Hemispherical Combustion Chamber) to the RCC (Re-entrant Combustion Chamber) by using rice bran oil methyl ester blended with diesel.

S. Jaichandar et al [8] (2012) investigates re-entrant combustion chambers for better air movement and charge mixing. However UBHC, CO and the smoke intensity in the modified engine partly increase with slow injection timing because of poor initial phase of combustion. The increased squish and swirl of the modified engine improves the charge mixing that which results in good combustion and increases temperature of combustion chamber and further increases NOx in modified engine.The biodiesel B20 obtains from Pongamia oil improves the combustion, performance and emission characteristics because of better mixing and enhanced combustion.[8]

II. MATERIALS AND METHODS

2.1 Preparation of Rice bran oil methyl ester (RBOME)

Rice bran oil was choose for this investigation and gets converted it into its methyl ester by trans-esterification. In this trans-esterification reaction, initially 250 ml of methanol was mix-up with the 150 ml of NaOH. The time taken for the reaction is six hours at 55˚C [1]. Then the mixture was kept for minimum eight hours at ambient temperature and then separates the settled glycerin. After decanting glycerol, the methylene esters get washed off with water. The characters of RBOME were found and compares with the diesel [3]. The comparison shows that the properties of rice bran oil methyl ester are relatively closer to diesel fuel properties.

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ShaikHussain,Associate Professor, Department of Mechanical Engineering, Malla Reddy Engineering College, Hyderabad, Telangana, India 500100

Sanam Ravi Teja,PG Student, Department of Mechanical Engineering, Malla Reddy Engineering College, Hyderabad, Telangana, India 500100

Effects of Properties, Characterization of Cast Steel Substrate Coated With Cu_2O Nano Films

[1*]*Kumar Kalathur*, [2]*Arul S*
[1]Research Scholar, Department of Mechanical Engineering, Sri Chandrasekharendra Saraswathi Viswa Maha vidyalaya,
Kanchipuram, Tamilnadu - 631 561, India.
Email: kummarr@gmail.com
[2]Dean of R&D, Department of Mechanical Engineering, Annamacharya Institute of Technology and Sciences,
Tirupati, Andhra Pradesh - 517520, India.
Email: dr.aruls@gmail.com

Abstract – The target of this work is to assess the metal potential coupled with cuprous oxide (Cu_2O) as exterior coatings. Thin Films are applied onto cast steel specimen by sol-gel spin coating technique. Distinct forms of slim cuprous oxide films are coated on the specimen. Cuprous oxide particles added steer to dissimilar microstructures and properties. Structural, Morphological, Spectroscopic and Flammable properties were evaluated on coated cast steel.

Key words – Cast steel; Cu_2O Nano particles; XRD; FESEM; UV-Visible

I. Introduction

Cuprous oxide (Cu_2O) has a cubic crystal structure having a lattice constant of 4.27A and this material is suitable for IC Engine applications. Cu_2O has the superiority of minimum price and high availability [1]. The Cu_2O is exceptionally adorable as a film substance due to its non-toxicity, elevated [2] absorption coefficient in perceptible regions, ample available substance (Cu) on planet, economical to process, and the conceptual energy conversion efficiency is 25% [3]. Cu_2O thin coatings can be developed by diverse techniques like reactive sputtering, vacuum evaporation, [4] chemical and thermal oxidation, and electro deposition. In recent times, so legal process has evinced to be a stunning technique for the production of nano scale metal oxide substances. Sol-gel approach was employed to produce Cu_2O film with ethanol and copper acetate in the absence additive [5]-[9]. The target of this research is to apply Cu_2O thin film onto cast steel substrate for Gear teeth coating application by means of sol-gel [10] spin coating technique and to investigate the behaviour of Cu_2O thin films. The prepared films are heat treated at 340^OC in 10% H_2 + 90% N_2 [11] to obtain single phase Cu_2O films. The heat treatment temperature of 340^OC is the optimum temperature to prepare [12] the single phase Cu_2O films.

Materials and Methods

Copper (II) acetate (100 % purity) was utilized as raw material for the formation of cuprous oxide nano films. Copper (II) acetate was diffused in isopropyl alcohol solution and stirred constantly. Little quantity of glucagon was subsequently added into the suspension and constantly mixed for 24 hours using magnetic bar. The mixture was filtered using 0.70 μm filter before spinning. Films were developed by depositing the mixture by spin deposition process onto cast steel substrate which was procured from Sigma-Aldrich. The mixture was dispersed onto the specimen at 3000 rpm about 70 seconds. The films were dried in the oven at 80^OC for 25 min and this method was iterated for three layers of coating for superior films which completely covered the specimen. Cu_2O coated films were heat treated at 340^OC about 60 minutes in 10% H_2 + 90% N_2. Without the atmosphere of 10% H_2 + 90% N_2, the phase concentration might not be a one phase of Cu_2O thin films because high oxygen required for developing CuO instead of Cu_2O. The microstructure of the films was studied using Diffractometer (XRD). The structure of the film was studied using microscope (FESEM) and characteristics were computed using ultraviolet-visible spectroscopy.

Results and Discussions

A. X – ray Diffraction
The XRD models of obtained samples with are exhibited in Fig. 1. The microstructure of the accumulation was evaluated by diffraction (XRD). All X ray-diffraction apexes are permitted to the cubic phase of Cu_2O crystals.

*Corresponding Author: Kumar Kalathur, E-mail: kummarr@gmail.com
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DEVELOPMENT OF PROTOTYPE MODEL OF AUTOMATIC SOWING MACHINE

Rakesh R[*1], Gopala Krishna M[#1], Chandbadshah S B V J[*2]

[1,*2]Assistant Professor, Department of Mechanical Engineering, AITS, Tirupati, INDIA
[#1]Assistant Professor, Department of Mechanical Engineering, SVCE, Tirupati, INDIA

ABSTRACT

The conventional sowing machines used by farmers in the fields to sow the crops are operated either by manual or by using animals like bullocks, etc. To help them by avoiding the use of animal an automated solar powered sowing machines has been proposed. The present working model related to sowing machine comprises of a seed distributor as explained in this project work. The description is focused on design and development activities. The machine designed here performs important function of calculating the distance in centimetres according to the data entered in to the microcontroller through keyboard, the data is nothing but where the seed has to be planted horizontally in a row. After planting all the seeds in one particular row, the seed planting mechanism comes back to its original place and again according to the data already generated previously, the vehicle moves further up to a certain specific distance to plant the seeds in another row.

Keywords: *Sowing, Machine, Automatic, Prototype, Development, Model.*

I. INTRODUCTION

This project work comes under the subject of Mechatronics. Today Mechatronics has become an applied Engineering science that includes diverse fields like control theory, microelectronics, mechanical engineering, Electrical engineering and artificial intelligence. These types of mechanical creations are called as Mechatronics or electro-mechanical machines ranging from simple machines to highly complex, controlled by micro-controller devices [1]. Also variety of machines are developed for wide applications like levelling the soil, cutting and collecting the full-grown crop, seed planting, segregating and packing, etc.

An 89C51 microcontroller is used as control system of the entire machine. The software is prepared in machine language and depending up on the information given by the keyboard and based on the control algorithm, the motors used in the project work controls entire mechanical transmission section [2]. Limit switches are used and they are arranged at various points of mechanical structure to identify the position of various mechanical transmission sections.

Depending up on the program, the microcontroller generates the output to control the machine through four motors and one solenoid coil. The major two mechanical transmission sections

(i) Moving the vehicle in forward and reverse directions.
(ii) Moving the seed planting mechanism horizontally are designed with two stepper motors, because here precision control is essential [3].

The most common stepper motors have multiple field windings and a permanent magnet rotor. The rotor is made to rotate by means of electronically commutating (switching) the current in the field windings [4, 5]. These motors are designed to operate indefinitely with DC voltage applied to one or more fields in order to hold the rotor in a fixed position. The rotor will rotate in discrete steps when the fields are energized in a specific sequence. Stepper motors are designed to rotate a fixed number of degrees with each step. A 1.8-degree stepper motor requires 200 steps for the rotor to make a full revolution [6].

Design and Development of Facial Expressions for a Humanoid Robot

[1]Chandbadshah S B V J, *[2]Ramesh Reddy K, [#2]Rakesh R, *[3]Arun K, [#3] Prakash PC
[1]Assistant Professor, *[2]Associate Professor, [#2]Assistant Professor, *[3]Assistant Professor, [#3]Assistant Professor,
[1,*2, #2,*3, *3, #3]Department of mechanical engineering,
[1, #2, #3]AITS, Tirupati -517520, INDIA.
*[3]SVCE, Tirupati-517501, INDIA.
*[2] SVEC, Tadepalligudem-534101, INDIA.

Abstract: Facial Expression identification is a quickly spreading and excellent research field in the area of Computer Vision, Automation and Artificial Intelligent. There are many uses which use Facial Expression to predict human opinion, judgment, nature and feelings. An assistant robot having an adjacent interaction with human being should be able to identify human facial expression. Facial moment's identification is a non-trivial problem because each independent has his own way to disclose his emotion and the facial expressions of two dissimilar persons may not be completely identical. Hence the Facial Expressions have been generated and applied to a robot to provide better and informative interactions between human-robot disclosures which lead to an effective communication between human-robot.

Index Terms – Robot, Humanoid, Facial, Design, Expressions, Interaction

I. INTRODUCTION

FEER-HRI system was used in the robots to identify human emotions and also to develop facial expression for accommodating to human emotions [1]. Surprise expressions were studied and real human like movements generated while speech in android robots [2] which have humanoid appearance. By using forward and inverse kinematics model a learning method was proposed based on automatic facial expression [3]. A mascot-type facial robot was developed to [4] improve favourable human feelings. Character robot face (CRF) was described by using parametric normalization scheme which generates [5] facial expressions of robot face models with high identification rates. Robot was designed with mood transition system to generate autonomous emotional interaction with human beings [6]. A learning model was developed [7] for presenting and solving facial expression recognition tasks. New approach for expression recognition was presented based on cognition and mapped binary patterns [8]. To improve human – robot interaction [9] autonomous facial expression recognition was greatly improved.

II. METHODOLOGIES

Assembly of piece parts are done manually by clamping and fixing with nut and bolts. Installing of 13 servos into the appropriate position with the help of screws. There are 13 servos in the advanced version that are driven by an Arduino microcontroller. This module will communicate to the Arduino to set each of those servos based on variables within program. Coding is given to the Arduino based on timing required. The servo mechanism is drawn into this for the provision of facial movements such as movement of eye balls, eye lids, etc. This is done through links which converts the movement of rotary motion to linear and angular motion. The motions such as closing and opening of eye lids and movement of eye balls. And we have added the forward, backward and sideway movements of robot with the help of wheels powered by 10 rpm motors. Design of overall project is undergone through Solid Works some of the basic design has been implemented from the designer of XYZBOT. Hence the design is then converted to 3D for laser cutting of piece parts. Design of the facial movements for a robot head is totally worked on the Solid Works software. The software used in the design of the face part has been done by using Solid Works. All the piece parts of the face modelling are designed by Solid Works.

2.1 Individual Part Design

2.1.1 Face Parts

The parts of the model are classified into different groups such as Face parts, Neck parts, Eye parts, Base parts. The basic face plate is fitted to the overall model (Fig.1A). This plate is then fixed with eye brows on the top of it. On these, horns are attached for the lip arrangement. The frame of the face contains all the servos of eye brows, lips are attached and all the parts of eye frame and jaw are fixed (Fig.1B). The skull box mandible connects the face frame and all the skull box parts (Fig.1C). This skull box mandible left is also a support for face frame and comprises of a servo for jaw movement (Fig.1D). Skull box nose panel is a support of the base plate and it comprises of servos for the movements of Eye lids (Fig.1E). The side part of skull acts as a support for the skull box (Fig.1F). Skull box back is used to cover the back part of the skull in which all the parts are mounted (Fig.1G). The bottom of skull contains servos of eye balls are mounted (Fig.1H). Firewall between the face frame plate and back of skull (Fig.1I).

STUDY OF DEVELOPMENT ISSUES IN 3D OPTICAL STORAGE DEVICES

T.Vedavathi[1], R.SenthamilSelvan[2]
[1,2]Assistant Professor, Department of Electronics and Communication Engineering, Chadalawada Ramanamma Engineering College, Tirupati, JNTUA, Ananthapur, Andhrapradesh, India.

Abstract

3D optical data storage is any form of optical data storage in which information can be recorded or read with three-dimensional resolution (as opposed to the two-dimensional resolution afforded, for example, by CD). This innovation has the potential to provide petabyte-level mass storage on DVD-sized discs (120 mm). Data recording and read back are achieved by focusing lasers within the medium. However, because of the volumetric nature of the data structure, the laser light must travel through other data points before it reaches the point where reading or recording is desired. Therefore, some kind of nonlinearity is required to ensure that these other data points do not interfere with the addressing of the desired point. No commercial product based on 3D optical data storage has yet arrived on the mass market, although several companies are actively developing the technology and claim that it may become available 'soon'.

Keywords: *Laser Beam, Optical Fiber, Layers of Written Data*

I.INTRODUCTION

The origins of the field date back to the 1950s, when Hirschberg developed the photo chromic spiropyrans and suggested their use in data storage. In the 1970s, Barachevskii demonstrated that this photochromism could be produced by two-photon excitation, and finally at the end of the 1980s Peter T. Rentzepis showed that this could lead to three-dimensional data storage. This proof-of-concept system stimulated a great deal of research and development, and in the following decades many academic and commercial groups have worked on 3D optical data storage products and technologies. Most of the developed systems are based to some extent on the original ideas of Rentzepis. A wide range of physical phenomena for data reading and recording have been investigated, large numbers of chemical systems for the medium have been developed and evaluated, and extensive work has been carried out in solving the problems associated with the optical systems required for the reading and recording of data. Currently, several groups remain working on solutions with various levels of development and interest in commercialization.

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Fire Alarming and Authentication System for Work house using Raspberry Pi3 in IOT

B. SREENIVASAN,M.Tech[1],M.Balaji[2], A.Kalyani[3],K.Bharath [4],S.Bhaskar Naidu [5]
[1]Department of Electronics and Communication Engineering
JNTUA University
Email: balaji.matta.143@gmail.com, alimisettykeerthi@gmail.com, bhaskarsompalli413@gmail .com,bharat.k.k87@gmail.com.

Abstract—**Ensuring minimum rights and safety of the garment workers has become a burning issue nowadays. The workers of garment factories are facing some labyrinth sand broken out of fire is surely one of them. The investors are losing their interest and the prominence of this sector is getting toneless. In this paper, we have propounded a system which is capable to detect fire and can provide the location of the affected region. Raspberry Pi3 has been used to control multiple Arduino which are integrated with a couple of sensors and camera. A 360° relay motor is assembled with the camera so that it can snap the image in whatever angle the fire is detected. We have provided a confirmation of the fire suspecting system to avoid any false alarm. The system will immediately send a message along with the image of the affected spot and Arduino's location. An admin can confirm or deny the impeachment and if the admin confirms the situation as a breaking out of fire, then the system will immediately raise an alarm and an automatic message will be sent to then ear by fire brigade.**

Keywords—
Fire Detection;RaspberryPi; WiFi module; Sensors; Arduino; Camera; Authentication; Notification.

I. INTRODUCTION

The Ready Made Garments (RMG) industry is the main driving force of the economy of Bangladesh. The RMG sector of Bangladesh is the main catalyst behin d the averaged GDP growth rate. Over 4.2 million em ployment opportunities have been provided by this secto r. More than a million laborers are working in these g arments factories. But this outstanding growth is being challenged by the frequent accidents in factories and in dustries.

Over the past decade the RMG sector of Banglades h has been through a number of tragic accidents. The majority of those accidents were caused by fire. On 24 November 2012, fire took 117 lives in "Tazreen Fashi on factory" in capital Dhaka [1]. 8 lives were lost wh en a fire broke out at a textile factory in the Mirpur industrial district on May 9, 2013. On 14 December 20 10, 30 people died and 200 were seriously injured whe n fire broke out at the garment factory, "That's It Spo rtswear Ltd" in Ashulia, Dhaka. Twenty two lives were lost when a deadly fire broke out at the "Garib and Garib" factory in Gazipur, Dhaka on February 2010 [2] . This incident shows that many garment factories do n ot have proper fire prevention and rescue system. Hund reds of factories are vulnerable to fire broke out becau se the factories are very old and lack fire detection tec hnology. Moreover, most of the factories do not have an automatic system to stop fuel and electricity supply when fire breaks out, and it takes a lot of time for the fire service to reach the disaster spot.

In this perspective, a system to detect fire and alarm the employees before it breaks out is a crying need. In this paper, we designed an IOT based fire alarming system t o help detect fire as soon as possible and save precious human lives. The system will use several sensors to detec t any symptoms of fire. The sensors will be placed on p roper places after doing surveys on the factory for its vul nerable places of fire. After choosing the best places for placing the sensors, the sensor will be activated. The data collected by sensors will be sent to Arduino microcontro llers placed on various places. The microcontroller will th en process the data. All the microcontrollers will be contr olled centrally by Raspberry Pi microcomputer. Intelligent algorithm is used to decide when to start alarm for fire. Besides, the system will stop gas and electricity supplies on sensing fire break out and will start firing suppression system, like opening fire extinguishing water valves. At the same time the system will send SMS using GSM mo dule to the nearby fire service station informing them of the incident. The system will also inform the location of the fire to the administrator using GPS module. Several t ypes of sensors will be used, for example, temperature se nsor, gas sensor, smoke sensor, flame sensor, etc.

II. RELATEDWORKS

Sowah *et. al.* [3] designed and implemented a fire detection system for vehicle using fuzzy logic. They us ed temperature, flame and smoke sensors for sensing fir e. The system also can extinguish fire in 20 seconds a nd they used the air-conditioning system for extinguishing fire. The author in [4] proposed a paradigm for detecting forest fire with the help of wireless sensor network. The authors have focused on how to process the data collected by the sensors rather than how to detect or sense the fire. Th ey used neural network for processing the collected dat a and make the network energy efficient. A fire alarmi ng system based on video processing propounded in [5] . They used smoke color and spreading characteristics o f smoke to detect possible fire outbreak. But processing the images is time consuming and needs sophisticated resources. In case of a garment factory, the fire shoul d be detected as soon possible because the garments ar e very much susceptible to fire. In [6], a fire monitori ng and control system was designed where they used v arious sensors like flame, smoke, gas sensors for detect ing fire and staring fire extinguishing process.

ACCIDENT PREVENTION BY EYE BLINKING SENSOR AND ALCOHOL DETECTOR

[1]P.SREEKANTH , [2]C.RAJESH KUMAR , [3]G.VINAY, [4]M.PRUDVI RAJ , [5]B.GOPI KRISHNA
[1]ASSISTANT PROFESSOR , [2345]B.TECH STUDENTS
DEPARTMENT OF ELETRONICS AND COMMUNICATION ENGEERINGING
ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, TIRUPATI

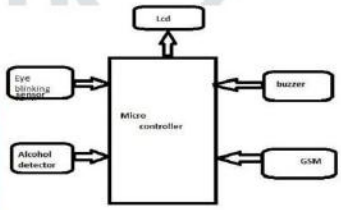
Abstract:

The main objective of this proposed system is to stop drunken and dowry people. Here in this system alcohol sensor and eye blink sensor are used .so whenever the driver starts the vehicle, the alcoholic sensor senses the amount of breathe and generates a signal to Buzzer, GSM and LCD. The output of sensors is given to micro controllers. If the value reaches to an particular level, then automatically it sends SMS through GSM. Buzzer will produce sound and the message was displayed by LCD.

I. INTRODUCTION

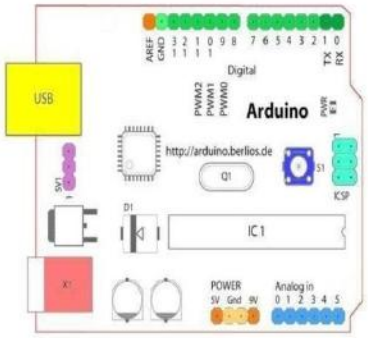
The primary point of this proposed framework is to control the mishaps by utilizing liquor and IR sensors .The capacity of an IR transmitter is utilized to transmit the IR beams in our eyes.IR collector is utilized to get the Infrared beams. Assume in the event that an eye is shut, yield of IR beneficiary is high. If an eye is opened, then yield of IR collector is low. Here liquor recognizes the substance and, in the event, that it achieves the settled esteem, it creates a SMS through GSM and signal will deliver sound and it was shown through LCD. The liquor sensor can be utilized to check the substance of liquor devoured by individual. The yield of sensor is corresponding to liquor content. At the point when the liquor particles in air met anode, at that point ethanol consumes into acidic corrosive. In light of that progressively current is delivered. On the off chance that the liquor atoms are progressively, current created is more . Here the yield sensor are in simple nature, it must be changed over into computerized design by utilizing simple to advanced converter of microcontroller .Here the microcontroller controls the entire circuit .the capacity of LCD is to show the message ,where as the GSM sends SMS and ringer produces alert.

II. BASIC MODEL OF THE SYSTEM



Introduction to the Arduino Board:

Arduino is an open source gadgets dependent on the administrations to use on the equipment and programming, arduino sheets can peruse inputs like a light on a sensor, unique mark on sensor, enacting an engine, turning on a LED, are controlled to the hard product frameworks.



Features on the arduino boards:

- Digital pins
- Analog pins

Efficient of Noise and Energy of CMOS Amplifier for Neural Recording Applications

[1]G.Vasantha, [2]Babitha,[3]Y.Harshavardan Raju,[4]Kaveri,[5]Gowrinandini
[1] Assistant Professor, Department of ECE, AITS Tirupati
[2345]B.Tech Student, Department of ECE, AITS Tirupati,
[12345]Email: vasantharoy@gmail.com, babithareddy99@gmail.com, yellamarajuharsha@gmail.com, kaveripulluru@gmail.com, nandini19981995@gmail.com

Abstract-

Inside neural checking frameworks, the front-end speaker shapes the basic component for flag identification and preprocessing, which decides the loyalty of the biosignal, as well as effects control utilization and indicator estimate. In this paper, a novel joined criticism circle controlled methodology is proposed to make up for info spillage flows created by low commotion speakers when in coordinated circuit shape close by flag spillage into the information inclination arrange. This circle topology guarantees the Front-End Amplifier (FEA) keeps up high info impedance over all assembling and operational varieties. In the proposed strategy displays a low power and low clamor neural speaker IC for handling both activity potential and nearby field potential flags in neural embed gadgets. In view of a capacitive input topology, the center operational trans-conductance speaker uses a two-organize structure with current cushion accomplishing wide data transmission, expansive yield swing, and little region. The proposed neural speaker is planned utilizing 1µm CMOS process and accomplishes 5.268dB gain.

Index terms – neural amplifier; neural recorder; capacitive feedback; operational trans-conductance amplifier, CMOS technology, low-noise amplifiers, neural recording.

I. INTRODUCTION

The Front-End Amplifier (FEA) is a key component for flag identification inside neural action observing frameworks [1], [2]. Developing enthusiasm for the field of neuroscience has quickened examination into such frameworks. Be that as it may, these are confined by an absence of reasonable Integrated Circuit (IC) systems [3], [4]. A coordinated FEA inside a little chip zone empowers neuroscientists and clinicians to at the same time record and watch bigger varieties of neural information, utilizing different cathodes and multichannel checking frameworks [5]– [7]. Further, procuring neural movement information by means of high-thickness exhibit detecting empowers future research in infection and neuro prosthetic gadgets [8]. Electrically-noticeable signs produced by neural action are low in both sufficiency and recurrence. Regularly, the flag is included two parts, the Action Potential (AP)— otherwise called neural spikes—and the Local Field Potentials (LFP). APs have amplitudes running from 5 µVpp to 50 µVpp, crosswise over frequencies of 300 Hz to 7.5 kHz, while LFP amplitudes are around 1 mVpp to 10 mVpp, over a scope of 25 mHz to 100 Hz, as portrayed in [3].

A neural recorder is an implantable restorative gadget used to gather neural signs for watching and diagnosing certain side effects of different maladies related with the mind, and to investigate the signs of the cerebrum identified with physical action [1]. Specifically, neural signs known as activity potential (AP). which live in the recurrence band from 300 Hz to around 7 kHz, and nearby field potential (LFP) which is seen around 1 Hz to 300 Hz frequencies, are of intrigue. These are extremely frail signs with amplitudes running from 100 µVpp up to 1 mVpp. In this manner, it is vital to give adequate intensification preceding further preparing of the flag, and to limit the expansion of clamor in the meantime. To interface the neural chronicle IC with multi-cluster test for high-goals handling, control utilization is additionally essential as it might cause temperature rise and lead to tissue harm. The neural intensifier is the primary square in the neural account chain and is basic in choosing the general execution of the chronicle gadget. This paper shows a low-power and low-commotion speaker for neural account frameworks.

This paper is organized in five sections. After this introduction, in Section II, existing method discussed of the paper Section III about the proposed method explained, as well as the novel feature of the proposed method. Finally, Sections IV and V provide the simulation results and the conclusions, respectively

II.EXISTING SYSTEM

Customarily in neural observing frameworks, the instrumentation enhancer was broadly utilized for Printed Circuit Board (PCB) scale frameworks because

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A Survey on Detection, Recognition, Segmentation and Classification of Brain Tumor

P.Harish, S.Baskar

ABSTRACT-- In the human body the brain is the most significant organ as it controls all the functions of human. Due to few abnormal conditions, unhealthy and unrestrained growth of tissue occurs which is referred as an uncommon action. This sort of action which occurs in the brain is called as brain tumor. It is significant to detect this tumor in order to minimize the death of humans affected by tumor. Cancerous cells detection is the most complex and long term process in medical image processing. Magnetic Resonance Imaging (MRI) is a methodology widely utilized owing to its significant features. MRI provides plenty of information in the tumor detection. MRI image is segmented with high rate of accuracy then tumor is classified whether it is malignant or benign. Because of the complexity and changes in the characteristics of tumor like its shape and size. This paper elaborates the numerous researches for tumor recognition, segmentation and classification of previously proposed methods highlighting its strength and limitations. There is a scope for further to recognize tumor and good image quality. Processing medical images to find solution to different issues by a computer with new algorithms has been drawing a very significant focus of the researchers over last few decades. A literature survey about diagnosis of brain tumor presented in this paper provides critical evaluation of the survey which inhibits new research.

Key words: MRI, image enhancement image segmentation, image registration, multi -resolution.

I. INDRODUCTION

Brain is the major organ of the human body. Every section of brain has a unique function hence due to some critical situations few cells grow unnaturally. This unnatural growth in brain is called tumor. A set of unnatural cells developed in or surrounding the brain. Benign and malignant are the two classifications of tumor. Benign are not harmful whereas malignant are deadly harmful.

The MRI of brain can give superior detection of tumor but the radiologist has to calculate the area quantification. Brain MRI provides proper detection of tumor hence MRI is used widely. But for segmentation it is complex. To overcome the limitation computer aided

Segmentation and detection is needed. A number of methodologies have been proposed. To overcome this, an automated system has to be found by considering accuracy and robustness. Hence artificial intelligence mechanisms are used with pattern recognition, fuzzy logic and machine learning.

The work presented in this paper elaborates brain tumor survey with MRI enhancement, segmentation and classification techniques of the recent works.

II. MATERIALS AND METHODS

Evangelia I.Zacharaki et al [2008] made a comparative study of biomechanical simulator in deformable registration of brain tumor images. The exactness of deformable enrollment will change for various biomechanical test system. In this paper two test systems were utilized. The non direct lagrangian test system (NL Approach) utilizes Finite Element Module of nonlinear versatility and unstructured cross sections. In Piecewise Linear Eulerian test system (PLE Approach) incremental direct flexibility and standard frameworks were utilized. These test systems offers more affordable biomechanical test system for tumor enlistment.

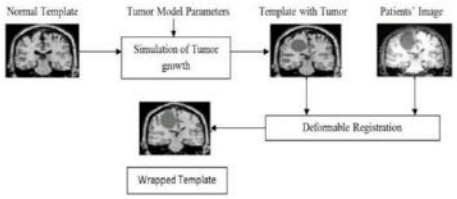

Fig.1. Flowchart summarizing the basic steps for registration of a normal template (brain atlas) with a tumor patient's image.

This process involves:

- Insertion of a little tumor seed in the layout and recreation of tumor development and
- Registration of the layout that is twisted by tumor development with the patient's picture.

The underlying tumor seed is extended by the biomechanical test systems until the extent of the recreated tumor in the map book turns out to be near the measure of the tumor in the patient's image.

The enrollment strategy is based upon the possibility of the HAMMER enlistment calculation. The downside of the framework is that an immediate correlation isn't made between the two methodologies due to various demonstrating approaches and numerical techniques. With respect to, the NL approach is computationally slower and can cause huge work bends and reenactment disappointment

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Mr.P.Harish, Research Scholar (PT), Department of EEE, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai. Assistant Professor, Department of ECE, AITS, Tirupati. (E-mail: harishpasupulati@gmail.com)

Dr S.Baskar, Professor, Department of Electrical & Electronics Engineering,School of Electrical and Communication, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai – 600 062. (E-mail: drbaskar@veltech.edu.in)

Solar Energy measurement using Arduino Board

[1]Dr. N. Pushpalatha M.Tech., Ph.D. [2]P. Sravani [3] C . Rajasekhar [4] N. Sai kalyan [5] K. Soma pramodh
Annamacharya Institute of Technologies and Sciences, Tirupati.

Abstract: *The Aim of this project is to measure the solar energy using arduino board. In this project, the parameters that are going to be measured are temperature, light intensity, voltage and current. Temperature sensor measures the temperature while the LDR sensor measures the light intensity. The voltage was measured by using the voltage divider since the voltage generated by the solar panel are large for the arduino as receiver. Finally the current will be measured by using the current sensor module that can sense the current generated by the solar panel. These parameters receives the input value from the arduino and the output was displayed at the LCD screen. The LCD screen displays the output of the temperature , the voltage and the current value. The function of the arduino is to convert analog input of the parameter to the digital output and displays it through LCD screen*

1. Introduction :

Due to the rise of global warming and extreme weather conditions, many existing countries have forced to look after the alternative sources in order to reduce dependence on fossil based fuels like coal and etc., solar energy is one of the most promising renewable resources which is currently being used all over the world to contribute for making rising demands of electric power.

Solar power is a conversion of sunlight into electricity, the sunlight is collected either directly by using photovoltaics (PV) or indirectly using concentrated of the solar energy. Photovoltaics was initially used as a power source for a small and medium size applications. It is powered by a single solar cell to a remote homes. As the cost of solar electricity has fallen, the number of solar photovoltaics systems has grown into millions.

Solar power stations produces hundreds of mega watts. Solar PV is becoming inexpensive and becoming low carbon technology to harness renewable energy from the sun.

The purpose of this project is to improve the power collection efficiency with developing the track of solar panel. In order to maximize the generation of output power of the solar panel arduino is used.

Concentration of solar energy from the sun using light rays is a point by using lens (or) mirror and tracking system . the light from the sun also produce heat .

2. Specification of components :

The main components that are used in this project are :

2.1 solar cell :

The solar panel which is used is of polycrystalline type . It runs with 12V, 250 mA, 3W as a source. The size of the solar panel is 145mm *145mm which is shown in the figure 1

Fig (1) : the solar panel of poly crystalline type

2.2 Arduino board :

The Arduino UNO is a microcontroller board based on the ATmega328 data sheet as shown in figure (2). It comprises of 14 digital input and 6 output pins. The clock speed of arduino board is 16 MHz.

Electrical Line Man Safety using Finger Print Sensor

[1]Dr.Irala Suneetha [2]K.Amani, [3]T.MuraliKrishna Reddy, [4]U.Nithishna, [5]D.Charan

[1] Professor & HOD, Department of ECE, Annamacharya Institute of technology and sciencess ,Tirupati

[2345] B.Tech Student, Department of ECE, Annamacharya Institute of technology and sciencess ,Tirupati

[12345]Email:iralasuneetha.aits@gmail.com,kaperlaamani@gmail.com,muraliperimidi@gmail.com,

nithishna58@gmail.com, charandama@gmail.com,

***ABSTRACT*- Electrical mishaps to lineman are ascending amid electric line fix because of absence of correspondence between the support staff and electric line man. This proposed framework gives an answer that guarantees security of electric lineman i.e., line man on distinguishing a blame in electric line the line man detects his finger in unique finger impression scanner and the primary line is turned off which is again exchanged on subsequent to comprehending the blame by again detecting his finger, along these lines it spares the life of lineman taking a shot at electric line. The proposed framework is completely worked on Arduino.**

Keywords: - Fingerprint scanner, Arduino, RFID Reader.

I. INTRODUCTION

An electrical switch is a consequently worked electrical change intended to shield an electrical circuit from harm brought about by over-burden or short out. The primary goal of this undertaking is to spare line man by making such a defensive framework controlled through unique finger impression scanner. In this proposed framework if there is any blame in line the line man detects his finger because of which fundamental line is turned off after that he deals with line taking care of the issue and after that again faculties his finger and switch on the electrical line. These days, electrical mishaps to the line man are expanding, while at the same time fixing electrical lines because of absence of correspondence between upkeep staff and electrical line man. This undertaking gives an answer for this issue to guarantee electric line man wellbeing. It exceptionally easy to keep up so it is extremely helpful for the line man. The parts which is required for our model is effectively accessible in the market. The principle idea of our venture is to spare the life of line man. The fundamental part of our venture is the Fingerprint scanner which is required to detect the finger.

II. EXISTING METHODOLOGY

On the off chance that there is any blame in line the line man sends the secret key because of which the primary line is turned off. After he works a SMS is send to switch on the electrical line. Because of numerous electrical lines the secret phrase for specific line might be fell. The system issue will influence the best possible working of the framework, Since it contain a GSM modem. There ought to be adequate equalization in the SIM moreover.

2.1. DISADVANTAGE OF EXISTING METHOD

Nowadays there is no security the password may be hacked. While sending SMS some tower problem. In case of emergency this is not suitable.

III. PROPOSED METHODOLOGY

This below figure is an overall block diagram of arduino based electronic circuit breaker which consists of finger print scanner.

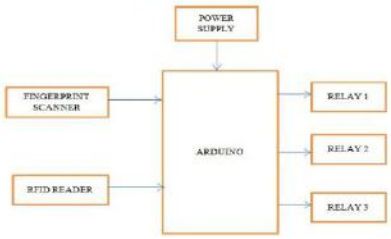

Fig1:Block diagram

In the above square graph, unique finger impression is selected by a lineman. This module is associated with the arduino. On the off chance that the unique finger impression put away in the scanner is coordinated with the confirmed unique mark, arduino is turned on .This makes on or off the hand-off which controls the electric line. After the fulfillment of the work, above process is rehashed in a similar way by the lineman. At the point when an individual's finger physically changed, unique finger impression scanner

Implementation of Fast Binary Counters Based on Symmetric Stacking

[1]I.Suneetha, [2] P. Neethachowdary, [3] K.Chethan, [4]V.Chandrika, [5] C.DileepKumar ,[6] P.Gunasekhar

[1] Professor & Head of the Department ECE, Annamacharya Institute of technology and sciences ,Tirupathi

[23456] Students: Department of ECE, Annamacharya Institute of technology and sciences ,Tirupathi

[23456]Email:-neethapantra88@gmail.com,kondampatichethan@gmail.com,vchandrika418@gmail.com, dileeprandy2222@gmail.com, gunaroyal1429@gmail.com

Abstract-

In this short, another twofold counter structure is proposed. Wallace tree multipliers give a power-proficient methodology to rapid duplication. The utilization of rapid 7:3 counters in the Wallace tree decrease can additionally enhance the multiplier speed. And furthermore we actualize 128bit Vedic Wallace multiplier give fast and expends not so much power but rather more productively. Consequently in proposed strategy we create 8X8 Wallace tree multiplier stacker and Vedic Wallace 128X128 piece stacker. These proposed strategies have preferred execution enhancement over 6 TO 3 Bit stacker and 7 TO 3 bit stacker. In existing technique, It utilizes 3-bit stacking circuits, which bunch the majority of the "1" bits together, trailed by a novel symmetric strategy to consolidate sets of 3-bit stacks into 6-bit stacks. The bit stacks are then changed over to paired checks, delivering 6:3 counter circuits with no xor doors on the basic way. This shirking of xor entryways results in quicker plans with effective power and zone usage. In VLSI reenactments, the proposed counters are 30% quicker than existing parallel counters and furthermore expend less power than other higher request counters. Furthermore, utilizing the proposed counter-based Wallace tree multiplier models diminishes inertness and power utilization for 128-piece multipliers.

Index terms – **Counter, high speed, low power, multiplier, VLSI, Wallace tree.**

I. INTRODUCTION

Fast, effective expansion of different operands is a fundamental activity in any computational unit. The speed and power effectiveness of multiplier circuits is of basic significance in the general execution of chip. Multiplier circuits are a fundamental part of a math rationale unit, or an advanced flag processor framework for performing sifting and convolution. The parallel augmentation of whole numbers or settled point numbers results in halfway items that must be added to create the last item. The expansion of these fractional items overwhelms the dormancy and power utilization of the multiplier. So as to join the fractional items productively, section pressure is normally utilized. Numerous strategies have been introduced to upgrade the execution of the incomplete item summation, for example, the notable column pressure procedures in the Wallace tree [1] or Dadda tree [2], or the enhanced design in [3]. These strategies include utilizing full adders working as counters to lessen gatherings of 3 bits of a similar load to 2 bits of various load in parallel utilizing a convey spare viper tree. Through a few layers of decrease, the quantity of summands is diminished to two, which are then included utilizing a customary viper circuit. To accomplish higher proficiency, bigger quantities of bits of equivalent weight can be considered. The fundamental strategy when managing bigger quantities of bits is the equivalent: bits in a single segment are tallied, creating less bits of various loads. For instance, a 7:3 counter circuit acknowledges 7 bits of equivalent weight and checks the quantity of "1" bits. This tally is then yield utilizing 3 bits of expanding weight.

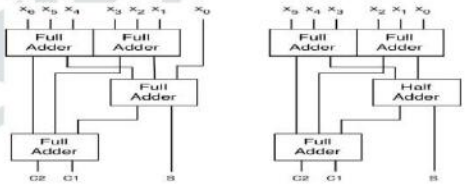

Fig. 1. A 7:3 counter and a 6:3 counter built from full and half adders.

The 7:3 and 6:3 counter circuits can be built utilizing full and half adders, as appeared in Fig. 1. A significant part of the deferral in these counter circuits is because of the chains of XOR entryways on the basic way. In this way, a lot quicker parallel counter design has been exhibited. A parallel 7:3 counter was exhibited in [4] and used to plan a fast counter-based Wallace tree multiplier in [5]. Also, counter structures as in [6] and [7] use multiplexers to lessen the quantity of XOR doors on the basic way. A portion of these muxes can be actualized with transmission door rationale to deliver considerably quicker plans.

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Energy Efficient Sensor Positioning in Wireless Sensor Networks

N. Pushpalatha, C Sreekanth, Y Penchalaiah

ABSTRACT---Wireless sensor networks spread everywhere in our daily life from health care to environment monitoring. In these applications sensor positioning plays a crucial role. The existing sensor positioning techniques are resulted in increased cost, energy consumption, connectivity failure and less accuracy. In the present work, Range-free sensor positioning based on Bacterial Foraging Algorithm is applied to reduce energy consumption by sensor nodes in hexagonal geographical area. The results are compared with Artificial Bee Colony algorithm. The results show, the improvement in accuracy, shortest path computation, residual energy, and an energy efficient wireless sensor network and the proposed method is implemented using NS-2.

Index Terms - Sensor Positioning, RSPBFA, Shortest path, Residual Energy and Energy Consumption.

I. INTRODUCTION

Wireless Sensor Networks (WSNs) are networks of distributed autonomous nodes that can sense or monitor physical or environmental conditions cooperatively [1]. Due to its potential applications in many areas ranging from environmental observation, natural habitat monitoring, medical, industry and military applications, WSN has attracted a lot of research interests in recent years [2, 3]. The deployment of mobile sensor nodes in the Region Of Interest (ROI), where interesting events may happen and the corresponding event detection mechanism is one of the key issues in this area. Sensor must be deployed in a location that is contexually appropriate to sense useful data. Optimized way of placing sensors may result in maximum utilization of the available sensors [4]. In addition to the coverage problem of the randomly deployed sensor networks, energy consumption is another major concern for mobile wireless sensor networks. In most applications, the lifetime of wireless sensor nodes is critical to its effectiveness, especially for mobile sensor networks whose mobile nodes consume more energy than the other components and processing devices. Energy consumption is a primary constraint for wireless sensor network nodes as they are self-powered. The source of energy for sensor is battery, with or without rechargeable facility during its lifetime. All sensor node activities, such as, sensing, communicating, computing, and moving will consume energy. Thus, once the battery of a sensor runs out of power, then sensor node is not usable anymore. Therefore, this can degrade the quality of service of the entire sensor network.

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N. Pushpalatha, Department of ECE, AITS-Tirupati, A.P, India. (pushpalatha_nainaru@rediffmail.com)
C Sreekanth, Department of ECE, AITS-Tirupati, A.P, India., (sreekanth.aitstpt@gmail.com)
Y Penchalaiah, Department of ECE, AITS-Tirupati, A.P, India.. (penchu.yadla@gmail.com)

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A Blind Watermarking Technique using Redundant Wavelet Transform for Copyright Protection

Dr.P.SatyaNarayana[1],D.Lahari[2],M.Jyosthna[3],M.Mahidharreddy[4],N.Dillibabu[4]
[1]Professor of the dept of electronics and communication engineering,Aits-Tirupathi
[2345]Btechstudents:dept of electronics and communication engineering,Aits-Tirupathi

Abstract— **A digital watermarking technique is an alternative method to protect the intellectual property of digital images. This paper presents a hybrid blind watermarking technique formulated by combining RDWT with SVD considering a trade-off between imperceptibility and robustness. Watermark embedding locations are determined using a modified entropy of the host image. Watermark embedding is employed by examining the orthogonal matrix *U* obtained from the hybrid scheme RDWT-SVD. In the proposed scheme, the watermark image in binary format is scrambled by Arnold chaotic map to provide extra security. Our scheme is tested under different types of signal processing and geometrical attacks. The test results demonstrate that the proposed scheme provides higher robustness and less distortion than other existing schemes in withstanding JPEG2000 compression, cropping, scaling and other noises.**

Keywords—blind watermarking technique; modified entropy; watermark insertion; watermark extraction; redundant wavelet transform

I. INTRODUCTION

With the advancement of technology, transmission and distribution of digital multimedia data become vulnerable to unauthorized duplication. Therefore, now-a-days watermarking techniques that can verify the authenticity of the digital data are important to protect the intellectual properties or copyrights in digital images . Some essential features of image watermarking are invisibility, robustness and security. The technology of digital watermarking has recently attracted to improve the robustness against several types of attacks.

Many watermarking schemes have been presented using frequency domain and singular value decomposition. Makbol-Khoo presented an embedding scheme that directly inserts the watermark into the singular values *S* obtained from redundant wavelet transform (RDWT)-SVD. Ling et al. verified the flaw of false-positive problem in Makbol-Khoo scheme in the recovered watermark. Ling et al.
revealed that Makbol-Khoo scheme is dependent on the watermark's U_w and V_w orthogonal matrices.

In 2016, Makbol et al. adopted another embedding technique derived from Lai scheme, where a watermark is inserted by examining the 1[st] column of *U* obtained from the hybrid DCT -SVD scheme. Furthermore, the authors presented block-based DWT-SVD based on HVS characteristics while their scheme provides drawbacks of the down-sampling of its bands. The shift variance of DWT produces inaccuracy in watermark extraction They also provided a feature of encryption for selected block locations. Encrypted coordinates on the selected blocks provided weak security and confidentiality of the watermark image. It can be obtained by attacks by finding the significant information of the image. Furthermore, they used a threshold for watermark embedding in the orthogonal matrix *U* that resulted in an important issue due to invalid imperceptibility and robustness results. More crucially, the results in were weak because the watermark embedding uses the same threshold for different hybrid schemes (e.g. DCT-SVD and DWT-SVD). A threshold cannot be used for different hybrid schemes and it must consider a balance between imperceptibility and robustness of watermarked images.

This paper presents a 4×4 RDWT-SVD image watermarking technique based on modified entropy considering an optimal threshold value. Arnold chaotic map is used to scramble the watermark image for improving security and confidentiality of the watermarked image. The scrambled binary watermark is embedded by modifying $U_{3,1}$ and $U_{4,1}$ coefficients of the orthogonal matrix *U* obtained from RDWT-SVD using specific rules. The robustness of watermarked images is measured under different types of geometric and signal processing attacks. The proposed scheme is designed to reduce the possibility of the false-positive problem in the extracted watermark. False-positive problems exhibited in Makbol-Khoo scheme , Zhang and Li , Rykaczewski , Liu-Tan and Lai-Tsai .

II. METHOD AND MATERIALS

A. Arnold Scrambling

Arnold scrambling can improve the security of watermarked image Arnold scrambling transformation is defined by:

A Novel Secure For Smart Home System Using IoT

[1]Dr.N.C.Eshwar Reddy, [2]P. Sai lahari, [3]Y. Sai Charan, [4]A. Teja Sri, [5]J. Aparna
[1]Professor, Dept. of ECE, AITS, Tirupathi,[2],[3],[4],[5] UG Students, Dept. of ECE, AITS, Tirupathi.
[1] ncereddy1950@rediffmail.com , [2]pujarisailahari@gmail.com , [3]saicharancherry0911@gmail.com ,
[4]avulatejasri497@gmail.com , [5] aparnaramamurthy19@gmail.com .

Abstract— Human services industry has been on the front line in appropriation and usage of the data. Internet of Things have opened up new paths for R&D in different fields including security and safety for home, Industries, Banking Sector. Here, IoT module and RFID labels are used for home security. It provides user authentication for only authorized users and avoids unauthorized access. It also detects gas or smoke inside the home and displays in a LCD Display. Lights glow after its authentication and identification of absence of gas or smoke.

Another application is Health Care monitoring system inside the home using BP sensor, Temperature sensor and Heart beat sensor. It sends message to the specific SIM using GSM Technology. This Smart home combines both home security and medical data of an individual.

Key Words— *GPRS, GSM, IoT , LCD, RFID.*

I. INTRODUCTION

[1] The Internet of Things (IoT) is an emerging technology that connects and interacts with the physical objects using the Internet. Iot has different applications like **Smart homes**, Smart Cities, Connected cars, **Smart health care Monitoring Systems** etc. In today's world there is need of creating smart homes. Home automation helps to run more number of home appliances with phone and tablet. Smart phones are creating new era by creating communication between different appliances using Bluetooth module, Wi-Fi module and its services. Because of home automation there is increase in level of work efficiency as well as it saves the time by reducing the human efforts. User friendly Android application provides the best platform to automate fans, light etc.

[2]Remote monitoring of patient's physiological parameters is major application of IoT in healthcare sector. It can give information regarding one's overall health parameters.

[3] IOT is an expanding network of physical devices that are linked with different types of sensors and with the help of connectivity to the internet, they are able to exchange data. Security and Safety have always been important criteria while designing homes, Industries etc. Authentication access is necessary for security. Gas leakages can be monitored and detected using gas sensor.

[4]For Health Monitoring System in Smart Home - BP, Heart Beat and Body Temperature are measured. Biomedical sensors measure the human body's heartbeat, blood pressure, pulse and Temperature sensor is additional.

II. DESIGN PRINCIPLE:

In the Smart home design, different components are connected and interacted with each other using IoT module and a Microcontroller. Different set of sensors are implemented to obtain the required criteria. This has a combination of medical security with home security. The domains involved are Embedded Systems and IoT.

Figure

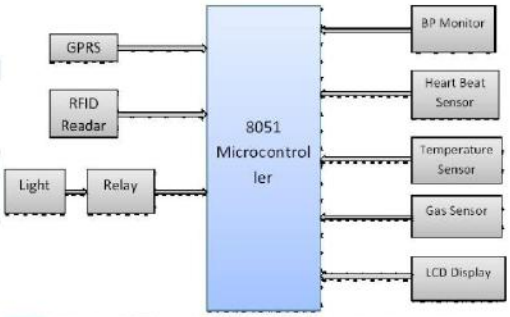

Fig: Block diagram for a novel secure for Smart home using IoT.

Sensors

- *Heart Beat Sensor*: It measures the changes in the volume of blood through any organ and determines the pulse. A sensor clip is attached to the index finger to identify the pulse rate.if abnormality of pulse occurs then it immediately sends message to the SIM and also LCD display.[Fig a].
- *Temperature Sensor*: The sensor used is LM35 to interact with the body. It measures the body temperature and also the variations in body temperature abnormally. [Fig b].
- *BP monitor*: BP monitor is designed to measure human blood pressure. It measures systolic, diastolic.
- *Gas Sensor using MQ-2*: The Grove - Gas Sensor (MQ2) module is useful for gas leakage detection (home and industry).Gas sensor identifies harmful gases like Ethane, carbon monoxide , green house gases, Propane etc. [Fig c].

Other Components

- *LCD Display:* A 16×2 LCD means it can display 16 characters per line and there are 2 such lines. That is, it has 16rows and 2 columns. It has different data pins from 0-7 and voltage VDD of +5 volts is used for operation. [Fig d].
- *GPRS*: General Packet Radio Service is a packet oriented mobile data standard on the 2G and 3G cellular communication network's global system for mobile communication (GSM).[Fig e].
- *RFID*: Radio frequency identification is a wireless identification technology that uses radio waves to identify the presence of RFID tags. It is used for identifications of people, object , etc.[Fig f].

Efficient Systolic Architectures for Discrete Wavelet Transforms

[1] Potti Chendi Alekya, [2]K.R.Surendra [3]Dr.N.Pushpalatha,[4]Dr.Irala Suneetha
[1]PG Scholar, Department of ECE, Annamacharya Institute of technology and sciences, Tirupati
[2] Assistant Professor, Department of ECE, Annamacharya Institute of technology and sciences, Tirupati
[3]Associate Professor, Department of ECE, Annamacharya Institute of technology and sciences, Tirupati
[4] Professor & HOD, Department of ECE, Annamacharya Institute of technology and sciences, Tirupati

ABSTRACT-

This work presents an implementation of Discrete Wavelet Transform (DWT)using Systolic architecture in VLSI .This architecture consist of Input delay unit, filter, register bank and control unit. This performs the calculation of high pass and low pass coefficients by using only one multiplier. This architecture has been simulated and implemented in VLSI. The hardware utilization efficiency is more compared to the referred due to FBRA Scheme. The systolic nature of this architecture corresponding to a clock speed of 115.9 MHz has its advantage in Optimizing area, time and power. The architecture is simple, modular, and cascadable for computation of one, or multi-dimensional DWT.

Keywords: *- DWT,* Six tap *FIR Filter, Systolic Array Architecture, Decomposition, FBRA*

I. INTRODUCTION

In recent years, there has been increasing important requirement to address the bandwidth limitations over communication networks. The advent of broadband networks (ISDN, ATM, etc) as well as compression standards such as JPEG, MPEG, etc is an attempt to overcome that's limitations. With the use of more and more digital stationary and moving images, huge amount of disk space is required for storage and manipulation purpose. Image compression is very important in order to reduce storage need.

Redundancies in video sequence can be removed by using Discrete Cosine Transform (DCT) and Discrete Wavelet Transform (DWT). DCT suffers from the negative effects of blackness and Mosquito noise resulting in poor subjective quality of reconstructed images at high compression. Wavelet techniques represents real life non stationary signal which is powerful technique for achieving compression. In order to meet the real time requirements, in many applications, design and implementation of DWT is required. For the implementation, Systolic array (DWT-SA) architecture is used. The proposed VLSI architecture computes both high pass and low pass frequency coefficients in clock cycle and thus has efficient hardware utilization. Here, the user is required to input only the data stream and the high-pass and low-pass filter coefficients.

This paper deals first introduction part and 2nd chapter tells that Discrete Wavelet Transform and 3rd chapter discussed basic principle of Systolic Array and 4th chapter discussed Systolic Array Architecture 5th chapter discussed results of proposed method and 6th chapter gives conclusion of the paper

II. DISCRETE WAVELET TRANSFORM

Wavelet is a small wave whose energy is concentrated in time. Properties of wavelets allow both time and frequency analysis of signals. The Discrete Wavelet Transform (DWT), which is based on sub-band coding, is fast computation of Wavelet Transform. It is easy to implement and reduces the computation time and resources required.

A schematic of three stage DWT decomposition is shown in Fig. 1. In figure 1, the signal is denoted by the sequence a[n], where n is an integer. The low pass filter is denoted by L1 while the high pass filter is denoted by H1. At each level, the high pass filter produces detail information; b[n], while the low pass filter associated with scaling function produces coarse approximations, c[n and so on]. The filtering and decimation process is continued until the desired level is reached.

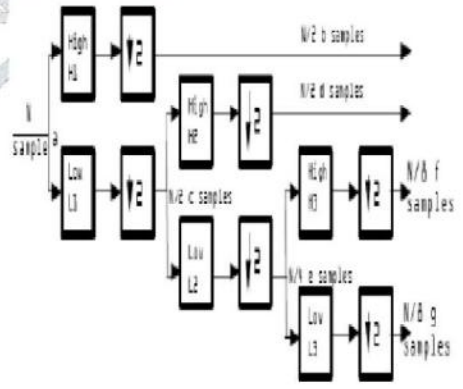

Fig 1. Three stage DWT decomposition using pyramid algorithm.

The maximum number of levels depends on the length of the signal. The DWT of the original signal is then obtained

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Throughput Analysis of Multicast Scheduling Algorithms by Varying NxN IQ Switch

Shaik Jumlesha [*], K. Navaz [2], S. Athinarayanan [3]

[1, 2& 3]Dept. Of CSE, Annamacharya Institute of Technology and Sciences, Tirupati, India

[*]*Corresponding Author:* navazit@gmail.com,

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***Abstract*—** Incredible measures of exertion have gone into investigate on multicast switch texture outline and calculations. Switch measure is one of the primary factor which impacts the execution of throughput and deferral. In this work, execution of switch has been investigated by applying the progressed multicast planning calculation OQSMS (Optimal Queue Selection Based Multicast Scheduling Algorithm), due date based round-robin booking calculation MDDR(Multicast Due Date Round Robin) and double round-robin based multicast planning calculation MDRR(Multicast Dual Round Robin). Recreation results demonstrate that OQSMS accomplishes preferred exchanging execution over different calculations under the allowable movement conditions on the grounds that if the switch measure builds, OQSMS will gauge ideal line determination in view of more line mixes so it accomplishes greatest conceivable throughput.

***Keywords*—** Multicast, Throughout, MDRR, MDDR, OQSMS

I. INTRODUCTION

The switches and routers basically store, route and forward these packets before they reach the destination. One core functionality of such switches (a layer 2 switch, or a layer 3 IP router) is to transfer the packets from the input port to one of the output ports. This functionality, called switching, though appears simple, is such a challenging problem to solve at line rates that, there is a wealth of literature on this topic.

In ancient switches, the input output ports communicated using a single shared bus. Consequently this bus was a limitation, as not more than one pair of ports can communicate at a time. The classical crossbar switch overcame the bottleneck imposed by this shared bus architecture that restricted the use of N input-output port pairs in parallel. The crossbar switch is an NxN matrix of 2N buses, connecting input output ports

Multicasting is the ability to provide point-to-multipoint connections. Driven by the Internet and its applications, such as video on demand (VOD), music on demand (MOD), teleconferencing, videoconferencing and distributed data processing, more and more communication services and applications will require that information from a source be delivered to multiple destinations. Multicasting will become an important feature for any switching network designed to support broadband integrated service digital networks (B-ISDN). Generally speaking, packet switch architectures can be divided into three major categories [11]: the shared memory packet switch, the shared medium packet switch and the space division packet switch. Theoretically, each of these three architecture types can be modified to support multicast. However, in shared memory and shared medium architectures, there is a scalability problem as the need for a high-speed memory or bus greatly limits their use when the switch size grows large. A crossbar switch is a switch connecting multiple inputs to multiple outputs in a matrix manner. The crossbar constraints of an IQ switch requires it to schedule packets to be transferred between inputs and outputs. The throughput and delay in IQ switch are heavily dependent on this scheduling decision. In past there has been a lot of research done to design multicast scheduling algorithms for IQ switches.

The fixed-size packet transmitted by the switch fabric is also called cell. We consider only the fan-out splitting discipline that cells may be delivered to outputs over several cell times. Any multicast cell is characterized by its fan-out set, i.e., by the set of outputs to which the cell is directed. We define the fan-out size f as the number of destinations of a multicast cell. The N×N switch architecture is shown in Fig.1. Let our assumptions as NxN switch having N input ports and N output ports an fabric is connecting input ports and output ports at any time slot. Let assume each input port having Q number of Non empty queues. Q_{ij} is the j^{th} queue in the i^{th}

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Research paper

Buffer Management and Packet Loss Avoidance Using Random Early Passive Proactive Prediction Queue Management And Cluster Based Multipath Reliable Congestion Control Protocol

[1]B Purushotham, [2]Dr. Ch D V Subba Rao

[1]Assistant Professor, Department of Computer Science and Engineering,
Annamacharya Institute of Technology and Sciences, Tirupati
[2]Professor , Department of Computer Science and Engineering, S V University College of Engineering, Tirupati

Abstract

Mobile adhoc network is one of the wireless sensor networks which consist of collection of nodes that helps to transmit the information from source to destination. During the information transmission, it has faced several problems such as packet loss because of the buffer overflow and frequent link failure due to the mobility of the nodes present in the Manet. For overcoming these issues, in this paper introduces the routing and buffer management technology for reducing the packet loss as well as effectively transmit the information from source to destination. Initially the buffer has been managed in the Manet with the help of the random early detection passive proactive prediction queue management technique (REDPPPQM) which effectively manages the length of the packets also utilize the resources with effective manner, more over it reduces the packet loss and reduces the limitation present in the PAQMN. After buffering the packets, optimized route has been predicted with the help of the cluster based multipath reliable congestion control protocol which grouping the similar packets into gather and the optimized route has been detected that avoids the packet loss as well as saving the energy while transmitting the information in the Manet. At last the efficiency of the system is evaluated with the help of the experimental results and discussions in terms of the packet loss ratio, transmission efficiency, throughput and mobility.

Keywords:*Mobile adhoc network, buffer overflow, optimized route, random early detection passive proactive prediction queue management technique, cluster based multipath reliable congestion control protocol, packet loss ratio, transmission efficiency, throughput and mobility.*

1. Introduction

Mobile Adhoc Networks (MANET) placed an important role in the communication process because it consists of collection of autonomous nodes that does not support any static infrastructure while making the communication [1]. At the time of communication the nodes are interact with each other with the help of intermediate nodes that provides the way for the destination nodes with effective manner. In addition to this, the nodes present in the network minimize the time, cost, and infrastructure setup in several applications [2]. Even though the MANET provides the various unique features while transmitting the information from source to destination, the networks faces several difficulties such as limited resources such as CPU, memory, battery power etc. which reduces the information transmission range. In addition to this, the network increases the number of retransmission, packet loss, link failure; node failure and buffer overflow [3]. Further the mobile network uses the drop tail queue management process which discards the most of the packets because the queue may be full while making the transaction. The sender continuously transmits the information to the receiver which leads to create the queue overflow which causes huge number of packet drop [4]. This packet drop is happened based on the under-utilization of the queue which is called as the global synchronization. These mobile network problems are resolved with the help of the active queue management process which effectively minimizes the packet delay, queuing delay as well as improves the overall resource utilization process. The active queue management [5] process is worked along with the network interface controller (NIC) while the buffer gets fill or closed. In addition to this, queue management process enhances the entire network performance due to low memory utilization, energy; processing power also minimizes the packet loss while making the information transmissions which is done with the help of the explicit congestion notification (ECN) and Random Early Detection (RED) method. Even though the method provide the efficient way to utilize the resources it is difficult to manage the buffer space [6] while tuning the network packets which leads to created packet fail in the mobile ad hoc network. This packet fails also create the difficulties while routing the packet to the destination node. So, in this paper introduces the hybrid method called the random early detection passive proactive prediction queue management technique for managing the buffer size that reduces the packet loss. The reduced packet loss leads to transmit the packet to the destination node by successfully creating the route from source to destination. The optimized route has been developed by using the

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Study of user's behaviour in Structured E-Commerce Websites

M.Tech.Scholar B.Thejaswini
Dept. of Computer Science
MJR College Engg.&Tech.
Piler, Andhra Pradesh, India

Asst.Prof.Reddi Durga Sree
Dept. of Computer Science
MJR College Engg.&Tech.
Piler, Andhra Pradesh, India

Karamala Suresh
Dept. of Computer Science
MJR College Engg.&Tech.
Piler, Andhra Pradesh, India

Abstract **-Online shopping is becoming more and more common in our daily lives. Understanding users' interests and behavior is essential in order to adapt e-commerce websites to customers' requirements. The information about users' behavior is stored in the web server logs. Nowadays, the growth of World Wide Web has exceeded a lot with more expectations. The internet is growing day by day, so online users are also rising. The interesting information for knowledge of extracting from such huge data demands for new logic and the new method. Every user spends their most of the time on the internet and their behaviour is different from one and another. Web usage mining is the category of web mining that helps in automatically discovering user access pattern. Web usage mining is leading research area in Web Mining concerned about the web user's behaviour. In this paper emphasizes is given on the user behaviours using web server log file prediction using web server log record, click streams record and user information. Users using web pages, frequently visited hyperlinks, frequently accessed web pages, links are stored in web server log files. A Web log along with the individuality of the user captures their browsing behaviour on a website and discussing regarding the behavior from analysis of different algorithms and different methods.**

Keywords **- Data mining, e-commerce, web logs analysis, behavioral patterns, model checking.**

I. INTRODUCTION

Nowadays the way people shop is totally different than the traditional way. People are buying more and more product online instead of going to the classical shop to shop to buy the product. E-commerce gives the opportunity to browse the number of different product with a different category, comparing different prices of products, create a wish list of product etc. e-commerce business is very competitive if the user does not get one thing at any site they can easily switch to another site for better options.

Therefore it is necessary to analyze the user's behaviour by the business analyst to give the better option and to motivate the user to buy the product. On the other hand study of user's behaviour on e-commerce sites is not an easy task. As this kind of application provides different navigation paths, users can navigate freely through the different category to a particular product. Generally, these users behaviour are stored in web server log, where it contains the ordered way or the sequence of user's activity created by users.

This log file is analyzed by an analyst to determine user's complex behaviour to increases the application contents and to provide proper suggestion to the user for the particular product. Generally, data mining algorithms are used to study these web server log files. The main approach of this kind of algorithms is to identify users behavior and to find customers interest. Numbers of algorithms are proposed in recent years for data mining in the field of ecommerce such as classification techniques, clustering, association rules or sequential patterns. Their techniques are used along with data mining to discover hidden patterns and relationships in large datasets. Most of the data mining techniques used now days have some limitation in point of view to data mining for an e-commerce application.

They do not mine in the correct or proper sequence of the user's navigation sequence, they ignore causality relations such as users sequence, number of pages visited, product search sequence, number of time page visited by customer etc.

To limit all condition we proposed the use of Temporal Logic and model checking techniques as an alternative to the data mining technique. The main approach is to analyze users' behaviour on e-commerce site to discover customers' complex behavioural patterns by means of checking temporal logic formulas describing such behaviours against the log model.

At the start using web server log user behaviour is generated. After generation business analyst can use set of predefined queries which help him to discover the way client use the website.

Research Article | Published: 16 November 2018

Classification and Prediction of Erythemato-Squamous Diseases Through Tensor-Based Learning

N. Badrinath, G. Gopinath, K. S. Ravichandran, J. Premaladha & R. Krishankumar

Proceedings of the National Academy of Sciences, India Section A: Physical Sciences **90**, 327–335 (2020)

Abstract

The paper proposes a classification algorithm based on support tensor machines which finds the maximum margin between the tensor spaces. The proposed algorithm has been deployed to classify erythemato-squamous diseases (ESDs) with the help of its features. Features are derived from the skin lesion images of ESDs, and it has been represented as second-order tensors, i.e., $\boldsymbol{X} \in \mathbb{R}^{\boldsymbol{n}}$ can be transformed into $\boldsymbol{X} \in \Re^{\boldsymbol{n}_1} \otimes \Re^{\boldsymbol{n}_2}$ where $n_1 \times n_2 \cong n$. After deriving the features from the skin lesion images, dominant features are extracted using Tucker tensor decomposition method. Most of the existing machine learning algorithms depend on the vector-based learning models, and these

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Deceptive call recognition in a network using machine learning[1]

V. A. Narayana[2], Abhinav Chamakura[2], Ramakrishna Gandi[2]

Abstract. This paper considers the construction of an effective beam finite element for the blade as the component of cyclic symmetric system. Spontaneously sensing and thwarting deceitful calls on a network. The call history on the network is collected for a given time span, call topographies for each of the collected call history by recipient number and using machine learning to make choices for identifying whether recipient number and a call to recipient number may be deceitful. The choice model may be incorporated on network to sense and thwart deceitful calls.

Key words. Network, deceptive call recognition, machine learning.

1. Introduction

The task of ensuring the vibration reliability concerning the rotor systems of turbomachines and their elements is accompanied by the implementation of a large amount of computational studies for the set of design models. The telecommunication industry is facing lot of challenges in terms of deceptive calls communication among the network. The worldwide yearly damages due to deceptive calls or deceptive activities increasing to US$40 billion according to various survey instruments. The losses are increasing faster than the profits in small and medium sized telecom industry. To monitor full time deceptive activities, it is an overhead on the Government and non-Government organizations. To overcome this challenge an attempt made in this paper to address the problem using decision tree generation using clustering analysis and machine learning module in a cost effective way.

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[2]CMR College of Engineering & Technology, Hyderabad-501401, India

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A novel method to detect foreground region using morphological operations with block based enhancement for underwater images

AUTHORS

M Sudhakar
Research AssociateVITCC

M Janaki Meena
Professor, VITCC

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Keywords: Block-Based SSI, Foreground Extraction, Morphological Operations, Fuzzy Segmentation.

ABSTRACT

Automation of detecting the Foreground Region (FR) or Shape of the object is essential in several computer vision, object recognition applications and poses several challenges in case of underwater images. Although Synthetic Sonar Images produce better quality images scattering of light, color distortion and poor lighting conditions are the few characteristics that effects the natural scene of the captured image. A novel technique for extracting the foreground region from a low quality underwater image is presented in this paper. We have decomposed the image in to multiple levels based on discrete wavelet transforms (DWT) for improving the sharpness or to reduce the fogginess in the image in order to get the clear image. Subsequently, to determine the sharpness of the local patches in the image a block based SSI algorithm is presented. Finally, the segmentation is performed by computing the binary gradient mask with the Sobel edge detection algorithm along with morphological operations. The proposed method is fast, extracting the accurate foreground regions and also detect the smallest particles present in the image. The results are qualitatively compared with the improved fuzzy c-means clustering (FCM), Otsuâ€™s Threshold and FCM thresholding by considering the static background images.

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DISTRIBUTED LOAD BALANCING ALGORITHM FOR WIRELESS SENSOR NETWORK

K. Navaz[1], S. Athinarayanan[2], S. Sameena[3] and R. Kavitha[4]

[1,2]*Department of Computer Science and Engineering, Annamacharya Institute of Technology and Sciences, Tirupati, India*
[3]*Department of Computer Science and Engineering, Universal College of Engineering and Technology, Vallioor, India*
[4]*Department of Computer Science, The Madurai Diraviyam Thayumanavar Hindu College, India*

Abstract

A Wireless Sensor Network (WSN) comprises of spatially scattered autonomous sensors to screen physical or natural conditions and to amiably go their information through the system to a Base Station. Grouping is a basic assignment in Wireless Sensor Networks for vitality effectiveness and system quality. Grouping through Central Processing Unit in remote sensor systems is outstanding and being used for quite a while. In this paper, we propose a few procedures that balance the vitality utilization of these hubs and guarantee greatest system lifetime by adjusting the activity stack as similarly as could be expected under the circumstances. Directly grouping through dispersed strategies is being produced for conveying with the issues like system lifetime and vitality. In our work, we connected both concentrated and conveyed k-means clustering calculation in system test system. K-means is a model based algorithm that surrogates between two noteworthy advances, passing on perceptions to groups and processing cluster focuses until the point when a ceasing standard is satisfied. Improved results are accomplished and related which demonstrate that conveyed clustering is compelling than brought together grouping.

Keywords:

Wireless Sensor Network, Clustering, K-Means, Network Stability

1. INTRODUCTION

Wireless Sensor Network (WSN) contains of two classes of hubs, to be specific essential and optional hubs. Essential hubs very much delegated with sensor and radio framework. The Secondary hubs are just the sending hubs which have a radio alone to go about as discontinuous (connect) hubs. These hubs made animated the rise of Wireless Sensor Network (WSNs) in applications including ecological checking, war zone examination, atomic, natural and synthetic assault identification, human services and home applications. WSN is made with the controls out of restricted vitality [1], memory [1], preparing power [2], and data transmission for correspondence [2], and radio range [2]. As sensors must work under strict power requirements, transmitting data detected to end station may be in feasible. This inspires to search for creating resources by utilizing grouping calculations sharing data in single-bounce neighbours only. Clustering is the blend of comparable articles and a grouping of a set is a parcel of its components that is chosen to limit some proportion of variety [3]. Clustering calculations are frequently helpful in applications in different fields, for example, computerized reasoning, perception, learning hypothesis, PC illustrations, neural systems, design acknowledgment and measurements. Commonsense applications [12] of grouping incorporate example order under unsubstantiated learning, quickness seek, time arrangement investigation, content mining and heading finding.

Clustering in sensor hubs has been broadly chased by the exploration network with the end goal to understand the adaptability, vitality and lifetime issues of sensor systems. Clustering calculations limit the correspondence in a nearby area and transmit just fundamental data to whatever is left of the system through the sending hubs. A gathering of hubs frames a group and the nearby co operations between cluster individuals are controlled through a cluster head (CH). Cluster [4] individuals by and large speak with the group head and the gathered information are amassed and joined by the cluster go to monitor vitality. The cluster heads can likewise shape another layer of groups among themselves before achieving the sink. The Fig.1 shows the architecture of sensed data forwarding with clustering and aggregation.

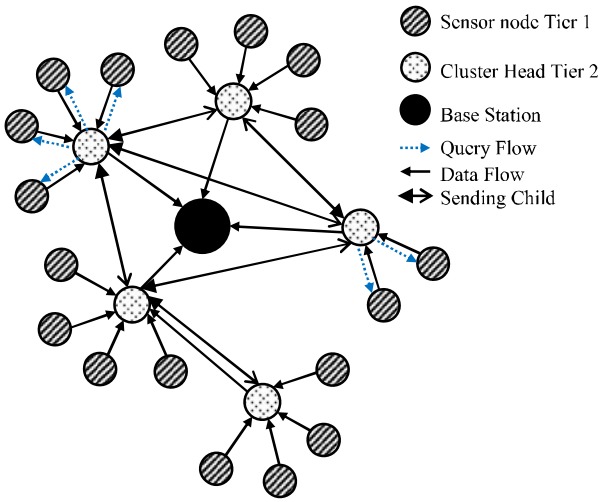

Fig.1. Sensed Data forwarding with clustering and aggregation

Issue is set on partitional grouping algorithms, which yield a single parceling of the information characterized by a settled number of parameters [4] [13]. With these parameters being not exactly the accessible information, partitional grouping can bear the cost of promising conveyed utilization of deterministic methodology. A prevalent incorporated also appropriated deterministic partitional clustering approach is offered by the *k*-means algorithm, which highlights straightforward, profoundly dependable, and quick focalized repetitions and re-grouping amid disappointment states.

The rest of this paper is as follows. In section 2, we evaluate related works and their highlights offered to clustering methods and the section 3 manages the concentrated method for grouping hubs utilizing *k*-means calculation. In section 4, the computational model of the *k*-means algorithm is presented. Section 5 exhibits

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Identity-based Data Auditing and Hiding for Secure Cloud Storage

M.Tech. Scholar R. Haritha
Dept. of CSE
MJR College of Engg.&Tech.
Piler, AP, India

Asst.Prof. M. Reddi Durga Sree
Dept. of CSE
MJR College of Engg.&Tech.
Piler, AP, India

Asst.Prof. Karamala Suresh
Dept. of CSE
MJR College of Engg.&Tech.
Piler, AP, India

Abstract - **Cloud computing is one of the significant developments that utilizes progressive computational power and upgrades data distribution and data storing facilities. With cloud storage services, users can remotely store their data to the cloud and realize the data sharing with others. Remote data integrity auditing is proposed to guarantee the integrity of the data stored in the cloud. In some common cloud storage systems such as the electronic health records system, the cloud file might contain some sensitive information. The sensitive information should not be exposed to others when the cloud file is shared. Encrypting the whole shared file can realize the sensitive information hiding, but will make this shared file unable to be used by others. How to realize data sharing with sensitive information hiding in remote data integrity auditing still has not been explored up to now. In order to address this problem, we propose a remote data integrity auditing scheme that realizes data sharing with sensitive information hiding in this paper. In this scheme, a sanitizer is used to sanitize the data blocks corresponding to the sensitive information of the file and transforms these data blocks' signatures into valid ones for the sanitized file. These signatures are used to verify the integrity of the sanitized file in the phase of integrity auditing. As a result, our scheme makes the file stored in the cloud able to be shared and used by others on the condition that the sensitive information is hidden, while the remote data integrity auditing is still able to be efficiently executed. Meanwhile, the proposed scheme is based on identity-based cryptography, which simplifies the complicated certificate management. The security analysis and the performance evaluation show that the proposed scheme is secure and efficient.**

Keywords- **Cloud storage, data integrity auditing, data sharing, sensitive information hiding,etc.**

I.INTRODUCTION

Cloud storage auditing is viewed as an important service to verify the integrity of the data in public cloud. Current auditing protocols are all based on the assumption that the client's secret key for auditing is absolutely secure. However, such assumption may not always be held, due to the possibly weak sense of security and/or low security settings at the client. If such a secret key for auditing is exposed, most of the current auditing protocols would inevitably become unable to work. With the explosive growth of data, it is a heavy burden for users to store the sheer amount of data locally. Therefore, more and more organizations and individuals would like to store their data in the cloud. However, the data stored in the cloud might be corrupted or lost due to the inevitable software bugs, hardware faults and human errors in the cloud [1].

The data sharing is an important application in cloud storage scenarios. To protect the identity privacy of user, Wang et al. [17] designed a privacy-preserving shared data integrity auditing scheme by modifying the ring signature for secure cloud storage. Yang et al. [18] constructed an efficient shared data integrity auditing scheme, which not only supports the identity privacy but only achieves the identity traceability of users. Fu et al. [19] designed a privacy-aware shared data integrity auditing scheme by exploiting a homomorphic verifiable group signature.

Other aspects, such as privacy-preserving authenticators [27] and data deduplication [28], [29] in remote data integrity auditing have also been explored. However, all of existing remote data integrity auditing schemes cannot support data sharing with sensitive information hiding. In this paper, we explore how to achieve data sharing with sensitive information hiding in identity-based integrity auditing for secure cloud storage.

II.PROPOSED SYSTEM

In this proposed system Remote data integrity auditing is proposed to guarantee the integrity of the data stored in the cloud. In order to verify whether the data is stored correctly in the cloud, many remote data integrity auditing schemes have been proposed [2]–[8]. In remote data integrity auditing schemes, the data owner firstly

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Research paper

Online e-tollgate fee collection using QRcode

Kuna Venkateswararao [1] *, L. Gurusarathy [1], Akepati Sankar Reddy [2]

[1] Assistant Professor, Department of Computer Science and Engineering, School of Computing, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai-62, TamilNadu, India

[2] Annamacharya Institute of Technology and Science

**Corresponding author E-mail: kvrvenkateshkvr@gmail.com*

Abstract

Now a day's People need to wait near the tollgate in queue for long time to pay the toll fee. The application on java is being introduced. Before we are reaching the tollgate it should display a message to the user that he is approaching the tollgate. The display of message based on GPS location. This Application helps to pay amount before the tollgate reached. Automatically it will generate an Electronic receipt with Barcode and QRcode in secure techniques .which can be shown at the tollbooth. This reduces the work of the people and the reduces the time. Payment is done through Mobile wallets or Credit cards. A list for all the tollgate and respective services to be made available in the application.

Keywords: *GPS; Barcode; Security; QRcode.*

1. Introduction

1.1. Exiting tollgate system

Tollgate is a gate on road at which you pay for an amount of money in order to allow using the road for vehicles. To pay tollgate free for any vehicle you need wait some time due to the gradually increasing number of vehicles. At payment time you said your vehicle number and type, then give to amount to tollgate. Every day, millions of mankind use to their own personal vehicles in place of public travel systems .This leads to steady increase in vehicle congestion in developing countries and toll payment system. Today's tollgate system needs the vehicle to stop at a toll plaza and collect toll fee is manually paid bill receipts. It is a slow work as manual colleting often leads to delay and mankind's have to wait .Progress in the traditional system is the ETC (Electronic Toll Collection System), which needs mankind's to have to use ETOLLGATE payment online web application.

1.2. Objectives

The main objective is to Online Toll Payment:

1) To Use online toll payment before reach the tollgate for controlling heavy traffic
2) To provide an effective less waiting time for traffic in Congested cities
3) Controls traffic to a maximum extent
4) Ensure traffic congestion totally based on the density of traffic
5) Represent Barcode used for verification of payment of tollgate
6) Use GPRS Technology for knowing nearest tollgates.
7) To provide happy journey to the travellers.

1.3. Need for the study

- Non Violation of rules
- Time Saving
- To eradicate traffic congestion during peak hours
- To avoid standby of traffic for a kilometer during peak hours.
- To enjoy safe and quick journey.

1.4. Expected outcomes

The main objective behind this proposal is to create a suitable ETC system to be implemented e-payment before reached to the tollgate. In this system first mankind register in to online application than login the application and add type of which it have and add payment type like card ,wallet etc. After successfully add the steps while nearest to the tollgate click on tollgate button it will show your near toll gate than select the tollgate and pay fee of vehicle charge based on criteria. After Success full payment it will generate a electronic barcode recipient than the recipient show to the tollgate crossing they will verify the payment using scanner.

Digital Signature Verification Using Artificial Neural Networks

Gopichand G, Sailaja G, N. Venkata Vinod Kumar, T. Samatha

ABSTRACT--- Identification and verification of hard written signature from images is major issue. This is very difficult as even human eye does not have that much visual ability to identify every detail of the in handwritten. Signature changes every time so it is difficult for humans to identify the original and forged ones. By using deep learning which uses the sophisticated is digital configured replica of human brain, we can identify the forgery done in signature with higher accuracy.

Index Terms — deep learning, digital configured replica, forgery, signature

I. INTRODUCTION

The robustness of human brain has always been an enigma and this has caused people to replicate it digitally. The human eye has a great efficiency of recognition due its architecture. This inspiration has led to people constructing artificial neural network and so deep learning.

In this we generally are going to assess the ways a human being would give his signature using some deep learning algorithms and artificial neural networks by which we can train the system accordingly and verify if the signature is real or forged. It would be a great way to authenticate the signatures and verify them accordingly. It would be a better option to verify the signatures using this model rather than visual recognition through human eye which have a high chances of making a mistake.

II. SIGNATURE VERIFICATION

2.1 Offline Signature Verification:

Verification of signatures with features which are already present is called as offline signature verification. The features are very simple and basic and the image scanned through a camera should follow certain methods for verification. Design of these kind of systems is difficult as there will be less features available.

2.2 Nature of Human Signature:

Human signatures are generally generated by the inbuilt functions of the human neuromuscular area which induces rapid movements. This system will largely consist of neurons and muscle and fibers which make us know that the velocity of the hand produces the equation. So signatures for every person are unique. In this model we can assess the person who will give the signature and train our model accordingly.

2.3 Types of Forgeries:

Forgeries of signatures are classified into three types as mentioned below and we will solve and try to prevent all this forgeries in our model.

2.3.1 Random forgery:

A signature which is forged and it may be the genuine signature of other person**.**

1.3.2 Casual Forgery :

A signature forgery in which the one who is doing the forgery will know the name of the victim

1.3.3 Skilled Forgery:

As the name suggests a person who is skilled professional is forging signatures is involved in forging the signatures.

III. NEURAL NETWORK OUTLINE:

A system which does computing and is combines with basic, and highly coincidental processing elements which use the data to get a highly relevant and faster response from the inputs taken. Artificial neural network models are a subpart of the machine learning models which are motivated by the functioning of the brain. Neural networks generally work like the neurons of the brain and the connected neurons will work in a network process to collect and process the data for providing the necessary output. There will be an input layer to the system which consists of all the patterns in which the system should process and also the necessary inputs and it communicates with the hidden layer as shown in the below figure and the hidden layers use the patterns and inputs by the input layer and are used to find out a relevant function for the task to be performed and then they communicate with the output layers to display the final output.

Feedforward mechanism:

This mechanism does not form circles like many artificial neural networks. This mechanism goes in a single way from the input to the hidden layers to the output and do not form any loops or circles in the process.

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Gopichand G, Assistant Professor, School of Computer Science and Engineering, Vellore Institute of Technology, Vellore Tamilnadu ,India (Email: gopichand.g@vit.ac.in)

Sailaja G, Assistant Professor, Computer Science and Engineering, SV Engineering College for Women, Tirupati, AP, India. (Email: gsailaja3@gmail.com)

N. Venkata Vinod Kumar, Assistant Professor, Computer Science and Engineering, Annamacharya Institute of Technology & Sciences, Tirupati, Tamilnadu, India (Email: vinnu.nukala55@gmail.com)

T. Samatha, Assistant Professor, Computer Science and Engineering, Annamacharya Institute of Technology & Sciences, Tirupati, Tamilnadu, India. (Email: samatha.cse13@gmail.com)

Feature Extraction Techniques in Microblogging Social Networks

T. Venkata Rathnam[1], Divya Jyothi. N [2]
[1, 2] *Assistant Professor*
[1, 2] *AITS-Tirupati, JNTUA University*
[1] isit.rathnam@gmail.com
[2] nara.divyajyothi@gmail.com

Abstract **-** In recent years, the role of online social networking in our everyday lives has expanded quickly. At present, it is not only utilized for social communication, but also a vital stage for trading data and news. Micro-blogging websites such as Twitter, associates with a billions of users around the globe allows to spread these kind of valid and unique information i.e. news. Twitter has, in any case, not exclusively been utilized for the spread of legitimate news, yet in addition tricky and fake news. Detection of fake news in these blogs has recently pulled in a growing interest from the overall public and research scientists as the misinformation circulation has been increases particularly in the social blogging sites. Initially the ratio of these fake news is a bit low, but is growing continuously at an alarming rate in the recent years. This trend has created much interest from the academia to politics and many other industries throughout the world. The result of these fake news or spams are showing much influence from educational, financial and politics and it becomes a challenging issue for the researchers to avoid or prevent the fake news by detecting the origin of these fake news. Numerous data science communities are also focused on it and reacted by taking some actions against these issues, such as Kaggle "Fake News Challenge", Facebook and Twitter deployed AI to filter the fake posts or tweets from the user channels. In this paper, we described about the challenges in fake news detection along with recent machine learning techniques developed for this purpose. Extracting the features from the social blogs especially the top most microblogging website i.e. twitter and the types of the features used to detect the fake news are also presented in our paper. Additionally, we also presented the various types of spam detection methods.

Keywords*—fake news, spam detection, tweet based spam detection methods, supervised and unsupervised learning methods.*

I. INTRODUCTION

Detection of fake information is a hot topic especially concerning news industry and also in societal aspects with the intension of evaluating the exactness of digital form of information. Over social network sites the false information will reach the society easily and attains real impacts in shortly to mass people. Society related issues raised by the people have able to tell which is fake and authentic. Anderson [1] mentioned that youth are very much aware about technology than their parents but to confirm whether that information is fake or real the youth seem like they confused and 44% people were confirmed it when research done by Common Sense Media. In the same statistics report it was represented as 31% of children who were having the age between 10-18 years are sharing at least a story and then they realize that it was fake one.

This leads to raise a completely new dimension related to the digital awareness which will have the capability in accessing and managing the technology. Along with the societal challenges, there is considerable and modest situation occurring in media concerns, the public circle and also journalism industry that needs debate and examination figuring out two important aspects [2]. The former one depends on a fact that the news publishers lost their control on news publishing to internet users by using some algorithms which are obscure and not even predictable. Besides, the new comers to the news market have created their presence by grabbing those technologies. The later depends on increasing the power of social media companies like Google, Apple, Facebook and Amazon attained a control over what was publishing to whom and how the publishing news is?

From the earlier context, to make online data as reliable is challenging but digital information is spread by many parties included in supporting to present data and in sharing the data among people in Internet, browsers and social networking sites. The concept of spreading of fake news has become more prevalent that Media and Sport Committee is now investigating the problems of users who are impacted with such fake information [4]. As disclosed by Conroy [3] detection of fake news can be defined as expecting the chances of specific news publications are intended to mislead the users. In this paper, we discussed the problem with the spreading of fake news in present technical aspects and also

Distributed Load Balancing Algorithm for Wireless Sensor Networks

R. Ranaprathap [1], B. Sunil Kumar [2], N. Penchalaiah [3]

[1] CSE, Asst Professor, AITS (Rajampet-Autonomous), India

[2] CSE, Asst Professor, AITS (Tirupathi), India,

[3] CSE, Asst Professor, AITS (Rajampet-Autonomous), India.

ABSTRACT— *A remote sensor arrange (WSN) comprises of spatially scattered independent sensors to screen physical or ecological conditions and to amiably go their information through the system to a Base Station. Clustering is a basic undertaking in Wireless Sensor Networks for vitality effectiveness and system quality. Clustering through Central Processing Unit in remote sensor systems is notable and being used for quite a while. In this paper, we propose a few techniques that balance the vitality utilization of these hubs and guarantee most extreme system lifetime by adjusting the activity stack as similarly as would be prudent. By and by Clustering through conveyed techniques is being created for appropriating with the issues like system lifetime and vitality. In our work, we connected both incorporated and dispersed k-implies Clustering calculation in system test system. k-implies is a model based calculation that surrogates between two noteworthy advances, passing on perceptions to groups and processing Cluster focuses until a ceasing standard is satisfied. Reproduction results are achieved and related which demonstrate that appropriated Clustering is powerful than centralized clustering.*

Keywords-DLB(Distributed Load Balancing) ,WSN, wireless sensor network; clustering; ns-2; k-means; network stability

I. INTRODUCTION

Remote sensor organize (WSN) contains of two classes of hubs, in particular essential and optional hubs. Essential hubs all around selected with sensor and radio framework. The Secondary hubs are essentially the sending hubs which have a radio alone to go about as discontinuous (connect) hubs. These hubs made animated the development of remote sensor systems (WSNs) in applications including ecological observing, war zone investigation, atomic, natural and compound assault recognition, social insurance and home applications. WSN is made with the controls out of constrained vitality [1], memory [1], handling power [2], and data transmission for correspondence [2], and radio range [2]. As sensors must work under strict power requirements, transmitting data detected to end station might be infeasible. This moves to scan for making assets by utilizing Clustering calculations sharing data in single-bounce neighbors as it were. Clustering is the mix of comparative items and a grouping of a set is a segment of its components that is chosen to limit some proportion of variety [3]. Clustering calculations are regularly valuable in applications in different fields, for example, man-made reasoning, perception, learning hypothesis, PC illustrations, neural

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HADOOP based Picture Pressure and Amassed Approach for Lossless Compression

T. Samatha*, B. Sunil Kumar, N. Venkata Vinod Kumar
Computer Science and Engineering, AITS, Tirupati, Andhra Pradesh, India

ABSTRACT

Computerized picture preparing is a renowned and developing field of utilization underneath software engineering building. The uses of computerized picture handling are medicinal imaging, satellite imaging, and video in which the measure of the picture or picture stream estimate is huge and needs tremendous volume of storage room or else high transmission capacity for correspondence in its genuine frame. In such applications, Image pressure techniques are used proficiently. Picture pressure is extensively isolated into two fundamental sorts: lossless and loss pressure. Here, Loss pressure manages pressure conspires that have resilience for some specific measure of mistake, that is, the compacted and the decompressed pictures may not be indistinguishable. Lossless picture pressure plans keep the data with the intension that exact revamping of the picture is plausible from the packed information. In this exploration work, past lossless pressure procedures are reviewed and after that returns to investigate the benefits and deficiencies of these techniques. This examination like wise given trial assessment of different present day lossless pressure calculations that were accounted for in the writing. The exploratory outcomes are directed and it is contrasted against one another with locate the better methodology under different execution estimates, for example, Mean Square Error (MSE), Compression Ratio (CR), and Peak Signal to Noise Ratio (PSNR) for openly accessible picture informational collections to examination better procedure.

Keywords: CR, PSNR, MSE, Medicinal Imaging, Satellite Imaging, HADOOP, Lossless Compression, Mean Square Error, Discrete Fourier Transform, Discrete Cosine Transform

I. INTRODUCTION

By methods for the advancement of medicinal imaging civilities, a rising volume of information is exhibited in the ongoing picture handling, and it results in a logically broad weight for information stockpiling and in addition transmission [1]. The expansive increment in the information prompt deferrals in access to the data required and this prompts a postponement in the time. Huge information prompt information units and capacity is full this prompts the need to purchase a greater space for capacity and losing cash. Expansive information prompt give mistaken outcomes for the likeness of information and this prompts getting off base data.

Vigorous computerized picture watermarking can be grouped into various classifications dependent on various arrangements of criteria One of such criteria is the sort of space in which the watermark installing happens as outlined. This order recordings computerized picture watermarking into two noteworthy classifications specifically spatial area and change space watermarking. The most prominent calculation in spatial area is slightest critical bits (LSB) though the most well known

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CERVICAL CANCER DETECTION AND CLASSIFICATION BY USING EFFECTUAL INTEGRATION OF DIRECTIONAL GABOR TEXTURE FEATURE EXTRACTION AND HYBRID KERNEL BASED SUPPORT VECTOR CLASSIFICATION

S. Athinarayanan[1], K. Navaz[2], R. Kavitha[3] and S. Sameena[4]

[1,2]*Department of Computer Science and Engineering, Annamacharya Institute of Technology and Sciences, India*
[3]*Department of Computer Applications, The MDT Hindu College, India*
[4]*Department of Computer Science and Engineering, Universal College of Engineering and Technology, India*

Abstract

Planning of invigorating representation is a troublesome and testing process because of the unpredictability of the images and absence of models of the life systems that thoroughly catches the reasonable expressions in each structure. Cervical malignant growth is one of the noteworthy reasons for death among different kinds of the diseases in women around the world. Genuine and auspicious determination can keep the life to some dimension. Therefore, we have proposed a computerized dependable framework for the analysis of the cervical malignancy utilizing surface highlights and machine learning calculation in Pap smear images, it is extremely advantageous to anticipate disease, likewise expands the dependability of the determination. Proposed framework is a multi-organize framework for cell nucleus extraction and disease finding. To begin with, clamor expulsion is performed in the preprocessing venture on the Pap smear images. Exterior highlights are separated from these demand free Pap smear images. Next period of the proposed framework is classification that depends on these separated highlights, SVM classification is utilized. Over 94% exactness is accomplished by the classification stage, demonstrated that the proposed calculation precision is great at recognizing the disease in the Pap smear images.

Keywords:

Cervical Cancer, Feature Extraction, DGTF, Classification, Hybrid Kernel SVM

1. INTRODUCTION

Cervical malignant growth has been ascending to be second most elevated factor causing passing among ladies all-inclusive and the event of cervical disease is overwhelming in creating nations like Malaysia, Philippians, Thailand and Indonesia. The quantity of female setback is high and common in the nation of Vietnam pursued by Malaysia and Philippians. Despite the fact that the passing rate had fallen after the inception of Human Papilloma Virus (HPV) immunization, different grounds of the ailment has not yet been wiped out. Pathologist assesses the slides utilizing the magnifying instrument to watch the spread of irregular cells. Malignancy is dealt with dependent on the examination. Determination got from pathologists gets shifted since the subjectivity has command over the slide understanding and furthermore investigation of malignant growth depends on the aptitude and ability of the pathologist. Issues will emerge when legitimate direction isn't accessible for unpracticed pathologists, so it is fundamental to propose a framework that could help pathologist amid demonstrative procedure and consequently subjectivity connected to finding be decreased. The Papanicolaou (Pap smear) test is viewed as most money saving advantage malignant growth counteractive action and location program designed up until this point. It was begat by George N. Papanicolaou and in his discovering; he detailed that influenced cells of the cervix can be recognized by the little example of cells assembled from the cervix. They had an exploration and demonstrated the power of vaginal smear for the simple discovery of cervical carcinogenic and precancerous changes. The conventional Pap test is a straightforward technique comprising of steps referenced underneath.

- To see the cervix, vagina is broadened by embedding's the speculum.
- Sample cells are gathered in and around the cervix by brush or swab.
- Cells are protected in a glass by applying some additive.
- To feature the auxiliary examples for examination utilizing magnifying lens in the lab, tests are set apart to improve the differentiation in the example.

Another strategy for test cell readiness for cytological test is the Liquid Based Cytology and it is to some degree like pap smear test however the thing that matters is that as opposed to spreading the cells in the glass slide, the cell is all of a sudden wash with additive fluid arrangement then it will be sent to the lab for expelling non-demonstrative materials such like bodily fluid, discharge and platelets. After the protection, a slight layer of cell is shaped onto a glass slide, with this cell, it is inspected under the magnifying lens in a similar way of conventional smear test.

2. LITERATURE REVIEW

Cervical malignancy compromises the lives of numerous ladies in our present reality. In 2014, the quantity of ladies contaminated with this ailment in the United States was 12,578, of which 4,115 kicked the bucket, with a passing rate of almost 32%. Malignancy information, including cervical malignancy datasets, speak to a huge test information mining systems since nonattendance of various expenses for blunder cases [1]. Cervical harm is one of the indisputable reasons of illness going in females around the globe. The Pap smear is the mind blowing dynamic screening test used to see the cervical pre-hazardous and destructive assortments in an exploratory of cervical cells subject to the shape assortments of the centers and cytoplasm [2]. Pap test has to a great degree changed the figure of women with cervical harmful development as it has revealed its ability to perceive 95% of the tumors of the vaginal neck. Cervical harmful development can be turned away if it is seen and treated early. Built up a novel strategy to consolidate a few models utilizing a Bayesian methodology. The technique chooses the most pertinent

A Scalable and Distributed Mechanism for DNA Databases by Aggregate Queries

H Santhi, Gayathri P, Gopichand G, Venkata Vinod Kumar N, Sailaja G

Abstract— The matter of sharing unique individual genomic grouping courses of action without giving the security of their data to help vast scale biomedical research ventures. Regardless, extends the results in different types. This approach is demonstrated powerful in keeping up the protection requirement against antagonistic server. We present a cryptographic security for questions that permits playing out most widely recognized DNA based personality. The limit is more affordable than figuring in current dispersed registering assessing plans. This point is spurred by the way that capacity is less expensive than calculation in current distributed computing evaluating plans. In addition, encoding the information makes it workable for us to deal with more extravagant arrangement of the inquiries the coordinating between the inquiry and grouping of the database, including:

(1) A certain is the quantity that matches between question images and a succession;

(2) Consistent OR matches where a question image is permitted to coordinate a subset of the letters in order along these lines making it conceivable to deal with (as an uncommon case) a "not equivalent to" necessity for an inquiry image ("not a G");

(3) Bolster for the expanded letter set of nucleotide base codes that envelops ambiguities in DNA groupings;

(4) Inquiries that determine the quantity of events of every sort of image in the predetermined arrangement positions.

(5) A begin question whose answer is "yes" if the quantity of matches surpasses a question indicated edge.

(6) All inquiry composes we can conceal appropriate responses from the unscrambling server, with the goal that just the customer takes in the appropriate response.

(7) The customer deterministically adapts just the question's answer, with the exception of inquiry compose (v) where we measure the (simple little) factual spillage to customer of real check.

Index Terms—DNA Databases, Cloud Security, Secure Outsourcing

1. INTRODUCTION

DNA is the medium of deep rooted stockpiling and transmission of hereditary data for all contemporary living creatures. Human DNA information is private and delicate individual data. Be that as it may, such information is basic, for instance, conclusion of attitude to execute particular infection, tranquilize hypersensitivity, or forecast of accomplishment rate in light of a particular treatment. Giving an openly accessible DNA database for encouraging exploration in this field is for the most part stood up to by protection concerns.

Now a days, the substantial calculation and limit of cloud administrations empowers pragmatic facilitating and sending of DNA databases and effective preparing of genomic arrangements, for example, doing grouping examination, flawless and estimated succession seek and various tests (conclusion, character, family line). The missing security layer that jellies the protection of people reports and doles out the heap of inquiry handling to the cloud. Though anoymization strategies, for example, de-recognizable proof [2], information expansion [3], or database apportioning [4] settle this issue mostly, they are not adequate in light of the fact that much of the time, re-ID of people is conceivable [5]. It takes after that the DNA information must secured, not only unlinked from the relating people.

We manage system proposed in [1], in that the DNA reports originating from couple of healing centers are encoded and keep the information at an information stockpiling site, and biomedical analysts can submit total tallying inquiries to this site. Checking inquiries are especially intriguing for factual investigation.

2. PROBLEM DEFINITION AND FRAMEWORK

This proposed construction gives another strategy that tends to a bigger arrangement of issues and gives a quicker question answer time than procedure presented in [1]. Our methodology depends on the current estimating plans of many cloud administrations merchants, stockpiling is less expensive than figuring. Subsequently, we support stockpiling through registering assets to enhance cost. Besides, from a client encounter perspective, answer time is the most substantial marker of execution; henceforth it is normal to go for lessening it. Our technique builds the best in class at both the reasonable level and the execution level.

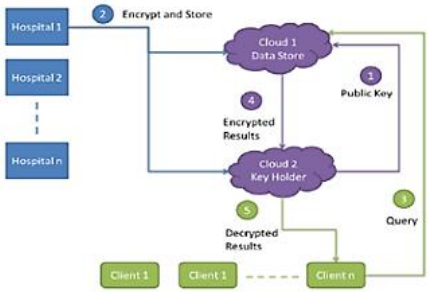

Fig.1. System Architecture

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H Santhi, School of Computer Science and Engineering, Vellore Institute of Technology, Vellore, T.N, India

Gayathri P, School of Computer Science and Engineering, Vellore Institute of Technology, Vellore, T.N, India

Gopichand G, School of Computer Science and Engineering, Vellore Institute of Technology, Vellore, T.N, India

Venkata Vinod Kumar N, Department of CSE, Annamacharya Institute of Technology and Sciences, Tirupati, A.P, India

Sailaja G, Department of CSE, SV Engineering College for Women, Tirupati, A.P, India

Underwater Image Enhancement using Conventional Techniques with Quality Metrics

M Sudhakar, M Janaki Meena

Abstract: ***Image enhancement is a widely used technique to increase the quality of an image. In this process the intensity levels are gradually increased in an image or parts of an image, results a quality image compared with the image captured at image acquisition process. These techniques are helpful to detect the edges or patterns present in the input images, used in different applications such as computer vision, medical imaging, underwater imaging and other multimedia applications to detect the objects or patterns in a given input image. Due to the degradation of color, light absorption and scattering, artificial light, suspended particles in underwater, the acquired images are having low contrast or very dim in color and causes only one color to dominate the entire image. Hence, the identification of the objects in the underwater image becomes tricky. After the image acquisition, preprocessing step is must to increase the quality of the degraded images for image processing and underwater or marine applications. This paper included numerous underwater image enhancement techniques developed in the recent years along with the limitations and challenges in it.***

Index Terms: Underwater Image enhancement, Histogram equalization, AHE, CLAHE, Dark Channel Prior

I. INTRODUCTION

Underwater images are hampered by poor contrast, color change, suspended and floating particles. Particularly with cameras mounted on ROV and AUV systems has widespread in civil and military applications [1]. The processing and analysis of underwater images is nontrivial in ocean engineering and many other scientific applications. The quality of underwater images is important in many applications such as inspection of plants, Sea based exploration, search of wrecks up to the exploration of natural sources and geological and biological fields. The broad issue in ocean engineering is acquiring the clear images in underwater environment. Capturing of underwater images is a great challenging task compared to terrestrial images, because of the haze caused by light that is reflected from the surface and is deflected and also diverted by several water particles. Different wave lengths of light cause various degrees of attenuation and the most visible color in the water is blue. Subsequently, with light scattering and deviation of color leads to the contrast loss in the captured images.

Image enhancement is a technique, used to increase the quality of an image by increasing the intensity levels of the image or parts of the image so that the resultant image should be clearer compared to the captured image and hence, used for display or further image analysis.

This process will not increase the intrinsic information of the image. This includes manipulation in the gray level and contrast, removing the noise, sharpening the object regions, filtering, and color correction and so on [2].Several image enhancement techniques such as histogram equalization, filtering with morphological operators, linear contrast adjustment, median filtering are exist. Histogram equalization (HE) is a widely used spatial domain technique used to increase the contrast for a given image using the histograms of it. This method is more appropriate for the images which are having less contrast; otherwise the outcome of this method is worse. When a person takes a photo in foggy climate conditions, the procured picture endures with poor visual quality as a matter of course. The objects that are far from the camera can lose the contrast and once in a while get obscured with their environment. Dark channel prior method can produce a natural haze free image. It is mainly used for removing the haze that exists in the outdoor images. The working principle of DCP is that in the non-sky region of the input image, at least one color channel contains low intensities at some pixels.

Background

Several image processing operations are applied on the images to increase the quality or to extract important features or patterns from the given input image. It is identical to signal processing, in which the input is image and output is also an image or portions of the image. In broad, there are mainly three stages incorporated in any image processing application i.e. image acquisition, process the image, getting the desired output.

The ultimate goal of computer vision or image processing application is to build up a software system or tool that can perform different sorts of processing techniques for the given image. This digital system will take the input as the digital image and process it by various image processing algorithms and produce the required output. In Figure 1, we have shown a simple image processing technique i.e. rotation of an input image with an angle of 180^0. At first, the image is captured by a camera and it will be sent to the Digital Image Processing (DIP) System. The image processing operation applied here is rotation, change the direction of the image with the given input angle. The DIP System includes many stages such as preprocessing, digitization, image enhancement and restoration, image segmentation, feature extraction, image representation and interpretation. Among these stages image enhancement and restoration holds a vital role.

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M Sudhakar, SCSE, VITCC, Chennai, India
M Janaki Meena, SCSE, VITCC, Chennai, India

A STUDY OF IOT AND ANDROID BASED WOMEN SAFETY APPLICATIONS

S.Sundara Pandiyan [#1], K.Navaz[#2], S.Athinarayanan [#3], N. Narayanan Prasanth[#4]

[#1,2&3]Department of CSE, Annamacharya Institute of Technology and Sciences, Tirupati, AP
[#4] School of Computer Science and Engineering , VIT University,Vellore, Tamilnadu
[1]gssundar1986@gmail.com
[2]navazit@gmail.com
[3]aathithee@gmail.com
[4]narayana.prasanth@gmail.com

Abstract*— *In brand new world, people using Smartphone have accelerated hastily and hence, a smart phone can be used efficiently for personal safety or a range of different protection purposes. The safety of women is a challenge of increasing urgency in India and different countries. The important difficulty in the handling of these cases by way of the police lies in constraints stopping them from responding quickly to calls of distress. These constraints encompass not understanding the vicinity of the crime, and no longer knowing the crime is going on at all: at the victim's end, accomplishing the police assuredly and discreetly is a challenge. The evil incident that outraged the entire country has wakened us to go for the safety issues and so a host of recent apps are developed to produce protection structures to women by mistreatment their phones. This work presents a survey of various Android Applications and IOT Applications for the Safety of Women. The app identifies the location of place through GPS and sends a message comprising this location URL to the registered contacts and also calls a registered contact to help the one in dangerous situations. Like that the IOT devices which monitors the threat through its sensors and the auto generated alert message is send to the cloud server which further communicates to the corresponding relations of the victims or information centers.

***Keywords*— Smart Phone, Android, IOT, GPS location and Database**

I. INTRODUCTION

In today`s international the arena has end up extra risky for ladies. The girls have been going through lot of bodily harassment in public places together with public shipping, foot route and so forth. Now-a-days because of common rapes, molestation, housebreaking the women safety is an crucial one. This app gives safety the use of the mixture of each GSM and GPS it offer alert message and phone and the modern-day area to the registered contact after triggering the pressure SENSOR3. Whilst you shake your cell telephone at specific frequency the app will be opened and whilst you click the button the message, name and area is shared to the first preferred registered touch, if the first person does not attend the decision then it diverted to the subsequent desired touch and so forth1

The application will still send the data to the preferred touch until the stop button is pressed by the person. The work was advanced in android it offer reliability and compatibility for the person. This gadget affords a manner to assist the women in the society to overcome the issues resulting from the society. This application is based on android it is value efficient. And it's far aimed at generating new version for women protection in all places to provide 100% secure environment in and out of domestic. Nicole Westmorland et al4 referenced on protective ladies' security? The primary motivation behind their take a look at is to discover using phone's in relation to domestic and sexual violence. In document[2] savagery towards women is a worldwide general medical issue, 35% of young ladies worldwide have talented both real and additionally sexual personal partner viciousness or non-accessory sexual brutality. The record moreover data the consequences of savagery on ladies' conceptive and psychological wellness.

In[5] the creators looking for to zone inquiries of observation advances directly into a hypothetical system that closer views the difficulties that new reconnaissance innovation posture to antiviolence actions. Mainly they deal with the effect of surveillance technology within the act of viciousness and some proposed arrangements, and remember the methodologies that reconnaissance innovation are utilized

Buffer Management Schemes to avoid Packet Loss in Mobile Ad-hoc Networks: A Survey

B.Purushotham, Assistant Professor, AITS, Tirupati, India, purush_bmp@yahoo.com

Dr.Ch.D.V Subba Rao, Professor, SVUCE, Tirupari, India, subbarao_chdv@hotmail.com

Abstract - Mobile Ad hoc Network is a self-configuring infrastructure less wireless network in which nodes are mobile in nature and they form a temporary network. Each mobile node is free to move anywhere independently in any direction. There is no centralized control in MANET due to the dynamic nature of the network. Hence, nodes communicate with each other through intermediate nodes. The intermediate nodes are normal nodes in the same network and assume the responsibility of forwarding packets on the route from source to destination. Wireless link transmission errors, mobility and buffer overflow (congestion) are major causes for packet loss in mobile ad hoc networks. Our work targets buffer overflow and it occurs at intermediate nodes i.e packet loss may occur in the buffer of a node, if the size of the buffer becomes less than the flow of packets into the buffer. If packet loss is not controlled then there will be a decrease in the performance of the MANETs. In order to reduce the packet loss, there are number of queue management techniques available like Drop Tail, RED and its variants. This paper provides a review of various buffer management schemes for packet queues and comparative analysis of existing techniques in wireless ad-hoc networks (MANETs).

Keywords — Active queue management, MANETs, Packet Loss, Passive queue management, Packet Queue, Scheduling scheme.

I. INTRODUCTION

A. Wireless Ad Hoc Networks

Wireless communication technologies are undergoing rapid advancements. The last few years have experienced a steep growth in teaching and research in the areas of wireless ad hoc networks. These networks have emerged to be attractive in many civilian and military applications and they hold great promises for our future. The attractiveness of ad hoc networks, in general, is attributed to their characteristics/features such as ability for infrastructure-less setup, minimal or no reliance on network planning and the ability of the nodes to self-organize and self-configure without the involvement of a centralized network manager, router, access point, or a switch. These features help to setup a network fast in situations where there is no existing network setup or in times when setting up a fixed infrastructure network is considered infeasible, for example, in times of emergency or during relief operations.

Wireless Ad Hoc Networks can broadly be classified into three categories:

- Mobile ad-hoc networks (MANETs)
- Wireless Sensor Networks
- Wireless Mesh Networks

Each one of these has significance for different application areas; each of these differs in the capacity and capabilities of nodes that participate in the network, the purpose of the network and the communication protocols employed. The focus of this paper is MANETs; from this point onwards, the words MANETs and Wireless Ad Hoc Networks will be used interchangeably.

B. Mobile Ad-Hoc Networks

A Mobile Ad hoc Network (MANET) is a type of ad hoc network [1]. Ad hoc means set or occurrence whenever important and not having plan in advance. Ad hoc is a LAN which permits new network devices to be inserted quickly. Mobile ad hoc network contains a collection of autonomous nodes which forms a short-term network without any fixed environment or central controller. For introducing network wireless connections (Wi-Fi) are used or any other average such as satellite or cellular transmission. Each device in a MANET is free to move self dependently in any direction. In MANET, each node (Mobile Device) acts as a router, which helps in sending forward packets from a source to destination. MANET nodes can be own devices such as lap-top, mobile phones and PDA. MANET can change place of location and configure itself on the fly. Fig.1 shows that source and destination nodes are not in range so packets are routed through intermediate nodes.

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Measuring Different Tasks for Unstructured Data and High Speed Data in Data Stream Mining

K. Rajasekhar[1*], P. Venkata Maheswara[2]

[1,2]Dept. of Computer Science, Annamacharya Institute of Technology & Sciences, Tirupati, India

Corresponding Author: kotapati.raja@gmail.com, Tel.: +91-9550469129

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***Abstract*—** Data streams are continuous flows of data. Examples of data streams include network traffic, sensor data, call center records and so on. One important problem is mining data streams in extremely large databases (e.g. 100 TB). Satellite and computer network data can easily be of this scale. However, today's data mining technology is still too slow to handle data of this scale. In addition, data mining should be a continuous, online process, rather than an occasional one-shot process. Organizations that can do this will have a decisive advantage over ones that do not.

One particular instance is from high speed network traffic where one hopes to mine information for various purposes, including identifying anomalous events possibly indicating attacks of one kind or another. A technical problem is how to compute models over streaming data, which accommodate changing environments from which the data are drawn. This is the problem of "concept drift" or "environment drift." This problem is particularly hard in the context of large streaming data. How may one compute models that are accurate and useful very efficiently? For example, one cannot presume to have a great deal of computing power and resources to store a lot of data, or to pass over the data multiple times. Hence, incremental mining and effective model updating to maintain accurate modeling of the current stream are both very hard problems.

***Keywords*—** Data Stream, Data Stream Mining, Concept Drift/Environment Drift

I. INTRODUCTION

Data Stream Mining is the process of extracting knowledge structures from continuous, rapid data records. A data stream is an ordered sequence of instances that in many applications of data stream mining can be read only once or a small number of times using limited computing and storage capabilities. Examples of data streams include computer network traffic, phone conversations, ATM transactions, web searches, and sensor data. Data stream mining can be considered a subfield of data mining, machine learning, and knowledge discovery.

In many data stream mining applications, the goal is to predict the class or value of new instances in the data stream given some knowledge about the class membership or values of previous instances in the data stream. Machine learning techniques can be used to learn this prediction task from labeled examples in an automated fashion. In many applications, the distribution underlying the instances or the rules underlying their labeling may change over time, i.e. the goal of the prediction, the class to be predicted or the target value to be predicted, may change over time. This problem is referred to as concept drift.

The **concept drift** means that the statistical properties of the target variable, which the model is trying to predict, change over time in unforeseen ways. This causes problems because the predictions become less accurate as time passes.

The term *concept* refers to the quantity to be predicted. More generally, it can also refer to other phenomena of interest besides the target concept, such as an input, but, in the context of concept drift, the term commonly refers to the target variable.

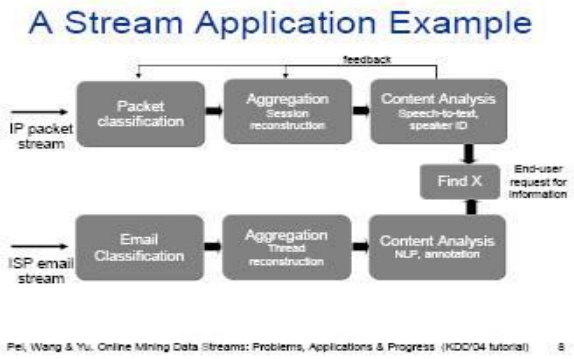

Fig. 1. Example of Stream Application.

India to foster Entrepreneurship and Start-ups : Present Status & Challenges

[1] Dr.S.Kishore, [2] Dr.D.Himachalam,
[1] Assistant Professor, Dept. of MBA, Annamacharya Institute of Technology & Sciences, Tirupati-517520, [2] Senior Fellow (ICSSR), Professor Emeritus (UGC), Department of Commerce, Sri Venkateswara University, Tirupati – 517502,

[1] kishore.mbaaitstpt@gmail.com,[2] dhchalam@gmail.com

Abstract— The present paper is a theoretical exposition on the need and importance of entrepreneurship, start-ups development and the challenges ahead. It provides a brief review on entrepreneurship, start-ups, its role and contribution for the economic development. Entrepreneurship has assumed immense importance in the economic development of a developing nation like India as well as that of the developed nations. India's economic progress, as a developing economy, is bound up with entrepreneurs who are enthusiastic and committed to maximize production as well as profitability of their respective organiations. The role of people and their abilities have to play in this stupendous endeavour is supremely important, and any negligence or under estimation of the human factor would only enfeeble the economic prosperity of the country. Tapping the many hither to unused and locally available resource is what is immediately required. All possible support-physical, material, technical have to be extended to the entrepreneurs to enable them to achieve industrial success. Today, it is dire need to encourage and bring the human to the main stream of industrial economy.

Index Terms - Entrepreneurship, Women Entrepreneurs, Start-up India, Stand-up, Start-up ecosystem.

INTRODUCTION

Accelerating industrial development through rapid industrialisation by exploitation and effective utilisation of the rich natural and physical resources, our country is endowed with, is vital for its economic development. Entrepreneurship is a vital input for development, which depends invariably on entrepreneurial talent and efficiency. It has emerged as a new major force for economic change. The developed as well as the developing countries today rely much upon rapid industrialisation for their economic development. The MSMEs sector, which has gained momentum in our country in the context of global economic change, need qualitative and dynamic entrepreneurship as it contributes significantly to the economic development and nation building. The country, which has sound entrepreneurship, can progress in all spheres of the economy, as it can transform all available resources into valuable products. And the resources have to be effectively utilized in manufacturing goods and providing services by applying innovative scientific approaches. Further, to speedup industrial production and augment the economic prospects of our country the young and energetic educated unemployed youth have to be motivated to participated in the great risk. In this endeavor woman also along with men have to be motivated and encouraged to contribute their mite to it, as they have the potential to work hard with diligence and devotion. Some of them in our country have already proved their mettle in the industrial sector.

The development of entrepreneurship, which is obviously a human activity, has become imperative for all development and prosperity not only economic. In this process human stands at the centre as an organizer of human beings and material reserves and exchange agent. Without his role the resources of production remain stationary and can never be transformed into products or services. The spirit of enterprise makes man a spry entrepreneur. It is this spirit, which has transformed him over the centuries progressively from a nomad into a cattle-rearer, an agriculturist, a trader, and an industrialist and many more things. In the realm of business an industry entrepreneurs are persons who intimate, organise, manage and control the affairs of a business unit, which combines the factors of production to supply goods and services [1].

The entrepreneurs are the nucleus of economic activity and propellers of economic development. Entrepreneurs should be competent to perceive new opportunities, willing to take risks in exploring them and undergo, if necessary, rigorous hardships. As a dynamic force in the economic life of a society as the organize its productive resources. The development of right entrepreneurship is one of the most acute problems of the developing countries. In fact a lack of the right kind of entrepreneurs in sufficient numbers invariably hinders economic development [2].

CURRENT SCENARIO OF ENTREPRENEURSHIP-IN INDIA

Entrepreneurship is vital for job creation, economic growth and problem-solving. According to the Global Entrepreneurship Development Institute (GEDI), there is a strong positive association between entrepreneurship, economic growth and innovation. The GEDI has recently released it's 2018 Global Entrepreneurship Index, a ranking of 137 countries. Countries are ranked on 14 criteria: Opportunity perception (whether the population can identify opportunities to start a business); start-up skills; risk acceptance; networks; cultural support; opportunity start-up (whether entrepreneurs are motivated by opportunity rather than necessity); technology absorption; human capital; competition; product innovation; process innovation; high growth (business intention to grow); internationalisation and risk capital availability.

India's performance as per the GEDI index

According to GEDI, India is ranked 68th out of 137 countries, a "middling" performance. As per the Asia Pacific region, India is again in the middle position, 14th out of 28 countries. The leading regional players are Australia, Hong Kong and Taiwan at first, second and third positions respectively. It is noteworthy that India falls below China (9th) and more established regional economies such as Korea (4th) and Japan (6th) in the region.

PRESENT CHALLENGES

Even though the formation of business networks are steadily rising, there are still many prospective entrepreneurs who do not follow through with their great business ideas. This is widely due to the fact that many challenges exist for them to overcome. First and foremost, many prospective entrepreneurs may fear the debt associated with their start-up. They may not have the resources available to make educated

Impact of digital marketing on the consumer behavior in retail industry

P. GANESH,
Asst. Professor,
AITS,
ganeshaitstpt@gmail.com

E. KUSUMA,
Asst. Professor,
AITS,
kusuma.mba85@gmail.com

Abstract: ***In this world of digitization, digital marketing is a vogue that is sweeping across the whole world. The trend of digital marketing is growing day by day with the concepts of Internet marketing that is turning into an important platform of digital marketing along with the electronic gadgets like the digital billboards, mobile, tablets and smart phones, gaming consoles, and many such gadgets that help in digital marketing. Digital marketing is going to be top on the agenda of many marketers, and they might be looking for innovative ways to market online, reduce cost per lead, increase click-through-rates and conversion rates, and discover what's hot in digital marketing.***
With the extensive technology development which has undertaken by the world, traditional concept of marketing with a digital mode that brings the whole world to the customer's doorstep in one click. The rising penetration nature of the internet and various faster digital communication channels, wider networks and new devices and their connectivity with marketers made consumers more informative and knowledgeable regarding the value they expected to return to the cost they incurred. The utmost purpose of the study is to identify the impact of digital marketing in consumer behavior with special reference to retail industry. Secondary sources of data has used for the study and based on the results of the secondary data analysis, conclusion has derived with the findings. Accordingly, the research study was addressed on how digital marketing has changed the retail industry and how it effects on the consumer behavior. With the analysis, it has recommended strategic response to face the changes made from digital marketing in the retail industry. Also it has identified on how the skills, attitudes and the behavior of the professional marketers should be shaped in strategizing the customer relationship marketing to the retail industry in the digital platform.

Keywords: Digital marketing; Customer relationship marketing; Consumer behavior, Retail Industry.

Introduction:

The research study has conducted based on the secondary data sources such as published journals, books, magazines, e-blogs and syndicated research articles and a conceptual analysis has conducted through number of theories, concepts and the models in marketing. Mind mapping, force field analysis, model of consumer decision making by Schiffmanand Kanuk and relationship marketing hierarchy are some of them.

Digital marketing can be identified as a form of direct marketing that connects the buyers with the sellers electronically through interactive technologies such as, emails, websites, social networks, online forum as well as newsgroups, interactive television, mobile communications etc.

According to the high level of connectivity, digital marketing facilitates many to many communications and it normally use to promote products and services in a timely, relevant, personal and cost-effective manner.

Consumer behavior involves the study of how people--either individually or in groups--acquires, use, experience, discard, and make decisions about goods, services, or even lifestyle practices such as socially responsible and healthy eating. As an evolving phenomenon, one should not be overly dogmatic about this definition. Numerous alternatives, each taking a slightly different angle and emphasizing different aspects.

Impact of digital marketing on the consumer buying behavior decision making process:

Consumer behaviour is a specific code of conduct in which, the consumers are displayed in searching for, purchasing, using, evaluating and disposing of the products and the services which they expect will satisfy their needs. It is the study that observes how individuals make decisions on spending their available resources (time, money, efforts) on consumption related items. It refers to an ultimate focus on what they buy it, why they buy it, when they buy it, where they buy it, how often they buyand how often they use it as shown in Figure 1

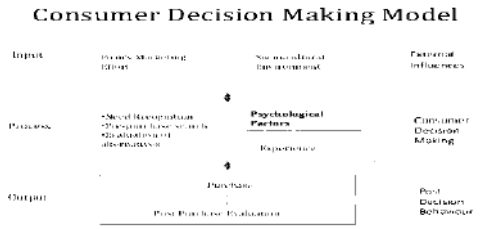

Figure no. 1, Consumer Decision Making

This is a simple model of consumer behavior, in which the input for the customer is the firm's marketing effort (the product, price, promotion and place) and the social environment. The social environment consists of the family, reference groups, culture, social class, etc. which influences the decision-making process. Both these factors together constitute the input in the mind of the consumer.
Today's consumers became more knowledgeable and powerful as they are capable of evaluating information and purchase the best option. So

Importance of Artificial Intelligence in Human Resource Management

[1] P. Akthar
Asst. Professor
Department of MBA
AITS, Tirupathi
Email: akthar.sulthanahr@gmail.com

[2] Dr. K. Haritha
Asst. Professor
Department of MBA
AITS, Tirupathi
Email: dr.k.harithanaidu@gmail.com

Abstract:

The purpose of HRM is managing the human resources effectively. HR plays crucial responsibility in employing the eligible candidates at right time and at right place within the Organization. It focuses on policies and on systems which are designed to enhance employee job performance. In the age of digitalization, Artificial Intelligence is redesigning the functions of HR. Artificial intelligence is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans and other animals. Nothing can beat the human brain in the case of problem-solving. The purpose of this article is to review the existence literature on importance of Artificial intelligence in Human Resource Management.

Keywords: Human resources, artificial intelligence, Artificial Stupidity

I. INTRODUCTION

From the early 20th century, Artificial Intelligence has been of interest to scientists, when the first generation of computers was designed. Professor John McCarthy, who was the professor in Mathematics at the Dartmouth College in 1955 coined the term Artificial Intelligence. In the beginning of 21st century, we spoke about how Artificial Intelligence will soon replace low level workers and occupy that space, leaving a susceptible job market. As that guess was true, AI even occupies legal jobs, managerial jobs, and reporting jobs etc.,

As Companies all over the world are taking up new technology to improve the work atmosphere , automation in HR is also more common. When the AI was first started, the HR Departments feared

To big loss in jobs. But the organizations have opened up to it.Technologies reduced the labor of HR Professional and give them time to focus on other goals.According to Artificial Intelligence Market Forecasts by Tractia, the revenue generation by using AI will reach 36.8 Billion Dollars by 2025.

Fifty six percent of the TA leaders approved that their processes will be speed up by AI automation tools, Babu Mittal, Head HR at Shopclues supported AI in HR as the 60% of the time that was spent on managing and organizing can now be invested in strategizing . Currently AI has already taken its place in most of the industries, majorly automobiles, boilers, steering, airplanes and others. As far as the mobile industry is concerned we understand that the AI in the form of Siri, Google assistant have become an indispensable component in our lives.

They have helped us to get easy access to our application without actually giving manual commands over the phone.

II. ARTIFICIAL INTELLIGENCE

AI is the imitation of human intelligence by machines, especially computer systems. In simplest terms, AI is the capability of a computer program or a machine to think, learn and act like humans.

Now a day's most of the jobs are related with paper work, accounting etc., so it is useful to get support from digital assistants to spend more time in thinking ideas. While Some experts are expecting that it is a threat for workers others take it as an advancement in the digitalization.

These AI or other Changes in Technology may affect the Employment. But mass unemployment not expected. But

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Inclusive Growth Through Entrepreneurship Development In India

Dr.S. Kishore *

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Abstract

The present paper is a theoretical exposition on the need and importance of entrepreneurship development for inclusive growth in emerging economies in general and in India in particular. It provides a brief review on the entrepreneurship development and its role and contribution for the inclusive economic development. The entrepreneurship is a driving force and boosts inclusive growth in all segments through transformation of the economy. It has been assumed immense importance in the economic development of a developing nation like India as well as that of the developed nations. India's economic progress, as a developing economy, is bound up with entrepreneurs who are enthusiastic and committed to maximize production as well as profitability, employment generation and overall economic stimulation for augmenting income levels of the people who are involved directly or indirectly. The role the people and their abilities have to play in this stupendous endeavour is supremely important, and any negligence or under estimation of the human factor would only enfeeble the economic prosperity of the country.

Tapping the many hither to unused and locally available resource is what is immediately required. Consequently, the industrial policies of the Indian Government and the successive Five-year plans have reiterated again and again the Government's intention to stimulate and promote the human factor in industrial development. Thus the entrepreneur has become very important as the nerve centre of all economic activity. As per the World Bank Report (2011), the societies that discriminate on the basis of gender have greater poverty, slower economic growth, weaker governance and a lower standard of living. As there exist a strategic linkage between financial inclusion of women and inclusive growth, it may be agreed that women are the drivers of economic growth and prosperity of any country, including India. Therefore, it is dire need to foster the entrepreneurship for inclusive growth and development of Indian economy.

Key Words: Inclusive growth, Entrepreneurship, Women Entrepreneurs, Start-ups.

Dr.S.Kishore, Assistant Professor, Department of MBA, Annamacharya Institute of Technology and Sciences (Autonomous), Tirupati-517520, Chittoor Dist., A.P., India. Mobile : +91 9908588567, e-mail : kishore.mbaaitstpt@gmail.com.

EXCESS THERMODYNAMIC FUNCTIONS OF 1,2,4-TRICHLOROBENZENE WITH ISOMERIC CRESOLS

N. Hari krishna[1], P. Venkateswarlu[2], K. Siva Kumar[3]

[1]Research Scholar, Department of Chemistry, J.N.T. University Anantapur, Ananthapuramu, A.P, India.

[2]Professor, Department of Chemistry, S.V University, Tirupati, A.P, India.

[3]Professor, Department of Chemistry, S.V. Arts College, TTD, Tirupati, A.P, India.

*Corresponding Author

Dr. K. Siva Kumar

Department of Chemistry

S.V. Arts College, TTD, Tirupati

E-mail: sivakumarkasi64@gmail.com

Mobile: +91-9290080843

Abstract

Densities(ρ) and speed of sound(u) have been experimentally determined for binary mixtures of 1,2,4-trichlorobenzene with isomeric cresols as a function of temperature at 303.15 K, 308.15 K and 313.15 K and at entire composition range. The density measurements of all the liquid mixtures were used to compute excess volume (V^E), isentropic compressibility (K_s) and excess isentropic compressibility (K_s^E). The calculated excess parameters have been fitted to the Redlich-Kister equation and the results were analyzed in terms of molecular interactions and structural effects between component molecules. The speed of sound data of the investigated liquid mixtures was analyzed in terms of theoretical model, namely collision factor theory (CFT). Moreover, Excess partial molar volumes and compressibilities were also computed for the same mixtures.

Keywords: Binary mixture, Excess properties, 1,2,4-trichlorobenzene, cresols, speed of sound.

1. INTRODUCTION

Thermo-physical properties of mixtures which contain blend of organic solvents with cresols are important for technological and theoretical points of view[1,2]. Further, fundamental thermodynamic properties of liquid mixtures are essential sources of information which are necessary for better understanding of the non-ideal behavior of binary systems due to physico and chemical effects which are responsible for molecular interaction, inter molecular forces etc., between unlike molecules.

In terms of practical applications, these thermodynamic properties are essential for elaborate estimation of varying thermodynamic models that are required in optimized processes of the chemical, petrochemical, pharmaceutical and other industries. Further, extensive information about structural phenomena of liquid mixtures is of essential importance in the development of theories of liquid state. It is well known that the study of excess thermodynamic properties like excess volume, excess isentropic compressibility's are much important to understand the molecular interactions in liquid components in order to develop and to test the applicability of varies solution theories and mathematical models[3]. The liquids that are chosen in the present investigation have many potential uses towards chemical industries. Cresols are one of the most important groups of aromatic organic compounds, used as disinfectants, organic intermediates, textile scouring agents, herbicides, surfactants and in the production of few phenolic resins, tri crysyl phosphate, salicylaldehyde, coumarin etc. Moreover, cresols are also utilized in the preparation of most widely applied substances namely Lysol and Creosote and as an end product in azo dyes. Thermodynamic properties of liquid mixtures containing cresols with different organic solvents were reported[4,5,6]. The present investigation involving mixtures of 1,2,4-trichlorobenzene

Radiation and Viscous Dissipation Effects on MHD Convective Flow Past an Accelerated Vertical Porous Plate Embedded in a Porous Medium with Chemical Reaction

Dr. E.Manjoolatha [1]
[1] Dept. of Mathematics, Annamacharya Institute of Technology and Sciences, Tirupati
[1] elavarthimanjoo@gmail.com

Abstract

This paper analyzes the radiation effects on an unsteady mixed convection mass transfer flow of a viscous incompressible electrically conducting fluid past an accelerated infinite vertical porous flat plate embedded in a porous medium, when the plate accelerates in its own plane, by taking viscous dissipation into account. The governing equations are transformed into a set of ordinary equations by suitable similarity transformations and the resultant equations are solved numerically using Runge-Kutta fourth order method along with shooting technique. The effects of the flow parameters on the velocity, temperature and concentration distribution of the flow field have been computed and represented through figures and tables. This type of problem finds applications in geophysical and astrophysical studies.

Keywords: *MHD; Radiation; Viscous Dissipation; Vertical Porous Plate; Chemical Reaction.*

1. Introduction

The study of convective flow with mass transfer along a vertical porous plate is receiving considerable attention of many researchers because of its varied applications in the field of cosmical and geophysical sciences. Permeable porous plate are used in the filtration processes and also for a heated body to keep its temperature constant and to make the heat insulation of the surface more effective .The study of stellar structure on the solar surface is connected with mass transfer phenomena. Its origin is attributed to difference in temperature caused by the non-homogeneous production of heat, which in many cases can rest not only in the formation of convective currents but also in violent explosions. Mass transfer certainly occurs within the mantle and cores of planets of the size of or larger than the earth. It is therefore interesting to investigate this phenomenon and to study in particular, the case of mass transfer on the free convection flow.

The problem of free convection flow with mass transfer has received the attention of many researchers. Chandran *et.al*[1] considered the unsteady free convection flow with heat flux and accelerated motion .Hasimoto[2] discussed the boundary layer growth on a flat plate with suction/injection. Mishra and Dash[3] studied the free convection of non-Newtonian fluids between parallel walls. Panda *et.al*[4] analysed the unsteady free convective flow and mass transfer of a rotating elastico-viscous liquid through porous media past a vertical porous plate. Pop and Soundalgekar[5] investigated the free convection flow past an accelerated infinite plate . Raptis *et.al*[6] studied the unsteady free convective flow through a porous medium adjacent to a semi-infinite vertical plate using finite difference scheme. Sattar[7] discussed the free convection and mass transfer

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Dr. A. Neeraja [*], P Rathna Jyothi [**], N. Sujana Kumari [***], Y. Masthanaiah[****]
* Dept. of Mathematics, Aditya College of Engineering, Surampalem, AP
** Dept. of Mathematics, Annamacharya Institute of Technology and Sciences, Tirupati
*** Dept. of Mathematics, Annamacharya Institute of Technology and Sciences, Tirupati
**** Dept. of Mathematics, Annamacharya Institute of Technology and Sciences, Tirupati

PARSIS MILIEU in *THE CROW EATERS* by BAPSI SIDHWA

1. Dr. D.Bharathi, Asst.Prof. of English

Annamacharya Institute of Technology and Sciences. Tirupati

2. Dr. P. Krishnaveni, Asst.Prof. of English,

Annamacharya Institute of Technology and Sciences. Tirupati

ABSTRACT

India is a country of tremendous religious and cultural diversity. Almost every religion of the world is represented in Indian sub-continent and the important religions in the country are Hinduism, Islam, Sikhism, and Christianity. Other than that, there are many minor religious groups like Buddhists, Jains, Jews, and others. Prominent among the other groups are Parsis. Bapsi Sidhwa has specially designed the novel *The Crow Eaters* to capture the quintessential Parsi ethos, culture, and diaspora. She was the first feminine writer from the Parsi Community in Lahore who reveals the secrets of Parsi religion, Parsi culture and Parsi taboos to the world. Like other religion writers, Sidhwa is very conscious to introduce Parsi characters and Parsi culture wherever it is possible in her works. The Parsi milieu in the novel does not mar the comic effect of the novel. On the contrary, it makes the novel both entertaining and educative, as the Parsi elements add to its texture.

Index terms: Chameleons. Immigration of Parsis; Parsis development, Zoroastrianism, Parsi culture, Importance of Fire, Tower of silence.

INTRODUCTION:

Literature is an expression of multifarious facets of human life. Literature also can efficiently and effectively express the emotions of individuals and groups.
The Indian sub-continent is a conglomeration of many religions. One among the religions is Zoroastrianism. The followers of Zoroastrianism are called Parsis.

The original homeland of Parsis is Persia. Persia was renamed as 'Iran' by Emperor Razashah Pehelvi during 1935. 'Parsi'means a native of "Fars" an ancient province now in Southern Iran, and Parsis are the followers of Zoroastrianism. Zoroastrianism is one of the ancient religions that exist till today. *Zenda Avesta* is the religious text of Zoroastrians. Much of its portion was lost and only liturgies survived at present. *Amesha Spentas*, *Yazatas* are the other supplementary texts. Parsis believe that there is only one eternal being i.e., Ahura Mazda the creator and also the judge on the day of Last Judgment. Zoroastrianism focuses on Good deeds, Good works and Good thoughts. Because they believe that man is created good, but can fall a prey to evil. Zoroastrians give importance to Fire and Water and consider them as holy. Hence they recite prayers in the presence of Fire. They believe in the equality of all religions. Rohinton Mistry reflects the attitude of Parsis on religion that one should "remain true to one's own because religions were not like garment styles that could be

SYNTHESIS, CHARACTERIZATION AND ANTIBACTERIAL STUDIES OF SCHIFF BASE, 2-(4-HYDROXY-3-METHOXY BENZYLIDENE AMINO) NICOTINIC ACID AND ITS CU(II) AND ZN(II) METAL COMPLEXES

K. M. Prasuna[1], D. Lakshmi Kanthamma[2], S. Vanitha[1], K. Seshaiah[2]*
[1]Department of Chemistry, J. N. T University, Ananthapuramu, A.P., India -515002.
[2]Inorganic and Analytical Division, Department of Chemistry, S.V. University, Tirupati, India -517502.

ABSTRACT:

A novel schiff base, 2-(4-hydroxy-3-methoxy benzylidene amino) nicotinic acid was synthesized by condensation of 4-hydroxy-3-methoxy benzylidene and 2-amino pyridine-3-carboxylic acid. Further, the metal complexes of the schiff base have been synthesised by using Cu(II) and Zn(II) metal ions. The functional groups such as -OCH_3, -OH, -C=N present on the Schiff base ligand provided donor atoms for ligation with metal ions. The prepared compounds were characterised by IR, ^{1}H NMR, ^{13}C NMR spectroscopy for the structural confirmation. Antibacterial activity of the prepared Schiff base and its metal complexes against gram +ve (Bacillus Substilis, Staphyllococcus aureus) and gram –ve (E. coli, P. aeruginosa) bacterial species was studied.

Index terms - Schiff Base, 4-Hydroxy-3-methoxy benzylidene (Vanillin), 2-Amino pyridine-3-Carboxylic Acid, Metal Complexes.

1. INTRODUCTION

Schiff bases and their metal complexes are azomethine group compounds which are synthesized from the condensation of an amino with carbonyl compounds [1]. From the decades, a wide range of Schiff bases and their metal complexes were synthesized and extensively studied their interesting biological activities [2-5]. They exhibit a vast range of biological activities such as antibacterial, antifungal, antimalarial, antiproliferative, anti-inflammatory, antiviral, and antipyretic properties [6-11]. Schiff bases and their metal complexes were found to be highly active against both gram +ve and gram –ve bacterial species. Further, the metal complexes exhibit more activity compared with the corresponding Schiff bases.

Vanilin is an organic compound having aldehyde, hydroxyl and ether as the functional groups. The compound vanillin is identical to the major component found in the vanillin bean (12-13). Synthetic Vanilin Produces good flavour and aroma to the food, beverages and pharmaceuticals (14-15).

Therefore, the present research paper accounts the synthesis of Schiff base ligand, i.e., (E)-2-(4-hydroxy-3-benzaldehyde) nicotinic acid by condensation of 4-hydroxy-3-methoxy benzylidene(Vanillin) and 2-amino pyridine-3-carboxylic acid and its Cu(II) and Zn(II) complexes. The prepared Schiff base and its metal complexes were characterized by FT-IR, ^{1}H NMR, ^{13}C NMR spectroscopic techniques. The prepared Schiff bases and its complexes were screened for antibacterial activity against gram +ve (Bacillus Substilis, Staphyllococcus aureus) and gram –ve (E. coli, P. aeruginosa) bacterial species. Further, the metal complexes showed more activity compared with the corresponding Schiff base.

II. MATERIALS AND METHODS

2.1 Synthesis of Schiff base ligand

The synthesis of Schiff base ligand was carried out by modification of the method reported in literature (16). In this procedure, 4-hydroxy-3-methoxy benzylidene and 2-amino pyridine-3-carboxylic acid were dispersed in methanolic solution in equimolar ratio. The resultant mixture was then refluxed on water bath at 70 ^{0}C for about 12 hrs. The obtained product was filtered, thoroughly washed with ethanol and ether to get solid compound. The solid was recrystallized with ethanol and dried under the reduced pressure over anhydrous $CaCl_2$.

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Research Paper

Effects of Thermal Diffusion and Radiation on Magnetohydrodynamic (MHD) Chemically Reacting Fluid Flow Past a Vertical Plate in a Slip Flow Regime

C. Veeresh[1], M.C. Raju[2], S.V.K. Varma[1], A.G. Vijaya Kumar[3]

[1] Department of Mathematics, Sri Venkateswara University
Tirupati-517 502, A.P, India. Email: veeresh371@gmail.com, svijayakumarvarma@yahoo.co.in
[2] Department of Humanities and Sciences (Mathematics), Annamacharya Institute of Technology and Sciences (Autonomous),
Rajampet-516 126, A.P, India, Email: mcrmaths@yahoo.co.in
[3] Department of Mathematics, Vellore Institute of Technology
Vellore-632 014, Tamil Nadu, INDIA, Email: vijayakumarag@vit.ac.in

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Corresponding author: M.C. Raju, mcrmaths@yahoo.co.in

Abstract. An analysis has been conceded to study the effects of Soret and thermal radiation effects on the magnetohydrodynamic convective flow of a viscous, incompressible, electrically conducting fluid with heat and mass transfer over a plate with time-dependent suction velocity in a slip flow regime in the presence of first-order chemical reaction. The slip conditions at the boundaries for the governing flow are taken for the velocity and temperature distributions and a uniform magnetic field of strength is applied normal to the flow direction. The free stream velocity is assumed to be subject to follow an exponentially small perturbation law. Analytical solutions are obtained for velocity, temperature and concentration fields for the governing partial differential equations depending on slip flow boundary circumstances by using the traditional perturbation method.

Keywords: Thermal diffusion, Porous medium, Heat and mass transfer, Chemical reaction, Slip flow regime.

1. Introduction

In nature, so many flows exist which are caused not only by the temperature differences but also by concentration differences. These mass transfer differences do affect the rate of heat transfer. The phenomenon of heat and mass transfer often occurs in chemically processing industries such as polymer production, food processing etc. The chemical reaction effects depend whether the reaction is homogeneous or heterogeneous. In the majority of cases, a chemical reaction depends on the concentration of the species itself. The MHD viscous flow containing heat and mass transfer has attracted many researchers for its applications in various areas like power and cooling systems, cooling of nuclear reactors, Magnetohydrodynamic power generation systems. Seddeek [1] studied thermal radiation and buoyancy effects on MHD free convective heat generating flow over an accelerating permeable surface with temperature dependent viscosity. The hydromagnetic mixed convective flow of a viscous incompressible electrically conducting fluid and mass transfer over a vertical porous plate with constant heat flux embedded in a porous medium was investigated by Makinde [2]. Mbeledogu [3] analyzed MHD free convection flow of a Boussinesq fluid past a moving vertical plate under the simultaneous action of buoyancy and transverse magnetic field. Chamkha [4] analyzed MHD heat and mass transfer flow past a semi-infinite vertical permeable plate with heat absorption. Chambre and Young [5] studied the effects of diffusion on chemically reactive species in a laminar boundary layer flow. Das et al. [6] investigated the effects of mass transfer on flow past an impulsively started infinite vertical plate in the presence of first-order chemical reaction. Muthucumaraswamy and Ganesan [7] performed a theoretical investigation on flow past an impulsively started infinite vertical

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Dielectric properties of polyvinyl alcohol (PVA) nanocomposites filled with green synthesized zinc sulphide (ZnS) nanoparticles

P. Lokanatha Reddy[1] · Kalim Deshmukh[2] · K. Chidambaram[1] · Mohammad M. Nazeer Ali[3] · Kishor Kumar Sadasivuni[4] · Y. Ravi Kumar[5] · R. Lakshmipathy[6] · S. K. Khadheer Pasha[5]

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Abstract
In this study, zinc sulphide nanoparticles (ZnS NPs) have been synthesized by green synthesis approach. These ZnS NPs were used as nanofiller to fabricate polyvinyl alcohol (PVA) based nanocomposite films via solution casting method. The PVA/ZnS nanocomposite films have been characterized by X-ray diffraction, Fourier transform infrared spectroscopy, field emission scanning electron microscopy, atomic force microscopy and thermogravimetric analysis. The results from these characterization techniques evidenced the improvement in structural, morphological and thermal properties of PVA/ZnS nanocomposite films and also confirmed the incorporation of ZnS NPs in the PVA matrix. In addition to that, the dielectric properties of the PVA/ZnS nanocomposite films were investigated for different frequencies (50 Hz–1 MHz) and temperatures (40–140 °C) using an impedance analyzer. The values of dielectric constant and dielectric loss of PVA/ZnS nanocomposite films were observed to be 328.93 (50 Hz, 140 °C) and 6.02 (50 Hz, 140 °C) with 3 wt% ZnS NPs content. This enhancement in dielectric properties demonstrated the good interaction between ZnS NPs and PVA matrix. The aforementioned results evidenced that the ZnS NPs were homogeneously distributed within the PVA matrix.

1 Introduction

Generally, the properties of the polymers are modified by adding nanofillers into the polymer matrix [1–6]. The properties of polymer nanocomposites (PNCs) depend mostly on the particle size, shape, concentration and the method in which the nanofillers are dispersed [7–9]. Further, much attention has been given to the PNCs due to their unique properties which are able to be attained by means of these materials. Polymers can be selected as excellent host materials for the nanoparticles (NPs), which show the outstanding properties [10]. Due to high surface to- volume ratio, the NPs impressively enhance the properties of PNCs as compared with that of pure polymers [11–13]. Among various synthetic polymers, polyvinyl alcohol (PVA) has been extensively used as a host polymer for different kinds of nanofillers [10] to fabricate PNCs due to its easy processability, biocompatibility, excellent film forming character, hydrophilicity, good chemical resistance, low cost, excellent solubility in water, non-toxicity, biodegradability, transmittance, noncorrosive nature and availability with diverse molecular weights [14–16]. PVA possesses excellent charge storing capacity, good thermal, chemical, and mechanical stability, better environmental stability and high dielectric strength. PVA has been used widely in various applications such as artificial biomedical devices, electronic devices, drug delivery systems, membrane applications, electrochromic devices, paper coating, packaging and textile applications [17–20]. Furthermore, PVA has a carbon backbone consisting of hydroxyl groups that can be a source for hydrogen bonding interaction between the nanofiller facilitating the formation of PVA based nanocomposites. Due to these

✉ S. K. Khadheer Pasha
khadheerbasha@gmail.com

1 Department of Physics, School of Advanced Sciences, VIT University, Vellore, TN 632014, India

2 Department of Physics, B.S. Abdur Rahman Crescent Institute of Science and Technology, Chennai, TN 600048, India

3 Department of Physics, The New College (Autonomous), Chennai, TN 600014, India

4 Center for Advanced Materials, Qatar University, 2713 Doha, Qatar

5 Department of Physics, VIT–AP University, Amaravati, Guntur, AP 522501, India

6 Department of Chemistry, KCG College of Technology, Karapakkam, Chennai, TN 600097, India

Synthesis and Spectral Characterization of Cu (II) Complexes with 2-Hydroxy-2-Methyl Propiophenone Picolylamine and Diimine co-Ligands

S. Vanitha[a], K.M.Prasuna[a], N.Saritha[a], A.Varada Reddy[b]

[a]Department of Chemistry, J.N.T. University Anantapur, Ananthapuramu, A.P.,India-515002.

[b]Department of Chemistry, Sri Venkateswara University, Tirupati, A.P., India-517502.

ABSTRACT:

Mixed ligand Cu(II) complexes, namely $Cu(L)SO_4.2H_2O$(1) and [Cu(L-ONN-L^1)] where L = 2-Hydroxy-2-Methyl Propiophenone Picolyl-amine, L^1 = Bipyridine(bipy)(2), 1,10-phenan-throline(phen) (3) and 6-Methyl bipyridine (6-Me-bipy) (4) have been synthesized and characterized by various spectroscopic techniques like IR, EPR, electronic absorption, fluorescence spectroscopy and cyclic voltammetry. Aforesaid spectral data, it is evident that two nitrogen atoms of the heterocyclic bases like bipy, phen, 6-Me bipy coordinates with metal ions and acts as neutral bidendate ligand. Spectral data concluded that the complexes(1-4) have distorted trigonal bipyramidal structures, around Cu(II) centre with co-ordination of $Cu(N_2O_3)$ and $Cu(N_4O)$ respectively. But the complexes (1-4) have redox reaction Cu^{II} /Cu^{I}, which results in the decrease of current intensity and enhanced reversibility. The synthesized complexes were investigated for antimicrobial and antioxidant activities. The results show a significant growth inhibitory activity (anti-microbial: antibacterial and antifungal) against bacterial strain streptococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiell pneumonia. The activity against streptococcus aureus is considered to be an important observation as the commercially available streptomycin is found to be active against this bacterial strain, and the antioxidant activities also showed good results when compared to the standard Ascorbic acid. Complex 4 show good antimicrobial activity when compared with other complexes.

Keywords:

Copper(II) complexes, bipyridine, 1, 10-Phenanthroline, 6-Me bipyridine, IR, UV-Vis, EPR, CV and Biological activity (Antimicrobial and antioxidant activities).

1. INTRODUCTION:

An extensive studies were made on transition metal complexes due to their wide spread applications in biological processes [1-3]. Among transition metals, copper has its own distinctive identification due its coordinating ability with various ligands to form variety of geometrical structures such as square planar, square pyramidal, distorted square pyramidal, and octahedral. The copper complexes with N-donor ligands have proven to be active catalysts for the hydrolysis of phosphate ester and carbonyl compounds [4], synthesis of many complexes by using 1,10-phenanthroline and 2,2-bipyridine can also be opted with various transition metals to form complexes. Ideal placement of both the nitrogen atoms in each ligand leads to cooperative binding with metal cations. Further, the metal complexes of the above ligands can also utilized for catalytic reactions [5,6].

Due to the presence of antibacterial, antifungal and anti oxidant properties, the metal complexes are having great importance in modern medicine[7&8]. High levels of resistance was observed with the offensive use of antimicrobials that resulted in the strains that resists almost all the drugs [9]. The copper (II) complexes have been studied against a diversity of bacterial, fungal as well as antioxidant

Nonlinear Radiative Unsteady Flow of a Non-Newtonian Fluid Past a Stretching Surface

P. Krishna Jyothi, G. Sarojamma, K. Sreelakshmi, and K. Vajravelu

Abstract Analysis of nonlinear radiative heat transfer on the MHD Maxwell fluid flow in the boundary layers adjacent to a sheet with continuous stretching is discussed. Numerical solution of the PDEs governing the flow is obtained by the successive application of suitable similarity variables and BVP4c method. The flow variables, surface frictional coefficient, and local gradients of temperature and concentration are discussed through the graphs and tables. Results of the present analysis are compared with the previously published work and are found to be in close agreement.

1 Introduction

We deal with several nonclassical fluids in industries and in our daily routine. For example, polymers, paints, jellies, medicines, physiological fluids, etc. exhibit rheological properties. Maxwell fluid is a special kind of fluid processing the properties of elasticity and viscosity while undergoing deformation. The upper convective Maxwell model is said to be the generalization of Maxwell material with large deformation using the upper convective time derivative. Roy [1] studied the Maxwell fluid flow pattern past an infinite plate when the plate is moving parallel to itself with an arbitrary time-dependent velocity. Assuming the pressure to be uniform and velocity in an exponential form, exact solutions are obtained. Kumari and Nath [2] studied the heat and flow characteristics of a Maxwell fluid of a vertical sheet with exponential stretching. Nonlinear radiative heat flux is significant when the temperature differences in the fluid layers are not small and the energy

P. Krishna Jyothi · G. Sarojamma (✉) · K. Sreelakshmi
Department of Applied Mathematics, Sri Padmavati Mahila Visvavidyalayam, Tirupati, Andhra Pradesh, India
e-mail: jyothikrishna@spmvv.ac.in; sarojamma@spmvv.ac.in; katasreelakshmi@spmvv.ac.in

K. Vajravelu
Department of Applied Mathematics, University of Central Florida, Orlando, FL, USA
e-mail: kuppalapalle.vajravelu@ucf.edu

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