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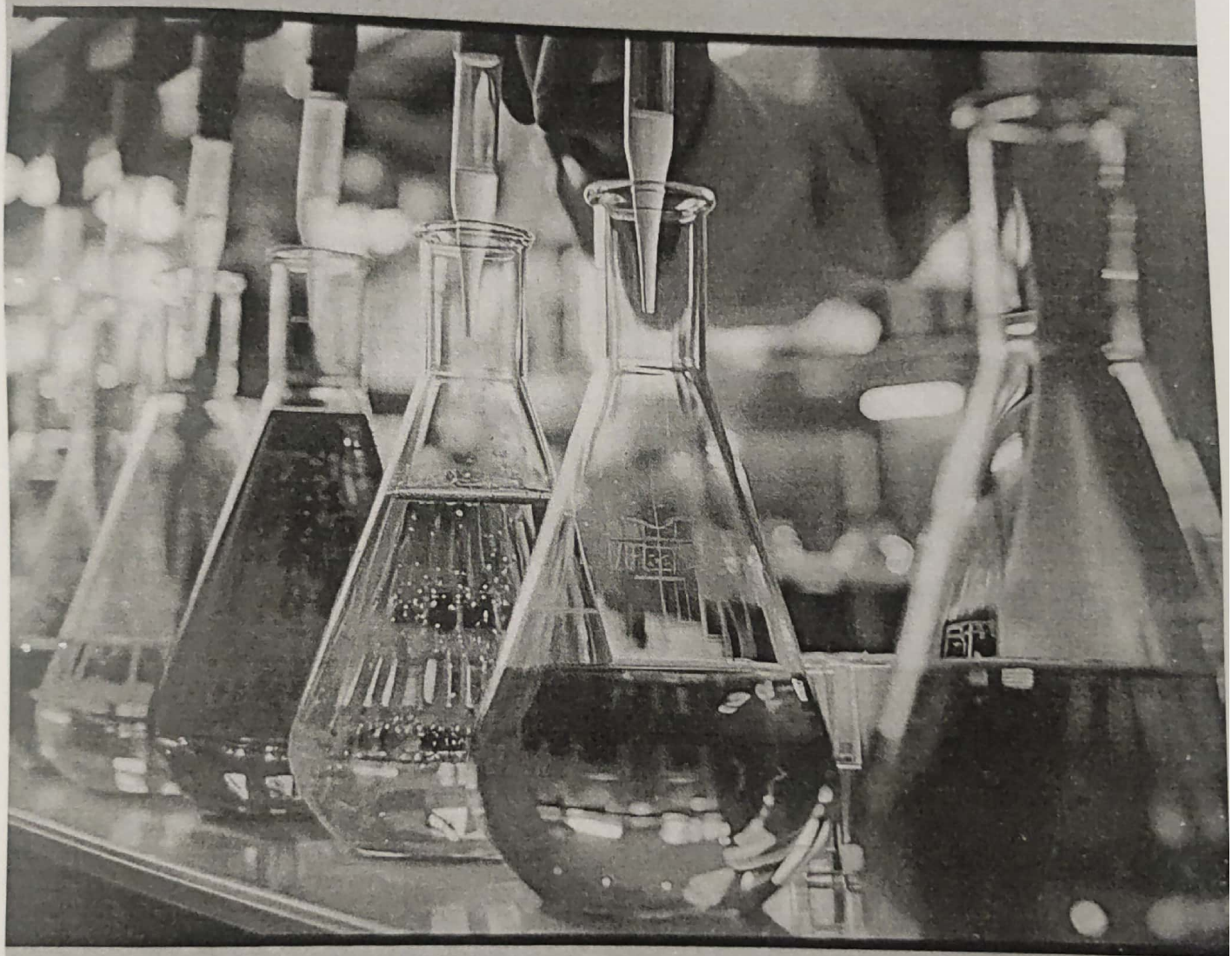

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Potential Biomedical Effects of *Durio zibethinus* Extract Mediated Gold Nanoparticles as Antimicrobial, Antioxidant and Anticoagulant Activity

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ABSTRACT

Nanotechnology is an innovative branch of science that deals with the formation, processing, and applications of nanomaterials. An eco-friendly and efficient method has been used for the green synthesis of stable gold nanoparticles (Au NPs) using *Durio zibethinus* extract as a reducing and capping agent. Durio zibethinus seeds were extracted from fresh, methodically washed Durio fruits obtained from Bangalore Fruit Market, India. In the present work, the green synthesis method was employed to obtain Au NPs with the assistance of Durio zibethinus seeds extract as a reducing agent and capping agent. The biologically produced nanoparticles were characterized by UV-Vis, XRD, SEM, EDAX and TEM analysis. The elemental composition of Au NPs was reported by EDAX spectral analysis. The bio-reduced Au NPs exhibited almost spherical. Increasing applications of NPs, especially metallic nanoparticles plays an important role. Gold is one of the most useful metallic nanoparticles. Au NPs have unique physiochemical characteristics and wide usage in different field applications. Besides, the antibacterial, antioxidant and anticoagulant properties of Au NPs were studied. It is proved that Au NPs synthesized using natural reducing agents (plant leaves, route, seeds, pulp, stem, etc.) are eco-friendly, inexpensive, and have good anti-microbial activities against micro-organisms. This study established a synthesis of Au NPs using *Durio zibethinus* extract as a viable green route approach, with remarkable antimicrobial, antioxidant and anticoagulant activities. Overall, the green synthesized Au NPs will be useful in

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Micro Electro Mechanical Systems

With research perspective

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Micro Electro Mechanical Systems

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Design of Rotary Intersection for selected Intersection in Tumakuru (A case study)

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Abstract: **The present paper deals with the study on design of rotary intersection at Kunigal circle which is situated in Tumakuru ring road which provides connectivity between Ring Road circle NH-206 and Kyatsandra toll gate NH-48. The situation become more intense during the peak hours when increase of traffic volume by 50% than normal traffic at this circle. For safe movement of traffic it is necessary to provide suitable intersection which may be a rotary intersection, or signalized intersection or grade separating intersection. But in this circle rotary intersection is suitable and intersection is designed for 4746 PCU/Hr and this intersection can bear a value up to 5000 PCU/Hr. The present traffic intensity rotary intersection is very suitable for the given junction.**

Keywords: **PCU/Hr- Passenger Car Unit per Hour, NH- National Highway.**

I. INTRODUCTION

Mixed type of traffic prevails in the Indian roadways particularly in the urban areas. In mixed traffic condition the road width is shared by all types of vehicles such as light motorized vehicles, heavy motorized vehicles and non-motorized vehicles. The rapid urbanization with economic growth results in large volume of traffic during the peak hours in most of the Indian cities. Large traffic volume is the prime cause of traffic congestion at urban road network mainly at the intersections. Traffic congestion in urban area is a serious problem and is increasing day by day with the increase in population/ vehicular ownership due to uprising economic status of urbanities. The traffic congestion not only raises the vehicle operating cost, travel time of trip makers but also is the prime reason of poor performance at the intersection.

Traffic congestion on major roads consequent upon existing bottlenecks at intersections is a major problem especially in metropolitan areas. Intersections are the most critical points from capacity, congestion and safety viewpoints for the operation of an urban road network and have implications on the socio economic workings of a city.

A. Rotary Intersection

A rotary intersection or traffic rotary is an enlarged road intersection where all converging vehicles are forced to move round a large central island in one direction before they can weave out of traffic flow into their respective directions radiating from the central island. The main objects of providing a rotary are to eliminate the necessity of stopping even for crossing stream of vehicles and to reduce area of conflict.

The crossing of vehicles is avoided by allowing all vehicles to merge into the streams around the rotary and then to diverge out to the desired radiating road. Thus the crossing conflict is eliminated and converted into weaving manoeuvre or a merging operation from the right and diverging operation to the left.

B. Guidelines for the selection of rotaries

Because of the some limitation, rotaries are not suitable for every location. There are few guidelines that help in deciding the suitability of a rotary:

[1] Rotaries are suitable when the traffic entering from all the four approaches are relatively equal.
[2] A total volume of 3000 veh/hr can be considered as the upper limiting and a volume of 500 Veh/Hr is the lower limit.
[3] A rotary is very beneficial when the proportion of the right-turn traffic is very high; typically if it is more than 30%.
[4] Rotaries are suitable when there are more than 4 approaches or if there is no separate lanes available for right-turn traffic.
[5] Rotaries are ideally suited if the intersection geometry is complex.

II. METHODOLOGY

A. Study of existing rotary intersection (Kunigal-Tumkur and Bangalore-Shivamoga ring road intersection).
B. Traffic volume survey.
C. Collection of data.
D. Design of rotary intersection.

A. Study of existing rotary intersection

Here we selected the Kunigal-Tumkur and Bangalore-Shivamoga ring road intersection as rotary intersection area. The selected area is a four legged junction i.e. where four roads are joining and the roads are Tumkur, Kunigal, Bangalore and Shimoga. We studied the details of these roads at site and tabulated. The data of existing rotary intersection area is as follows:

Road Safety and Black Spot Analysis for Selected Stretch in Tumakuru City (A Case Study)

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Abstract: **This paper deals with study on Road Safety and Black Spot analysis (Accident Zones) of selected stretch in Tumkur city. The previous 15 years Accident data were collected from Police stations in Tumkur city. By analysing the accident 5 data black spots were selected which are having more number of accidents. The black spots are Kodi circle, in front of Maruthi Suzuki showroom and Siragate Circle. From the analysis of Traffic volume survey (PCU and ADT) on the selected stretch we have observed that present serving traffic volume is more than the designed capacity of road. Based on our study, the remedial measures are suggested for selected stretch like change in road geometrics as per IRC SP 73, introducing sign boards, speed breakers, reflectors, street lights etc,.**

Keywords: **Accident Black spots, Passenger Car Unit, Average Daily Traffic, Indian Road Congress.**

I. INTRODUCTION

The spectacular increase in number of motor vehicles on the road has not kept pace with corresponding increase in total length of road network. The supply lane for traffic i.e. the road length not has been able to meet the demand created by the growth of vehicle population. Further the mixed traffic situation prevailing on our road network has further aggravated the traffic situation. Thus the vehicles population increases in year by year.

The vehicles registered in India from 1951 to 2005 were 3,00,000 to 75,00,000. An accident is an incident that happens unexpectedly and unintentionally. It is occasioned either by human failure or human negligence. Viewed from the above perspective and also thorough hindsight every road accident is an avoidable happening. The history of human kind has been one of conquests over the inevitable. It is the process of development and the absence of significant and meaningful results from the issues.

India has one of the highest evident rates in the world. Every year more than 3, 94,982 accidents are reported. Studies on accidents all over the world have shown that the human factor is responsible for a majority of accidents. In India, vehicle users are the causative factor, in 70 % of the road accidents. Pedestrians are responsible for 4.1% of the road accidents and poor conditions of the road accounts for about 0.4% of the accidents. It is evident, that nearly 80% of the accidents occur due to bad driving habits and human error.

II. OBJECTIVE

A. The objective of the present study is:

To develop the safety co-efficient of black spots considering the following parameters:

a. Sight distance
b. Gradients
c. Traffic volume
d. Geometric measurements of Black spots
e. Right of way
f. Capacity of cross & side walks

III. METHEDOLOGY

The methodology include following steps:

A. Selection of study area
B. Data Collection- Road Inventory, Accident Data, Traffic Volume
C. Identification of Black Spots
D. Analysis of Data
E. Remedial measures

A. Selection of study area

A road stretch from Kodi Circle to Shridevi Institute of Engineering & Technology has selected for this study. The Satellite image of selected road stretch is as shown below:

Evaluation of Marshall Properties of Bituminous Concrete Mix by blending Plastic Waste Flakes with Bitumen

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Abstract: **This paper presents the results of an experimental investigation on how effectively the plastic waste could be utilized in bituminous concrete course to improve the properties of bituminous mixture. It has been shows that the addition of plastic waste results in the improved Marshall Stabilities and flow value. The OBC for plain bitumen mixture was 5.33, while for plastic blended mixture for (bitumen+ plastic) 80+20, 60+40 and 40+60 was 6.67, 6.00 and 5.50 respectively. For all mix maximum stability, minimum flow, mean air voids and mean voids filled with bitumen were determined. It was observed that (80% Bitumen+20% Plastic) blended mixture has shown very good increased stability value of 47% when compared to plain bitumen mixture. The overall result shows that, Marshall Stability value has increased with bitumen mixture modified with plastic waste. While the OBC and flow value has decreased.**

Keywords: **Marshall Stabilities, OBC-optimum bitumen content, VFB-Voids Filled with Bitumen, VMA-Voids in Mineral Aggregate.**

I. INTRODUCTION

The design of bituminous mixture by Marshall Method involves the proportioning of the aggregates and bitumen to produce a mix that will have the optimum qualities and properties. The purpose is to develop a design, by trial mean, which will contain optimum amount of bitumen, having adequate voids, satisfactory flow properties and possess a planned combination of stability, durability and flexibility, based on the climatic condition, traffic density and loads it is intended to carry.

HMA is one type of premix widely used in road construction worldwide. It is considered by many highway engineers as premier material. Term ―hot mix‖ comes from aggregate and bitumen dried and heated for proper mixing and workability and mix together with desired temperature.

In India, it is estimated that over 33 lakh kilometers of road exists. The road transport carries close to 90% of passenger traffic and 70% of freight transport. Investigations in India and countries abroad have revealed that properties of bitumen and bituminous mixes can be improved to meet requirements of pavement with the incorporation of certain additives or blend of additives. Use of plastic along with the bitumen in construction of roads not only increases its life but also makes it economically sound and environment friendly.

II. METHODOLOGY

The experimental work is grouped in to 3 main divisions such as characterisation of Materials, blending of bitumen with plastic and marshal method of bitumen to find out marshal stability flow, VMA, VFB, air voids and bulk specific gravity. Mix design of bituminous concrete is done using Marshall Method for both mixes without using plastic and blending with plastic.

Mix design of bituminous concrete is done using Marshall Method for both mixes with and without blending of plastic. Bituminous concrete is close graded mix with high strength, durability and low porosity hence close graded Bituminous Concrete Grading-I as per the MoRT&H Specification is selected for the present study. Totally four mix designs were done, one mix design for virgin aggregates without blended plastic and three mix design for virgin aggregates with blended plastic (i.e. 80/20, 60/40, 40/60), and for each mix OBC was found. The plastics are premixed with bitumen and then heated to 160℃ - 170℃. Plastic has a melting point of 145℃, thus remains intact during high mixing temperature. At the OBC the Six specimens were cast to ensure the Marshall Properties - Density, Stability, Flow and the volumetric properties i.e., Air Voids, Voids in mineral aggregates, Voids filled with bitumen. Performance tests like Marshall Stability, flow were conducted for reference mix and for optimum bitumen content (OBC).

A. Tests on Materials

The materials used are as follows.

[1] Aggregates
[2] Bituminous Binder 60/70
[3] Cement Filler
[4] Plastic Shredding

B. Blending of Bitumen with Plastic.

C. Determination of Marshall Properties.

Laboratory Evaluation of Mechanical Properties of Asphalt Concrete Mixture by Using Polyester Fibre

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Abstract: **This paper presents the influence of the fibre on improving mechanical properties of bituminous mixes. Flexible pavements are often plagued with problems of cracking and rutting due to repeated traffic loads. It has been shown that the addition of polyester fibres results in the improved Marshall Stabilities, tensile strength. The OBC for original mixture was 5.4%, while for fibre reinforced mixtures the OBC were 5.2%, 5.25%, and 5.3% for 6mm fibre length and 5.3%, 5.35%, 5.35% for 12mm fibre length corresponding to fibre contents of 0.1%, 0.3%, and 0.5% respectively. On other hand the optimum fibre content (OFC) was determined for both 6mm and 12mm fibres by taking the average value of fibre content corresponding to maximum stability, minimum flow, mean air voids and mean voids filled with bitumen. Then the bituminous concrete mixes prepared at OBC & OFC are subjected to Indirect Tensile Strength test (ITS). The Indirect tensile strength ratio is observed to be more than the specification limits. It was observed that 12mm fibre with OFC 0.4% has shown increased stability value of 30%, indirect tensile strength ratio of 20% increment and lower flow value compared with reference mix. The addition of fibre as modifier to the base bitumen produced stiff and tough bitumen. The overall results show that, increasing the amount of fibre content and fibre length in bituminous concrete mix will increase the Marshall stability and air voids in total mix while flow and unit weight tend to decrease.**

Keywords**: Polyester Fiber, ITS, OBC-Optimum bitumen content, OFC- optimum fibre content**

I. INTRODUCTION

The development of transportation plays an important role in economic development of the country. A pavement structure can be designed either as a flexible pavement or rigid pavement. The flexible pavement is widely preferred in India, due to its advantages over rigid pavement and economy. Flexible pavements have low or negligible flexural strength and are rather flexible in their structural action under higher volume of traffic and load. Flexible pavements are often plagued with problems of cracking and rutting due to repeated traffic loads, steps must be taken to increase the life of the bituminous pavements. At present, addition of fibre is one of the common methods applied for binder modification. It is widely believed that the addition of fibre will enhance materials strength and fatigue characteristics. This paper presents the results of an experimental investigation as how effectively the fibre could be utilized in the bituminous concrete course to improve the performance.

Fibres are used to improve the performance of asphalt mixtures against permanent deformation and fatigue cracking (1, 2, and 3). Fibres reinforcement plays an important role in asphalt concrete, which is one of the most advanced technology for asphalt concrete performance(4). Fibre reinforced asphalt concrete have demonstrated that the addition of fibres result in a significant influence in the volumetric properties and pavement performances of asphalt concrete (5, 6). The fatigue resistance and the resistance to permanent deformation of asphalt binders could be improved by fibres. The service lives of asphalt pavement were prolonged (7). The volumetric and mechanical properties of fibre reinforced asphalt mixtures were investigated, and design procedure for fibres reinforced asphalt mixture was proposed (8). The indirect tensile strength and dynamic creep test of asphalt mixture could be improved by addition of roofing polyester waste fibres (9).

A. Objective of the Present Study

Determination of Mechanical Properties of Asphalt Concrete Mixture by Using Polyester Fibre at various percentages

II. METHEDOLOGY

A. Materials

There are many fibers available in the market (polyester fiber, acrylic fibers, nylon fibers, glass fiber, polypropylene fiber, carbon fiber, cellulose fiber etc.) Polyester fibre is used as an additive in bituminous concrete grade-2. The polyester fibre of lengths 6mm and 12mm are used at different percentages i.e., 0.1%, 0.3% and 0.5% by weight of total mix.

Aggregates are selected from the local quarry, and are characterised for their physical properties and the results are shown in Table1 and the results conform the MORTH specifications. Aggregate Impact Value (AIV), Crushing, Specific Gravity, water absorption and particle shape. The binder used is from the MRPL (Mangalore Refinery Petroleum Limited) and penetration grade is 60/70. This is also characterized for their properties in the laboratory to determine the Ductility, Grade of the binder, Softening Point, Specific Gravity and Flash & Fire point. The test results are shown in Table 2 and are compliance as per the specification. Table 3 is the results of fibre given by the company (Reliance Industries Limited).

Effect of Utilization of Waste Foundry Sand with replacement of fine aggregates on Marshall Properties of Bituminous Concrete

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Abstract: **This study is about the effect of foundry sand on paving grade bitumen under various percentages. The basis of the project is to find out change in the physical properties of the bitumen by replacing fine aggregates with foundry sand at different percentage (10%, 15%, and 20%) by weight of total mixture. For all mixture maximum stability, minimum flow, mean air voids and mean voids filled with bitumen and optimum bitumen content were determined. The experimental results shows that 15% foundry sand used as a partial replacement of fine aggregate in bituminous concrete mixtures showed better results as compared to conventional bituminous concrete mixes for VG30. Hence the use of foundry sand collected from foundry industries which are in the sand form could be used as in bituminous concrete mixes, wherever foundry sand is locally available and the cost of transportation is lower than ordinary conventional materials. Bituminous concrete mixes prepared with 10%, 15% and 20% foundry sand as fine aggregate shows higher Marshall properties compared to MoRT&H (V revision) hence bituminous concrete mixes prepared with 10%, 15% and 20% foundry sand as fine aggregate can be used for local roads or low volume roads.**

Keywords: **OBC-Optimum Bitumen Content, VG- Viscosity Grade, MORTH- Ministry of Road Transport & Highways**

I. INTRODUCTION

A flexible pavement is built up of several layers consisting of the wearing course, surface course, base course, sub base course, and compacted sub grade. The pavement is built to a depth where stress on any given layer will not cause undue rutting, shoving and other differential movements resulting in an uneven wearing surface. The chief function of a surfacing course is to provide a smooth wearing surface with high resistance to deformation. The thickness of the pavement largely depends on the load to be carried and the strength characteristics of the sub grade. The effect of magnitude of loads, tyre pressure, wheel configuration influences largely for the stress, strain and deflection inducement in the flexible pavement. These factors must be thoroughly analyzed and understood for the pavement thickness design, damage analysis and sensitivity analysis in both ideal masses and layered systems.

Foundry sand is high quality silica sand with uniform physical characteristics. It is a by-product of ferrous and nonferrous metal casting industries, where sand has been used for centuries as a moulding material because of its thermal conductivity. The physical and chemical characteristics of foundry sand will depend in great part on the type of casting process and the industry sector from which it originates. In modern foundry practice, sand is typically recycled and reused through many production cycles.

Industry estimates that approximately 100 million tons of sand is used in production annually of that 6 - 10 million tons are discarded annually and are available to be recycled into other products and in industry. The automotive industries and its parts are the major generators of foundry sand. Foundries purchase high quality size-specific silica sands for use in their moulding and casting operations.

II. METHODOLOGY

This paper consists of three stages: characterizing the material, designing mixtures for the virgin aggregates and three different percentage of foundry sand (10%, 15%, and 20%), performance test like stability and flow was determined and compared the results with conventional bituminous concrete mixes.

In the first step, properties of bitumen, aggregates, filler and foundry sand were established while in second step, optimum bitumen content for each of these mixtures was determined according to Marshall Mix design method, and in the third level, suitability of different percentage of foundry sand was evaluated.

For the preparation of bituminous mixes, aggregate gradation is done according to the MORT&H specifications. Gradation should be within the limits as per MORT&H. The sieves are arranged with one another according to the size. About 2.5 to 3kg of aggregates are then sieved through various sizes. The percent passing through each sieve is observed. When tested, the combined grading of coarse and fine aggregates and for the specific mixture shall be within the limits.

- ***A. Asphalt binder:*** Asphalt used in the study is of penetration grade 60/70, since it is used to a great extent and is good enough to temperature condition. It was purchased from the local distributor. Several tests have been conducted in laboratory to evaluate the physical properties of Asphalt Binder.
- ***B. Filler:*** the filler selected is cement of OPC 43 grade Chattinadu cement and basic test like specific gravity test was done.

Stabilization of Black Cotton Soil using Briquette Fuel Ash

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Abstract: **Black cotton soil which is highly sensitive to seasonal moisture content variations is responsible for substantial distress in the structures that are built over it. Civil engineering infrastructures especially pavements suffer from premature failures. Stabilizing black cotton soil with chemicals, industrial wastes, geo textiles etc. have been found to be effective in improving their engineering properties, strength characteristics and CBR value. Use of briquette fuel ash as stabilizing agent is one of the admixtures that can alter the weak properties of black cotton soil apart from partly solving disposal problem of briquette fuel ash. In this context an attempt is made to study the effect of briquette fuel ash made of blended groundnut shell husk, rice husk and coffee husk on black cotton soil. In the present work, experiments are conducted by mixing briquette fuel ash in various percentages (0-8%) to BC soil. Studies made by the addition of ash to the soil are Strength Characteristics of black cotton in addition to Atterberg's limits. Un-drained tri-axial shear tests were conducted on remolded samples which is a mixture of BC soil having various percentages of fuel ash. Soil samples are prepared at OMC and MDD of corresponding mixtures of soil and various Percentages (0-8%) of fuel ash. In the present work it is observed that the Strength of BC soil increases by the addition of briquette fuel ash up to 6%.**

Key words: **Stabilization, Black Cotton soil, Briquette fuel, Rice Husk ash, Groundnut shell husk, Coffee husk**

I. INTRODUCTION

Black cotton soils are problematic in nature due to its swelling, shrinkage property posing damaging effects on the structure constructed. We need to improve the overall performance of the soils by some means. In recent times, with the increase in the demand for infrastructure, raw materials and fuel, soil stabilization has started to take a new shape. With the availability of better research, materials and equipment, it is emerging as a popular and cost-effective method for soil improvement. If structures are placed without any proper ground improvement, failure of structures may happen and this will cause loss of life, property, money and energy. Hence, a proper ground improvement work is essential before starting construction works over black cotton soil.

II. LITERATURE REVIEW

Sriramarao.A, M. Rama Rao (2008) has worked on ―swell- shrink behaviour of expansive soils under stabilized fly ash cushions‖ has showed that the structures built in expansive clays are likely to be damaged due to the strains caused in them following alternate swelling and shrinkage. The study relates to the behaviour of expansive clays under lime-or cement-stabilized fly ash cushion subjected to several wetting and drying cycles. Rao et al. (2001) studied the impact of cyclic wetting and drying on the swelling behaviour of lime-treated expansive clays. The beneficial effects of lime stabilization were partially lost. Partial loss of inter-particle cementation, inter-particle porosity and reduced degree of saturation were adduced as the reasons for this loss. 1540 Guney et al. (2007) also observed from their tests on lime-stabilized expansive soils that though the swelling decreased initially, the beneficial effects were lost after the first cycle. Studies conducted on black cotton soils with CNS cushion (Subba Rao, 2000) revealed that CNS cushion is effective in reducing swelling and shrinkage only during the first cycle. But, afterwards, the performance of a black cotton soil + CNS system becomes less effective.

III. MATERIALS AND METHODOLOGY

A. Black Cotton Soil

Black cotton soil (BC soil) is a fine grained clayey soil. The black colour in Black cotton soil is due to the presence of titanium oxide in small concentration. The Black cotton soil has a high percentage of clay which is predominantly montmorillonite mineral in and black or blackish grey in colour. The montmorillonite clay mineral is mainly responsible for expansive characteristics of the soil. The physical properties of Black cotton soil vary from place to place. Normally more than 50-60 percent of soil particles in Black cotton soil are clay particles of size less than 0.001 mm. The liquid limit, the volume change is of the order of 200 % to 300% and results in swelling pressure as high as 8 kg/cm2 to 10 kg/cm2. As such Black cotton soil has very low bearing capacity and high swelling and shrinkage characteristics. Due to its peculiar characteristics, it forms a very poor foundation material for road construction. Soaked laboratory CBR values of Black Cotton soils are generally found in the range of 2 to 4%. Due to very low CBR values of Black cotton soil excessive pavement thickness is required for designing for flexible pavement. For the present experiment work Black cotton soil was procured from a village near chithradurga district.

A Study on Use of Waste Plastic as an Alternative Building Material

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Abstract: **Plastic is one of the daily increasing useful as a hazardous material. At the time of need plastic is found to be very useful, but after it is use, its simple thrown away, it creating all kind of hazards. Plastic is not bio degradable, so it will continue to be hazardous for more than centuries. The idea of this project is to find a use for this waste plastic scrap into a use full alternative building material. The mixing of plastic with sand to create a new type of brick was put into thought.**

Keyword: **M-sand, Plastic Bottles, Brick, Test on Bricks and eco-friendly alternative building material**

I. INTRODUCTION

Plastic is a very common material which is widely used by everybody in this world. Plastic has many advantages as it is compact and light in weight and they pollute the atmosphere because of its degradable property. It is really impossible to imagine a world without plastics. Towards the end of the century, one approach to this problem was met with wide effort toward recycle. The plastic scrap used was leftover pieces of bottles, cans, bags etc. so, the plastic was chopped into small pieces and heat was supplied from below. Into to molten plastic past, sand was added in suitable proportion.

The paste contained nothing more than sand, waste plastic. After thorough mixing, the paste was poured in to the rectangular mould with standard brick dimensions. The paste took only 20 minutes to settle and harden. Cooling of the set was done by water cooling and after 5 more minute the brick was extracted from the mould. It had a dark grey texture and increased weight by the initial analysis. Local brick testing methods were conducted such as free fall of the brick and scratch test. In both of those tests, our brick showed increased strength. The brick was subjected to compressive test, water absorption test and efflorescence test.

II. OBJECTIVE

This work was under taken with following objects

- To reduce the waste plastic quantities on the land and water to avoid land and water pollution
- To reduce the dumping area of waste plastic.
- To produce the cost effective material.
- To prevent the people health from harmful diseases.
- To develop a alternative building material that could satisfy requirement of good building material. And also to arrive at a solution for the problem of imbalance between the available and the demand of conventional building material.
- To develop a scientific way of reusing waste plastic along with the sand and binding material that could result in alternative building material.
- We want to minimize plastic waste from environment and society
- Making a plastic brick which are economical for poor people and society.

III. MATERIALS USED

B. Waste plastics:

Plastics are used substance which plays an important role in almost every aspect of our lives. Plastic is the synthetic material made from a wide range of organic polymers. Such as polyethylene, PVC, nylon etc

TABLE 1: PROPERTIES OF PLASTIC WERE TAKEN FROM OFFICIAL WEBSITE CENTRAL INSTITUTE OF PLASTIC ENGINEERING AND TECHNOLOGY, CHENNAI

SL.No	Properties	Results
1.	Density at 23℃	0.958
2.	Elastic modulus	9
3.	Tensile creep strength	8
4.	Bending creep modulus	1
5.	Tensile strength at 23℃	2
6.	Elongation at break (%)	>600
7.	Thermal conductivity	0

Static Analysis of G+7 Apartment Building Using Etabs

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Abstract: ***Structural Analysis is a branch which involves in the determination of behavior of structures in order to predict the responses of different structural components due to effect of loads. Each and every structure will be subjected to either one or the groups of loads, the various kinds of loads normally considered are dead load, live load, earth quake load and wind load. ETABS (Extended Three Dimensional Analysis of Building System) is a software which is incorporated with all the major analysis engines that is static, dynamic, Linear and non-linear, etc. and especially this Software is used to analyze and design the buildings. Our project "Analysis and Design of 8 Storey RC Frame as Residential Apartment" is an attempt to analyze and design a apartment building using ETABS. A G+7storey building is considered for this study. Analysis is carried out by static method and design is done as per IS 456:2000 guidelines. Also an attempt has been made to design the structural elements manually. Drawing and detailing are done using Auto CAD as per SP 34.***

Keyword: **ETABS, Building, Analysis, Design**

I. INTRODUCTION

The term building in Civil Engineering is used to mean a structure having various components like foundation, walls, columns, floors, roofs, doors, windows, ventilators, stairs lifts, various types of surface finishes etc. Structural analysis and design is used to produce a structure capable of resisting all applied loads without failure during its intended life. Prior to the analysis and design of any structure, necessary information regarding supporting soil has to be collected by means of geotechnical investigation. A geotechnical site investigation is the process of collecting information and evaluating the conditions of the site for the purpose of designing and constructing the foundation for a structure. Structural engineers are facing the challenges of striving for most efficient and economical design with accuracy in solution while ensuring that the final design of a building and the building must be serviceable for its intended function over its design life time. Nowadays various software packages are available in market for analyzing and designing practically all types of structures viz. RISA, STAADPRO, ETABS, STRUDL, MIDAS, SAP and RAM etc.

II. LITERATURE REVIEW

Varalakshmi V et.al (2014) [1] analyzed a G+5 storey residential building and designed the various components like beam, slab, column and foundation. The loads namely dead load and live load were calculated as per IS 875(Part I & II)-1987 and HYSD bars i.e. Fe 415 are used as per IS 19861985. They concluded that the safety of the reinforced concrete building depends upon the initial architectural and structural configuration of the total building, the quality of the structural analysis, design and reinforcement detailing of the building frame to achieve stability of elements and their ductile performance.

Chandrashekar et.al (2015) [2] analyzed and designed the multi-storeyed building by using ETABS software. A G+5 storey building under the lateral loading effect of wind and earthquake was considered for this study and analysis is done by using ETABS. They have also considered the chances of occurrence of spread of fire and the importance of use of fire proof material up to highest possible standards of performance as well as reliability. They suggested that the wide chance of ETABS software which is very innovative and easier for high rise buildings so that time incurred for designing is reduced.

Balaji.U and Selvarasan M.E (2016) [3] worked on analysis and design of multi-storeyed building under static and dynamic loading conditions using ETABS. In this work a G+13 storey residential building was studied for the earth quake loads using ETABS. They assumed that material property to be linear, static and dynamic analyses were performed. The non-linear analysis was carried out by considering severe seismic zones and the behavior was assessed by considering type II soil condition. Different results like displacements, base shear were plotted and studied.

Geethu et.al (2016) [4] made a comparative study on analysis and design of multi storied building by STAAD.Pro and ETABS softwares. They provided the details of both residential and commercial building design. The planning was made in accordance with the national building code and drafted using Auto CAD software. They concluded that while comparing both software results, ETABS software shows higher values of bending moment and axial force.

III. OBJECTIVE

The main objective is to perform analysis and design of the structure without any type of failures.

1. Main objective of this study is to analyze and design G+ 7 residential building using ETABS software

Seismic Analysis of a Reinforced Concrete Building by Limit State Method

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Abstract: **Consideration of site specific lateral loading due to earthquake loads along with vertical gravity loads is important for finding the behaviour of reinforced concrete buildings. The design criteria for reinforced concrete buildings are strength, serviceability and human comfort. In the present study, the analysis and design of a G+2 storey Hospital building for earthquake is carried out considering the member forces due to dead load, live Load, and earthquake load combinations with the partial safety factors for limit state of collapse as per Indian standard codes of practice. The members are designed for the most critical member forces. In present study, an alternative simplified method of considering load combinations for finding the member forces and choosing the most critical member forces for design is suggested. The final design of members is found to be more economical and satisfy the recommendations of most of the international codes of practice.**

Keyword: **RC Hospital building; seismic loads; Limit state method, Crucial zones , Moment resisting frame**

I. INTRODUCTION

Earthquakes, caused by movements on the earth surface, result in different levels of ground shaking leading to damage and collapse of buildings and civil infra-structures, landslides in the case of loose slopes, and liquefaction of sandy soil [2]. The behaviour of reinforced concrete moment resisting frame structures in recent earthquakes all over the world has highlighted the consequences of poor performance of beam column joints [3]. Beam column joints in a reinforced concrete moment resisting frame are crucial zones for transfer of loads effectively between the connecting elements (i.e., beams and columns) in the structures [4]. Traditionally, seismic design approaches are stated, as the structure should be able to ensure the minor and frequent shaking intensity without sustaining any damage, thus leaving the structure serviceable after the event [5].The structure should withstand moderate level of earthquake ground motion without structural damage, but possibly with some structural as well as non-structural damage. The limit state method corresponds to earth quake intensity equal to the strongest either experienced or forecast at the site. The main aim of this paper is to investigate the seismic performance of a reinforced concrete moment resisting frame building under a moderate earthquake ground motion. The building which is located in Kudur city (zone 2), was analyzed in accordance with the suggested seismic provisions.

II. LITERATURE REVIEW

Prakash Sangamnerkar et al. (2015) Static and dynamic behaviour of reinforced concrete framed regular building. He has done the comparative study on the static and dynamic behavior of reinforced concrete framed regular building. Comparison of static and vibrant behaviour of a six storey_s structure is considered in this paper and it is analysed by using computerized solution available in all four seismic zones i.e. II, III, IV and V. This is important for building design and resistant from earthquake.

M. S. Aainawala et al. (2014) Comparative study of multi-storey RCC buildings with and without Shear Walls was done. He did the comparative study of multi-storey R.C.C. Buildings with and without Shear Walls. They applied the earthquake load to a building for G+12, G+25, G+38 located in zone II, zone III, zone IV and zone V for different cases of shear wall position. They calculated the lateral displacement and story drift in all the cases. It was observed that Multi-storeyed R.C.C. Buildings with shear wall is economical as compared to without shear wall. As per analysis, it was concluded that displacement at different level in multi-storeyed building with shear wall is comparatively lesser as compared to R.C.C. building without shear wall. Which is important for building design and use of shear walls.

P. Rajaram, A. Murugesan, G.S. Thirugnanam (2010).Experimental study and research on behavior of interior RC beam column joint subjected to cyclic loading. He discuss about Experimental study and research on behavior of interior RC beam column joint subjected to cyclic loading is carried. Beam column joint is an important component of reinforced concrete moment resisting frames and should be designed and detailed properly, especially when the frame is subjected to earthquake loading. Failure of beam column joints during earthquake is governed by bond and shear failure mechanism which are brittle in nature. Therefore, a current international code gives high importance to provide adequate anchorage to longitudinal bars and confinement of core concrete in resisting shear. Codes provide for reduction of seismic forces thorough provisions of special ductility requirements. Details for achieving ductility in reinforced concrete structure are given in IS 13920:1993. This paper covers the analysis and design of two bay five stories R.C.C moment resisting frames for general building using ETABS as per IS 1893-2002 code procedures and detailed as IS 13920-1993 recommendations.

Mohit Sharma et. al. (2009). To study the dynamic analysis of multi-storey Building.He considered a G+30 storied regular reinforced concrete framed building. Dynamic analysis of multi storey Building was carried out. These buildings

Design and Analysis of Metro-Station Using ETABS Software

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Abstract: **India could be a developing country that has given more importance for up the infrastructure that creates a lot of revenue for the state. The cities area unit growing and resulting in urbanisation, the urbanization is divided into 3 patterns that area unit particularly cluster wise expansion, satellite cities and sub urbanisation. To meet the transportation facility and to simple traffic in densely populated cities adoption of tube services has become common. During this project, comparative studies of metro railway station beneath completely different loading condition for different unstable zone area unit done. The station includes of nine stores like stilt parking level, ground level, second floor that is link bridge level, third floor that is platform level, fourth, fifth, sixth floor for business activity and a terrace. The analysis of this building is done using ETABS version-15.0 for various load cases. Finally responses of the building like most displacement, storey drift and base shear area unit obtained and used for the study.**

Keywords - **Metro-station analysis, ESLFM Metro-station using ETABS, Storey-drift of metro station, Metro-station Displacement.**

I. INTRODUCTION

A. General

India may be a developing country that has given additional importance for up the infrastructure that creates additional revenue for the state. This cities square measure growing and resulting in urbanisation. The urbanization is split into 3 patterns particularly cluster wise enlargement, satellite cities and sub urbanisation. A railway system service includes major civil works like railway system stations, flyovers, piers, bearings, deep foundation etc. therefore for the success of railway system services, structural engineers thought to concentrate additional on planning of structural members.

B. Advantages of Metro

- The metro rail system has proven to be most efficient in terms of energy consumption, space occupancy and numbers transported. High capacity carriers-very high volume of peak hour peak direction trips. Eco friendly – causes no air pollution and less sound pollution.
- The energy utilization is low it's around 20% for every traveller Km in contrast with street based framework. The occupation of space is very less it‘s about 2m width only for elevated rail.

C. Disadvantages of Metro

- Underground tunnels are the most expensive to build operate and to maintain, some zones will require underground tunnelling as is the case in central Bangalore.
- Construction cost for metro service is nearly 20-30 times more than road transport services.

D. Objectives

- To analyse a metro railway station for seismic forces. To study the various responses such as base shear, lateral displacement and storey drift etc. of metro railway station for time history data (Bhuj earthquake).
- Analysis of metro station with different zones by response spectrum and time history methods. To compare effect of equivalent lateral force and response spectrum analysis on performance of a metro railway station.

II. LITERATURE REVIEW

Krishnareddygariparthima: This journal paper shows studies of four model of G+5 building with one symmetric plan and remaining irregular plan was considered for the analysis. Here, the building wasanalysed with the FE based software ETABS.

Harshitha R, A Soundarya, Y Guruprasad [2014]: This paper studied on dynamic behaviour of symmetric RC frame using response spectrum method and time history analysis will be carried out by taking the previous earthquakes data of Bhuj (2001) and Spitak (1988).

Dynamic Analysis of High Rise Buildings with Helipad

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Abstract: **Increase in the number of road users and the need to transport personnel goods to places of interest with convenience, alternative mode like the air transportation with no traffic and ease of its parking space features in commercial areas has been put forth in this paper. A Helipad park located on the top of a storey building would help to access a place of importance or a location with streams of people converging to it at the same time and with the same road network. This paper is aims to model analyze a multi-storey helipad park. ETABS application is used.**
Keyword: **Higrise building, Helipad, static analysis**

I.INTRODUCTION

The progress of the nation is mainly dependent on planning and economic status of the nation. To make a nation economically strong it is important to provide a better infrastructure for commercial and residential purpose. High rise building is one of the forms to increase economic status of the nation. High rise buildings can be utilized for multi purposes like public health and safety purposes, IT sectors, commercial and recreational purposes etc.

Need Of Helipads On High Rise Buildings

Helipad as a structural element serves the following:

- Helipads provide space for the landing for the helicopters.
- Some commercial buildings provide heli-taxi services for VIP.
- Helipads are used as emergency exit in case of fire disaster in the building.
- Major defense buildings also use helipads in emergency and rescue operation.
- In hospitals helipads are important and it provides air ambulance facility and in case of patient evacuation from accidental areas to hospitals or from shifting one hospital to another hospital.
-

Design Criteria For The Construction Of High Rise Buildings Are As Follows:

- Location of the building.
- Transpiration facility.
- Purpose for which it is to be constructed.
- Security and safety.
- Planning.
- Design and analysis by considering different types of loads.

Fig 1: Helipad on multistory building

II LITRATURE REVIEW

Tejaswi Kota, Rajesh Kadiyala, [1] for the analysis of the building the most effective method is time history method. But Due to the lack of data response spectrum method is the effective method. In this paper the author has analyzed ten buildings of time period 0.1 sec to 1.18 sec and different soil strata as per Indian standard.

Basavaraj S. Balagopal, Gururaj Katti, [2] In this paper for G+10 storey RCC building non linear dynamic analysis is carried out. For different time history and mass irregular building is modeled by using ETABS software. In this paper it is shown that for different loads the effect on floor using ETBS by time history method.

III PRESENT STUDY & METHODOLOGY:

The present work contains 10 storey hospital symmetrical and unsymmetrical building with helipad on the terrace. The building is analyzed by response spectrum method and time history method. The comparison is done for obtained results.

- Collection of detailed description of helipad.

Study on Behaviour of Concrete by Completly Replacing Fine Aggregates by Quartz Sand and M-sand

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Abstract: **Now a days to global consumption of natural soil, sand deposit are being deplete and causing serious threat to environment as well as society. River sand is becoming a scarce commodity and hence an exploration alternative to it is as become imminent. Manufactured sand and Quartz's sand is the good alternative to river sand and it is purposely made ,fine crushed aggregates produced under controlled conditions from a suitable sand source rock. The use of M sand and quartz's sand as replacement for fine aggregate is an economical solution for making the concrete resistant to weathering .The paper presents a concrete mix design procedure for complete replacement of fine aggregate with quartz sand and M sand.**

In this study, concrete mix M30 has been designed with suitable W/C ratio using the combination of M sand and Quartz sand by replacing the river sand and the results are to be determined and compared with the normal concrete.

Keyword: **FINE AGGREGATES, M SAND AND QUARTZ SAND.**

I. INTRODUCTION

Concrete is an artificial material in which the aggregates both fine and coarse are bonded together by the cement, when mixed with water. Its great versatility and relative economy in filling wide range of needs has made it a very competitive building material. With the advanced technology and increased field of applications of concrete, the strength, workability, durability and other characters of the ordinary concrete need modification to make it more suitable for suitable situations. Added to this is the necessity to combat the increasing cost and scarcity of fine aggregates under these circumstances the use of other alternative materials is found to be an important alternative solution.

The demand on concrete is likely to increase in future to match the requirement resulting from growing population, housing, transportation and other amenities. At present, there is scarcity of conventional fine and coarse aggregates required for concrete making due to continuous demand on concrete for construction. For reducing the cost of concrete and also to meet the demand, locally available materials, such as, quartz sand and M Sand replacing fine aggregates can be used. Very recently, several researchers have used quartz sand and M Sand as a partial replacement of fine aggregates and investigated its effect on major concrete properties.

II. LITERATURE REVIEW

1. Priyanka A. Jadhav, Dilip and K. Kulkarni , (2007)

Effect of replacement of natural sand by manufactured sand on the properties of cementMortar. Concrete mixes containing various contents of the waste were prepared and basicstrength characteristics, such as compressive strength, splitting; flexural, waterabsorption and density were determined and compared with a control mix. Fiveconcrete mixes containing various contents of the waste, 0, 3, 5, 8 and 10% as a fine sand.

2. Nithyambigai.G , (2009)

Partial Replacement of Manufactured Sand and Fly Ash in Concrete. Six concrete mixes containing various contents of the fine aggregate 0, 10, 20, 30, 50, and 100% as a replacement to the fine sand were prepared. The results of the following tests are reported: compressive strength, split tensile strength, modulus of elasticity and abrasion

III. OBJECTIVES OF STUDY

1. The objective of the present investigation is to find the optimum mix design for M30 grade concrete with regards to the amount of material constituents.
2. To study the workability of concrete such as slump test, Compaction factor test, vee- bee test with completely replacement of quartz sand and M-sand.
3. To investigate the strength characteristics such as compressive strength and split tensile strength for concrete mixes of grade M30 by replacing quartz sand and M-sand as a complete replacement of fine aggregate respectively.
4. To compare the results with completely replacement level of quartz sand and M-sand with conventional concrete.

Vermi Bio-Filtration for Wastewater Treatment

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ABSTRACT- **In the present study a low-cost, sustainable and eco-friendly technology has been applied to treat dairy waste water and sewage waste water utilizing earthworms. The symbiotic and synergistic interaction of earthworms with microorganisms is responsible for the treatment of waste water as it passes through the gut and intestine of earthworms.**

Earthworms body works as a _Biofilter' and they have been found to remove the BOD, COD, TDS and TSS from the waste water effectively by the general mechanism of _ingestion' and bio degradation of organic waste, heavy metals and solids from wastewater and also by their absorption through body walls. Earthworms increase the hydraulic conductivity and natural aeration by granulating the clay particles. They also grind the silt and sand particles, increasing the total specific surface area, which enhances the ability to adsorb the organics and inorganics from the wastewater. Intensification of soil processes and aeration by the earthworms enable the soil stabilization and filtration system to become effective and smaller in size. Suspended solids are trapped on top of the vermifilter and processed by earthworms and fed to the soil microbes and immobilized in the vermifilter. There is no sludge formation in the process which requires additional expenditure on landfill disposal. This is also an odour free process and the resulting vermifiltered water is clean and disinfected enough to be reused for farm irrigation, in parks and gardens.

Keywords: Vermi-bio-filtration, Vermifiltration, Total Dissolved Solids, synchronous waste water treatment.

I. INTRODUCTION.

The demand of new conventional wastewater treatment facilities to treat dairy and sewage are increasing day to day. The increase in population leads to consumption of more and more fresh water, which ultimately returns back as wastewater (around 80% of fresh water). While water demand will continue to increase, the limited amount of natural fresh water available will always impose great challenges to water resources management. Such a conflict could be resolved by different means among which reuse of treated wastewater effluents has emerged as a renewable resource that increases in amount with the increase in water use. The importance of wastewater treatment and reuse in the field of water resources management is now commonly acknowledged. In planning and implementing wastewater treatment and reuse, water reuse applications usually govern the wastewater treatment needed and the degree of reliability required for the treatment processes and operations. Perhaps, agricultural and landscape irrigation is the largest current use of reclaimed wastewater. Irrigation uses can offer significant opportunity for water reuse since, in many arid and semi-arid region, 70-90% of applied water is used in irrigation.

Domestic wastewater usually carries organic load along with several hazardous chemicals, which spoils the sense of the river and at the same time it also degrades the aquatic ecosystem. Conventional wastewater treatment plants involve large capital investments and operating costs, and for that reason these systems are not a good solution for small villages that cannot afford such expensive conventional treatment systems. Apart to construction costs the operation and maintenance problems in STPs has been subjected to sustainability. Moreover, excess sewage sludge produced by STPs has been subjected to increasingly stringent limitations on discharge during the last few decades. According to Sinha et al., many developing countries cannot afford the construction of STP and therefore there is a growing concern over developing some ecologically viable small-scale wastewater treatment technologies for onsite wastewater treatment.

Also due to high establishment and running cost of a sewage treatment plant (STP) the majority of urban centers in developing world dispose urban runoff and sewerage water directly into urban river without any treatment or with partial treatment. However, at this crucial juncture some ecologically engineered tools can solve issues related with safe and cost-effective wastewater treatment technologies. The majority of present wastewater treatment system systems are a –disposal-based liner system‖ and they should be transformed into cyclical treatments in order to conserve the water nutrient resources. An economical and wastewater treatment approach is often required.

Biological wastewater treatment process involves the potentials of some living organisms to remove contaminants and sludge from wastewater in order to make it suitable for surface irrigation and other industrial use. Biological wastewater treatment involves the transformation of dissolved and suspended organic contaminants to biomass and evolved gases: CO_2, CH_4, N_2 and SO_2. A variety of organism like aquatic plants, to develop a low-cost bioreactor for wastewater treatment and sludge reduction and deserves to be explored, such technologies includes constructed wetlands and vermi filtration.

Study on Pervious Concrete Pavement

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***ABSTRACT*: Pervious concrete is one of the most innovative kind of concrete, compared to conventional concrete. It comes with high porosity to drain off storm water. In the present behavior concrete has been studied experimentally with various mixes of GGBF's, polypropylene fiber, sand. Different properties like workability, compressive strength, permeability for7,14,28 days are studied experimentally. In our project we try to improve compressive strength of pervious concrete without compromising in permeability.**

***Key words*: GGBF's, polypropylene fiber.**

I .INTRODUCTION

Pervious concrete which is also known as the no-fines, porous, gap-graded, and permeable concrete and permeability, and a lower unit weight. However, pervious concrete has a greater advantage in many regards. Nevertheless, it has its own limitations which must be put in effective consideration when planning its use. Structurally when higher permeability and low strength are required, the effect of variation in aggregate size on strength and permeability for the same aggregate cement ratio need to be investigated Enhance porosity concrete have been found to be a reliable storm water management tool. Apparently, when compared to conventional concrete, pervious concrete has a lower compressive strength, greater permeability.

Major Applications Of Pervious Concrete Pavement

Low-volume pavements, Residential roads, alleys, and driveways, Sidewalks and pathways, Parking areas Low water crossings, Tennis courts, Sub base for conventional concrete pavements. Slope stabilization.

II OBJECTIVES OF PROPOSED WORK

The present study includes knowing the basic properties of materials used in preparation for Pervious concrete.

- Also the study includes the preparation and testing of laboratory specimen for Design Mix for M20 Grade for various mixes.
- To know the Compressive strength for 7, 14, 28 days and Discharge of water through the pervious concrete for 25% and 30% GGBS with 0.2% polypropylene fiber..
- Materials: Ground granulated blast furnace slag(25% and 30%), water, regular sand(10% of CA),coarse aggregate, polypropylene fiber(0.2%), cement(43 grade).

III. MATERIALS AND METHODOLOGY

Methodology: Determination of basic properties of materials.

Coarse aggregate: In our project we are using 20mm down and 10mm retaining aggregates.

Fig 1

Fine aggregates: While pervious concrete is considered a ―no-fines‖ concrete, a small percentage of fine particles can be added to increase the compressive strength of the pervious concrete mix. In our project we are using 10% fine aggregate.

Ground granulated blast furnace slag:

Blast furnace slag is the waste by-product of steel manufacturing. It imparts added strength and durability to concrete, and can replace 20-70% of the cement in the mix. In our project we added 25% and 30% of GGBS by replacement of cement.

Analysis And Design of G+3 Multistorey Residential Building Using Staad Pro

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***Abstract*: In order to compete in the ever growing competent market it is very important for a structural engineer to save time. As a sequel to this an attempt is made to analyze and design a multistoried building by using a software package STAAD pro.For analyzing a multi storied building one has to consider all the possible loadings and see that the structure is safe against all possible loading conditions. There are several methods for analysis of different frames like Kani's method, cantilever method, portal method, Matrix method.STAAD Pro with its new features surpassed its predecessors, and compotators with its data sharing capabilities with other major software like AutoCAD, and MS Excel. We conclude that staad pro is a very powerful tool which can save much time and is very accurate in Designs. Thus it is concluded that staad pro package is suitable for the design of a multistoried building.**

I INTRODUCTION

Building construction is the engineering deals with the construction of building such as residential houses. Buildings are the important indicator of social progress of the county.

Daily new techniques are being developed for the construction of houses economically, quickly and fulfilling the requirements of the community engineers and architects do the design work, planning and layout, etc, of the buildings.

The building design can be made using software on structural analysis design (staad-pro). The building is subjected to both the vertical loads as well as horizontal loads. The vertical load consists of dead load of structural components such as beams, columns, slabs etc and live loads. The horizontal load consists of the wind forces thus building is designed for dead load, live load and wind load as **per IS 875**.

The building is designed as two dimensional vertical frame and analyzed for the maximum and minimum bending moments and shear forces by trial and error methods as per **IS 456-2000**. The help is taken by software available in institute and the computations of loads, moments and shear forces and obtained from this software.

Stages In Structural Design :

The process of structural design involves the following stages:

Structural planning, Computation of loads, Method of analysis, Member design and Detailing, drawing and preparation of schedules.

II LITERATURE REVIEW

[1] V.Varalakshmi: The design and analysis of multistoried G+5 building at Kukatpally, Hyderabad, India. The Study includes design and analysis of columns, beams, footings and slabs by using well known civil engineering software named as STAAD.PRO. Test on safe bearing capacity of soil was obtained.

[2] L.G.Kalurkar: The design and analysis of multistoried G+5 building using composite structure at earthquake zone-3. A three dimensional modeling and analysis of the structure are carried out with the help of SAP 2000 software. Equivalent Static Method of Analysis and Response spectrum analysis method are used for the analysis of both Composite and RCC structures. The results are compared and found that composite structure more economical.

[3] P.Jayachandran: The design and analysis of multistoried G+4 building at Salem, tamilnadu, India. The study includes design and analysis of footings, columns, beams and slabs by using two software's named as STAAD.PRO and RCC Design Suit.

III METHODOLOGY

[1] MODELLING:
   a. (G+3) Residential building

[2] LOADS:
   b. 1.5(Live Load +Dead Load)

[3] ANALYSIS:
   c. Analysis of RCC framed structure.
   d. Shear Force and Bending Moment calculations

[4] DESIGN:
   a. Design of Slab, Beam, Column, Footing and staircase

[5] GEOMETRIC PARAMETRS:
   b. Beam = 300 * 450mm.
   c. Column = 300 * 350mm.
   d. Slab = 150mm.

Soil Cover and Hydrosoil Studies of Muguru Adda Halla Watershed Using Rs and Gis Techniques

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Abstract: **Soil cover, hydrosoil and thickness of the soil cover play a dominant role in surface movement of water, ground water movement and also helpful in suitability for different types of agricultural and articultural crops.In present study prepared soil map contain total 19 types of soil pattern based on 2004 KSRSAC soil classification with reference of Karnataka Agroclimatic zones using RS and GIS thchniques.prapared Soil map and hydrosoil map in which it shows run off potential zones of the study areas are high potential runoff zone, low potential runoff zone , moderately high potential runoff zone moderately low potential runoff zone, habitation mask and water body mask. .It helps to find out the percentage of water run off and infiltration in the study area.**

Keyword: **Hydrosoil, run off zone, RS and GIS, Soil cover**

I. INTRODUCTION

Soils play an important role in the accumulation of ground water. Soil structure and texture which are controlled by the percentage of sand, silt and clay play a dominant role in the ground water infiltration .Eaton, E.M.(1950),Katterfield G.N., cherushic.G.V(1970) The sand (0.06mm to 2mm in diameter) helps in high infiltration whereas the silt (0.002mm to 0.06mm diameter) is having medium infiltration and the clay below 0.02mm diameter is having low infiltration. A Enduta et al(2012), Jagath W rupa singhe et al (2010), J Benton Jones(2008). Based on the physical property and broad chemical composition of the soil cover hydro soil map of the study area has been prepared. This map has been useful in delineating run-off potential zones.

There are ten varieties of agro climatic zones in Karnataka Jagannathan.V. et al.(1991). They are 1)North eastern transitional zone,2)North east dry zone, 3)Northern dry zone, 4)Central dry zone, 5)Eastern dry zone, 6) Southern dry zone, 7)Southern transitional zone 8)Northern transitional zone 9)Hilly zone 10) Coastal zone in which the study are falls under southern dry zone and southern transitional zone.

The soils of Karnataka represent variety of soil types which depends on the geology, climate, vegetation and physiograpby of the region in which the study area have been classified into 19 types.morphological and physio-chimical property that have a bearing of plant growh and have thus influenced the cropping pattern.

Soil cover study:

Soil serves as a natural medium for the growth of the plants. Next to water and air, soil is most essential for the existence life existence. Soils are the basis of support for most life and a source of nutrients for all kinds of life in one way or the other. It is well-known that soil is produced by the weathering process. It gets mixed with decayed vegetation and other organic matter and forms humus rich top soil over the parent rock or at some distance which forms _A‘ horizon. Below this would be _B‘ horizon and followed by _C‘ horizon. Before bringing out the characteristics of soil types of study area, a general classification of the agro climatic zones of Karnataka is presented in order to compare them with the study area.

There are ten varieties of agro climatic zones in Karnataka Jagannathan et al. (1991). They are 1) North eastern transitional zone,2) North east dry zone, 3) Northern dry zone, 4)Central dry zone, 5) Eastern dry zone, 6)Southern dry zone, 7) Southern transitional zone, 8) Northern transitional zone , 9) Hilly zone, and 10) Coastal zone. This classification among with agro climatic zone of Karnataka is shown in Fig.3.1. As per the classification, broadly the study areas fall into southern dry zone and southern transitional zone.

A detailed classification and characterization of soils of the study area have been done based on soil texture, profile and study in the field and chemical characteristics of soil samples. For this, soil series classification developed by KSRSAC (2004) has been kept has base. Based on this, the area has been classified into total 17 soil series, based on bedrock, habitation mask and water body mask as shown in Fig.3.2 and as presented in table 3.1. The area covered by them and their percentage is given in brackets. They are 1) Allianpura soil series (1.83 sq km;0.74%) 2) Ballary hatti soil series (0.78 sq km;0.31%), 3)Channasandra soil series (6.231 sqkm ;2.5%), 4) Enugadale soil series (23.70 sq km; 9.52%), 5)Gattavadi soil series (81.53 sq km;32.75%), 6)Guttapalli soil series is (9.28 sq km ; 3.73%), 7) Hutagalli soil series (5.50 sq km;2.21%), 8) Kalkeri soil series (3.98 sq km;1.6%), 9) Muddapura soil series (14.54 sq km;5.84%), 10) Muddinahundi soil series (32.23 sq km;12.95%), 11) Nelsoge soil series (14.54 sq km;5.84%), 12) Ramsamudra soil series is 7.12 sq km; 2.86%), 13) Sinkihalli soil series (0.083 sq km;0.033%), 14) Srinivasapura soil series (0.017 sq km; 0.07%), 15) Tagadur

Comparison on the Effect of Lift Core Wall in a Framed Structure at Different Positions with and Without Providing Beams and Columns.

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Abstract: **Lift core wall is a structural vertical member which resists the moments, shear and axial load due to lateral load and gravity load transfer to the wall from the other structural member. It is provided in various locations of the structure. In this study a 9 storey building is considered and modelled with five different positions of lift core wall. It is also compared with and without providing the beams and columns around the lift core wall.**
It is modelled by using E-TABS software

Keywords: **Lift core wall, Shear wall, Response spectrum**

Behavioural Study of Glass Fibre Reinforced Concrete

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Abstract: **Plain concrete possess very low tensile strength, limited ductility and little resistance to cracking. Internal micro cracks are inherently present in concrete and its poor tensile strength is due to propagation of such micro cracks. Fibres when added in certain percentage in the concrete improve the strain properties as well as crack resistance, ductility, flexure strength and toughness. Mainly the studies and research in fibre reinforced concrete has been devoted to steel fibres. In recent times, glass fibres have become available, which are free from corrosion problem associated with steel fibres. Glass-fibre reinforced concrete (GRC) is a material made of a cementatious matrix composed of cement, sand, water and admixtures, in which short length glass fibres are dispersed. In this study trial tests for concrete with glass fibre and without glass fibre are conducted to indicate the differences in compressive strength and flexural strength by using cubes of varying sizes. The experimental results have shown good improvement in the properties over conventional concrete.**

Keyword: **Glass Fibre, RCC, GFRC, Construction.**

Design of Non return Valve (NRV) for Injection Moulding Machine and Optimization of Materials for NRV using FE Based Approach

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Abstract: **Injection Molding Machine is the most commonly used manufacturing process for casting the plastic parts. The plastic granules are melted in the injection molding machine and then injected into the mold through reciprocating screw and Non-return valve (NRV). NRV is the major component in the injection molding machine which can be operated under high pressure and temperature to injected melted plastic. In the present work, NRV has been designed by using CATIA and analysis has been carried out using ANSYS. In this paper, the effect of pressure and temperature of NRV has been investigated by ensuring proper design of NRV of different materials like TZM, H13 Tool Steel and D2 Tool Steel. Static and thermal analyses have also been conducted at an operating pressure of 6 MPa and at a temperature of 220°C in order to suggest better design. The fatigue analysis has been conducted to estimate the life of the component (NRV). The outcome of the FE analyses suggests that the NRV of TZM and H13 Tool Steel materials offers better strength, thermal resistance and better life compared to D2 Tool Steel material.**

Index Terms: **NRV, Ansys, Fatigue, TZM.**

I. INTRODUCTION

The injection molding is the most commonly used manufacturing process for the fabrication of plastic parts. A wide variety of products are manufactured using injection molding machine, such as plastics housings, consumer electronics, and medical devices Including valves & syringes which vary greatly in their size, complexity and application. The injection molding process requires the use of an injection molding machine, raw plastic material, and a mould. The plastic is melted in the injection molding machine and then injected into the mold, where it cools and solidifies into the final part. The barrel contains the mechanism for heating and injecting the material into the mould. This mechanism is usually a reciprocating screw and NRV. A reciprocating screw and NRV advance the material forward by either a hydraulic or electric motor. During this process the material is melted by heat & pressure. The material enters the grooves of the screw through NRV. The screw and NRV completes the shot volume & returns to reverse position. The problem occurred in the NRV is of the wearing of threads due to affect of high melting temperature & pressure of mold materials. Industries are having temporary solution to make repair of threads on Lathe machine. This reduces weight & strength of NRV resulting misalignment in assembly. The NRV is the most crucial part of a machine.

The manufacturing process of injection molding is a primary form of manufacturing of plastic products in the world today. The demands of high molded part tolerances, dimensional stability, and shot-to-shot repeatability are increasing and better controls and mechanical components of the injection machines are required to meet the demands. A major component that contributes to this process of improvement is the plasticizing unit and specifically, the non-return valve which is one of the components of the assembly.

The non-return valve controls the volume of molten plastic material that is injected into the mold. Any imperfection in the operation of this component is reflected in the molded part. Imperfect molded parts cost the industry billions of dollars per year. An improvement in the non-return valve is needed to eliminate imperfect molded parts.

THE VALVE EXPERIMENT

The basic functions of Good Non-Return Valve are:

- To allow plastic to flow through it, not over it, during screw rotation to develop the required shot size for the part. There should be no dead spots for the plastic to accumulate or get hung up, and the flow path for the polymer should have minimum pressure drop and no shear stress due to sharp corners.
- To provide a nearly perfect seal so that upon injection this valve slides shut and acts like the plunger in a syringe to push plastic forward into the sprue, runner, gate, and cavity—not allowing any melt to slip back into the screw during injection, pack, or hold. We want it to seal under pressures up to 40,000 or 50,000 or even 60,000 psi.
- To seal instantly, or as quickly as possible, at the start of injection. Most of all, it should do so repeatedly.
- To do the above without excessive wear on the barrel inside diameter. It is possible for a non-return valve to work properly but still not hold a cushion due to wear on the inside diameter of the barrel.
- To last at least six months to a year under normal use, understanding that some abrasive resins or filler will influence functional life.

Review on Experimental Study in Electrochemical Discharge Machining Process

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Abstract: **The need for micro-machining of advanced engineering material started with increasing demand in aerospace, nuclear and medical industries. Hybrid machining processes are introduced through the combination of the many non-conventional machining processes thereby taking the advantage of more than one process. Electro Chemical Discharge Machining (ECDM) is a novel hybrid machining process used for machining conducting and non-conducting engineering materials combining the features of EDM and ECM processes. The present paper focuses on the experimental investigation in ECDM process, carried out so far by many researchers.**

Keyword: **Non Conventional Machining, Hybrid Process, EDM, ECM, ECDM, ANFIS, Response Surface Methodology**

A Review on Production Methods of LM Matrix with Particulate Reinforcement

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***Abstract*— A composite material is a blend of two or more chemically distinct and inexplicable phases. Either metals or ceramics or both as well can be blended with particles or fibers, to enhance their properties; these blends are known as Metal-Matrix composites. From the past few years, materials research and development has shifted from monolithic to composite materials, adjusting to the need for reduced weight, low cost, quality, and high performance of the composites. Aluminium alloy widely employed in the aircraft and aerospace industry for the manufacturing of different parts and components, it is due to its high strength to density ratio and their higher mechanical and physical properties and tribological properties comparing to matrix materials. Aluminium and its alloys occupy third place among the commercially used engineering materials.**

***Keywords*— *Composite*, Metal-Matrix Composites, Mechanical Property, Tribological Property, Engineering Materials.**

I. INTRODUCTION

There are more than 50,000 materials accessible to engineers for the design and manufacturing products for discrete utilization. These materials range from copper, cast iron, brass, which have been available for so bounteous years, To the more newly advanced substance, such as composites, ceramics and high- performance steels. Due to broad choice of materials, today's engineers are posed with a big objection for the right selection of material and manufacturing processes for an application. Aluminium and Aluminium alloy castings have dominated the automotive sector for decades. Approximately two thirds of all aluminium castings are used in automotive industries and it continues to grow at the expense of iron castings. Although aluminium castings are significantly more expensive than ferrous castings, there is a continuing market requirement to reduce vehicle weight and to increase fuel efficiency. It is this requirement which drives the replacement of ferrous parts by aluminium. These materials depending on their major characteristics like stiffness, strength, density and melting temperature, can be classified into four categories. They are i) Metals ii) Plastics iii) Ceramics iv) Composites.

Composite materials are defined as ―a material systems consisting of mixture of or combination of two or more micro constituents insoluble in each other and differing in form and or material composition‖. Composites are generally prepared by adding dissimilar materials together to work as a single mechanical unit and the properties of such materials are different in scale and kind from those of any of its individual constituent. Composites can offer a combination of properties and a diversity of applications unobtainable with metals, ceramics, or polymers when used alone. Most commonly encountered industrial problems which lead to the components replacements and assemblies in engineering are wear. Hence, many efforts have been made for producing durable materials and techniques for reduction in the wear of tools and engineering components. It includes modification for bulk properties of the materials, their surface treatments and application of coating etc.

Composite Materials

Metals: Metals have been the dominating materials in the past for structural applications. They provide the largest design and processing history to the engineers. The common metals are iron, Aluminium, copper, zinc, magnesium, lead, nickel and titanium. In structural applications, alloys are more frequently used than pure metals. Alloys are manufactured by mixing different elements in right proportions. Alloys offer better mechanical properties when compared with pure metals. Through the principle of alloying, thousands of new alloying composites are developed for various high technical applications. Metals have high stiffness, strength, thermal stability and good electrical conductivity. Due to their higher temperature resistance than plastics, they can be used for applications with service temperature applications

Plastics: Due to their light weight, easy process-ability and corrosion resistance, plastics are widely used for automobile, aerospace and consumer goods. Plastics can be formed into near-net-shaped parts with ease. They provide high surface finish coupled with low production cost.

Ceramics: These are more rigid of all the engineering materials. The major distinguishing characteristic of ceramics compared to metals is that they possess almost no ductility. They fail in a brittle manner. They have the highest melting points. They are generally used for high- temperature and high-wear applications and are resistant to most forms of chemical attack.

Composites: These materials have been utilized to solve the technological problems for a long time but only in the 1960s did these materials start capturing the attention of industries with the introduction of polymeric- based composites.

Design and Optimization of Variable Twin Scroll Turbocharger

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Abstract: **In these days technological advancements in Automobile sector where mans penchant is to develop technologies that can improve the power and mileage of the vehicle turbocharger is one such exotic gadget. Any engine needs air for combustion of fuel and it is the Air-Fuel ratio the decides the performance of an engine. Hence supply of air is an important task. During high speed operation of any engine there is not enough time for air to be sucked in the cylinder by itself. Hence the volumetric efficiency goes on decreasing as engine picks up speed as a result of which only partial combustion takes place.**

Keyword: **Automobile, IC Engines, Turbo Charger, Volumetric Efficiency**

I. INTRODUCTION

Advanced hardware components are increasingly being considered for production of passenger car internal combustion engines to meet stricter emission regulations and customer demands of improved fuel economy and drivability When integrated in a single engine configuration these advanced hardware components may result in significant nonlinearities and interactions thereby requiring advanced control methods In this paper we consider one such situation when demands for increased engine power improved fuel economy and drivability provide a rationale for utilizing a variable twin scroll turbocharger while emission regulations necessitate an external exhaust gas recirculation system The engine exhaust gas drives the turbine which drives the compressor which in turn compresses ambient air and directs it into intake manifold Since the increased quantity of air can be delivered to engine cylinders a larger quantity of fuel can be burnt thereby providing larger torque output as compared to non turbocharged engines The turbo charging also improves fuel economy due to improved efficiency of engine operation at lean air fuel ratios Turbo charging also affects regulated engine emissions.

II. LITERATURE REVIEW

The world‘s first functional supercharged engine was made my Dugald Clerk, which was used in two-stroke engine in 1878. Daimler received a German patent for supercharging an IC engine in 1885. In a supercharger the loss can be up to 15% of engine output. To reduce the loss of power, later on the compressor was driven by a turbine using the exhaust gas energy. Then this technology became popular by the name as Turbo charging during early 1980‘s.There are many inventions aimed at increasing the performance of an Internal Combustion engines. When power increases, efficiency decreases. Presently, ethanol is prospective material for using in automobiles as an alternate fuels. The main reason for using ethanol is that Toyota Yaris 1300cc SI engine was used for this experiment was equipped with variable turbine geometry turbocharger with the possibility to control mass flow rate in the turbine by using an additional waste gas system. Computer control programs in lab view environment was given in order to analyze knock signals produced and to regulate the opening signal was fed to the engine control unit, where it was transformed by fourier transforms. This gave a distribution of knock signals in the range of 2000- 8000 hertz. Control signal for the knock was obtained in the range of 0-

Volts and was transferred to the engine control unist for regulating the mass flow rate of exhaust gases through the variable geometry turbine. When the value is greater than 0.01 Volts then the valve in waste gas was opened much more to reduce mass flow rate of the engine exhaust gas through the turbine which in turn decreases the rotational speed of the turbocharger and thus compressor pressure ratio falls.

III. OBJECTIVES

- To prepare the existing design of Parts of Turbocharger.
- To conduct different analysis test based on the requirement for the redesigned parts.
- To create an optimized design by conducting geometric material optimization.
- To conduct same analysis tests which are ran for existing design to optimized design.
- Comparing the difference between old design and optimized design.

IV. METHODOLOGY

- Existing design and purpose of the Turbocharger is studied with the default standards.
- Concept drawing for new requirement has been developed and process to be followed to get the approval from Customer.
- 3D CAD models of the different major parts are been designed and will be recreated.
- FE Model of the design will be created.
- Analysis under different conditions will be done and the behaviour of component will be estimated.
- Based on the results obtained in analysis the design will be optimized in different stages.

A Review on Solar Water Pump with Auto Tracking

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Abstract: **Solar energy is converted to mechanical energy by absorbing the solar radiation from the sunlight. In this paper we have introduced a solar photo voltaic cell for collecting the sun rays through the solar array and transforming this sun rays in to electricity to generate the electricity. The main aim of this project is to supply electricity through the sun rays and it is for the purpose of irrigation in the rural areas where the electricity scare is expected. In our solar kit we have introduce an Automatic solar tracker which stimulates and increases the efficiency of the solar panel by keeping the solar panel which moves according to the direction of movement of sun rays. A solar PV cell is a electrical device that converts the energy of light directly to electricity by the photovoltaic effect. A photoelectric cell is defined as an device whose electrical characteristics like current, voltage, resistance, varies when exposed to light. Solar cells are the basement for any photovoltaic modules panels.**

Keywords **– Solar panel 10 watts, Cams mechanism, LDR Sensor, Arduino board, Hydraulic cylinder, DC motor, battery.**

Review Article
Synthesis and Characterization of Al6061 Reinforced with Boron Carbide and Graphite

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Abstract: **Aluminium matrix composites (AMCs) are prominent in advance engineering materials due to their strength, Ductility, toughness, light weight, high strength, low coefficient of thermal expansion and excellent mechanical properties. . The aluminium matrix can be strengthened by reinforcing with hard ceramic particles like SiC, Graphite, B4C etc. Fabrication of metal matrix composites mainly includes liquid metallurgy, powder metallurgy, squeeze casting. We are finding increased applications in aerospace, automobile, space, underwater, and transportation applications.**

Tensile strength and hardness of AMCs increases by reinforcing 6061Al matrix with B4C particles because of its high hardness (3200 Kg/mm2) third hardest material next to diamond and cubic boron nitride.. By stir casting route, aluminium matrix was reinforced with boron carbide particulates of 37, 44, 63, 105, 250µ sizes respectively. Their low density and higher elongation at failure make them materials of choice in light weight components in aerospace, automobile, and locomotive.

Graphite and AL2O3 reinforced composite are prepared using stir casting technique for varying wt.% (Graphite 3% and AL2O3 3%, 6% & 9%). Micro structural study has been carried out on prepared composites, which reveals a good distribution of particles in to the matrix. Its possess low friction, self-lubrication, electrical conductivity, thermal conductivity and low wettability by liquid metals etc.

Keywords – Ductility, Toughness, Coefficient of thermal expansion, Reinforcement, Low wettability

A Review on Automatic Side Stand of Two Wheeler

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Abstract: **In today world two-wheeler vehicles plays a very important role in our life. It is used for travelling from one place to another place. So it is very useful and also responsible for causes of some minor and major accident because of forgetting to lift off the side stand. Side stand plays a very important role while the vehicle is in the rest position. Due to this, it is very important to prevent the rider from this condition which happened many times, which may avoid by using automatic side stand mechanism in vehicles. In automatic side stand the simple mechanism is used for lifting the side stand automatically while the vehicle is at the start or stop condition. In this automatic side stand the simple mechanism is used which is very easy to understand and applicable in a practical life. In a country like India, 20-22% [1] accident happened due to forgetting the lift off the stand. So the figure of accident due this reason is serious and many life has affected by this reason. So preventing this type of accident we installing this mechanism.**

Keyword: **Manual side stand, Automatic side stand, 20-22% accident, Effective price, installing, economical, two wheeler, lift off.**

Correlation of Microstructure, Corrosion and Wear Behaviour of Thermal Spray Thin Film Coated Al2024 Alloy and Its Composites

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Abstract: **Aluminium metal matrix composites are significantly important in the various demanding fields of engineering like aerospace, defence, automobiles, and consumer goods. The industrial need of good materials with light weight, excellent properties and low cost demanded the scientists to research on composite materials. Thermal spraying is an industrial coating process that consists of a heat source (flame or other) and a coating material in a powder or wire form which is literally melted into tiny droplets and sprayed onto surfaces at high velocity. In the present investigation the elemental SIC (400µm) powders are mixed with aluminium 2024 molten metal to produce a composite. The proposed investigation is to deal with development of aluminium based composite through casting route. Syntheses, thermal spray coating and characterization of wear and corrosion behaviour.**

Key words: **Composites, Al 2024, SiC, TiC, Casting**

I.INTRODUCTION

There have been tremendous strides in engineering materials since the Second World War. Today among various metal matrix composites (MMCs) synthesized, aluminum metal matrix composites in general and discontinuously reinforced aluminum metal matrix composites. Composite material is composed of two or more distinct phases (matrix phase and dispersed phase) and having bulk properties significantly different from those of any of the constituents. In a stir casting process, the reinforcing particles are distributed into molten matrix by mechanical stirring. The final uniform distribution of the particles in the matrix depends on process parameters and material properties such as strength of mixing, the wetting condition of the particulates with the melt, relative density, and solidification rate. Stir casting technique is the most economical among other well-established metal matrix composite fabrication methods. For this reason stir casting has turned on to be the most popular commercial viable method of manufacturing AMMCs.

II. LITERATURE REVIEW

1. G.B.Veeresh Kumar et.al demonstrated experimental results of the mechanical and tribological properties of Al7075–SiC composites are presented. The composites of Al7075 containing 2–6 wt% SiC were fabricated by liquid metallurgy route. The experimental results showed that the density of the composites increase with increased SiC contents and are in line with the values obtained by the rule of mixtures. The hardness and tensile strength of the Al7075–SiC composites are found to be increased by increased volume percentage of ceramic phase at the cost of reduced ductility. The wear properties of the composites containing SiC exhibited the superior wear-resistance properties.

2. Rabindra Behera et.al fabricated LM6 based composites reinforced with different weight fraction of SiC particles was produced by stir cast technique and the effect of reinforced ratios on the forgeability and the machinability was examined. The test results show that the increment in weight fraction of reinforcement particles in the matrix metal produced better mechanical property like hardness but the forgeability of the cast MMCs decreases. The forgeability of the as cast MMCs were also varied with the change in thickness of the casting.

3. K.L. Meena et.al studied aluminum (Al-6063)/SiC metal-matrix composites (MMCs) are fabricated by melt-stirring technique. The MMCs bars and circular plates are prepared with varying the reinforced particles by weight fraction ranging from 5%, 10%, 15%, and 20%. The average reinforced particles size of SiC are 220 mesh, 300 mesh, 400 mesh respectively. The stirring process was carried out at 200 rev/min rotating speed by graphite impeller for 15 min. The microstructure and mechanical properties like Proportionality limit, Tensile strength lower yield point, Ultimate tensile strength, breaking strength, Impact Strength are investigated on prepared specimens of MMCs. It was observed that the hardness of the composite is increased with increasing of reinforced particle weight fraction. The tensile strength and impact strength both are increased with rising of reinforced weight fraction.

4. Souravkavalet.al made experimental study on quantification of strength and hardness of silicon carbide particulate reinforced LM6 alloy matrix composites test specimens after tensile testing has described. Based on the experimental evidence from this research work, the author concludes that increase in weight fraction of SiC, an increase in hardness has observed, the split tensile strength and Young‘s modulus values increased gradually as the silicon carbide content in the composite increased from 2.5% to 15% by weight fraction and the micro structural results reveal that the silicon carbide particles have uniformly distributed throughout the MMC .

Design and Analysis of BMW Engine Flywheel through FE Analysis

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Abstract: **Flywheel is a rotating mechanical device that is used to store rotational energy. Flywheels have a significant moment of inertia and thus resist change in rotational speed. Flywheel development has been dominated by mobile application where minimizing mass is critical. The main problem with flywheel is its higher weight which results in lower rotational speed. Flywheel is designed by using 3D modeling software. Then the 3-D model was imported into ANSYS using the IGES format. Using finite element analysis, static structural analysis carried out by considered three different materials namely Gray cast iron, Aluminium 6063 T6, Titanium, Beryllium and carbon fiber and their relative performance have been observed respectively. The finite element idealization of this model was then produced using the tetrahedron solid element. The analysis was performed in a static condition. We find out the total deformation, normal stress and equivalent stress by using FEA software. In this paper by observing the results of static analysis obtained carbon fiber is suggested as better material for designing of wheel as it has lower weight.**

Keyword: Flywheel, BMW, CATIA, ANSYS, Structural Analysis

Development and Modeling Analysis of Electrochemical Discharge Machining for Non Conductive Materials

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Abstract: **Electrochemical discharge machining has the ability to machine electrically non conducting materials as compared with different existing traditional and also non-traditional machining processes. ECDM depends with the effects of different process parameters like applied voltage (V), electrolyte concentrations (wt%) and duty ratio on different machining performance characteristics such as material removal rate (MRR), Tool wear rate(TWR). A cylindrical shaped stainless tool of diameter 350 µm and NaOH solution as electrolyte were used. Material removal was treated as heat transfer problem because electrical energy released by sparks generation transfers into thermal energy on the work piece, resulting in material removal due to thermal melting and chemical etching.**

Keyword: **MRR, TWR, Voltage, Concentration, Electrode gap**

SMS Based Vehicles Theft Deterrent System by Sequential Controlled System of Automobiles

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Abstract: **Now a day's insecure environment the ratio of vehicle theft increases rapidly. Because of this manufacturer of luxury automobiles have the responsibilities for taking steps to ensure the authorization for the owners and also in built the anti theft system to prevent the vehicle from theft. The proposed security system for smart cars used to prevent them from loss or theft using Electro Mechanical process through SMS. Advanced Risk Machine (ARM) processor triggers certain actions. If the result is not authentic means ARM produces the signal to block the car access For Fuel Cut-Off, Break Lock (i.e. Produce the interrupt signal to car engine to stop its action) and inform the car owner about the unauthorized access via Multimedia Message Services (MMS) with the help of GSM/GPRS modem. Also, it can be extending to send the current location of the vehicle using the GPS modem as a Short Message Services (SMS).**

Keywords: **Component, Formatting, Style, Styling, Insert**

Review Paper on Maglev Windmill with Solar Panel

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***Abstract* – A vital factor in the survival of future generation depends on the use of environmental friendly and renewable energy resources, and usage of sustainable power sources like wind, solar energy is necessary for human life. Use of a vertical axis wind turbine with magnetic levitation technology for more efficient generation of electrical energy, Wind turbine requires high structures to permit space for their enormous edges, thus Maglev windmill is a perfect replacement. Maglev wind turbines have a lot of advantages over ordinary wind turbines like they can be utilized both for domestic and large scale power generation, starting at wind speeds By erecting solar panels on the top of the wind turbine, instead of wasting the solar rays falling on the roof, it can be utilized in this way to generate integrated power by harnessing two renewable energy resources.**

Keywords: **Magnetic Levitation, Magnets, Wind Energy, Solar panel**

A Review on Solar Energy Dryer for Drying the Agricultural Products

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Abstract: **The solar drying system utilizes the solar energy to heat up an air and to dry any food substance which is loaded, which is not only beneficial but also it reduces wastage of agricultural products and helps in preservation of agricultural products, but it also makes transportation of such dried product easily and promotes the health and welfare of the people. This paper presents the design and construction of a solar dryer for drying an agriculture product. The dryer is composed of solar collector (air heater) with the baffles and a solar drying chamber containing rack of three or four net trays both being assimilated together. The air allowed in through air inlet is heated up in the solar collector chamber and channelled through the drying chamber where it is utilized in drying (removing of the moisture content from the food substances or agricultural product which is loaded in it).**

Keywords: **Solar Dryer, Agricultural Product, Convection, Drying Rate, Ambient Temperature.**

A Review on Prominence and Status of Hybrid Electric Vehicle

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ABSTRACT: Hybrid Electric Vehicles ('IlEVs') are the main areas for research and development due to protocols fact on energy resources utilities, global warming and fuel economy. In this study, fundamentals, history, energy management, storage and classification of HEVs are review. Ultra-capacitor and batteries are the major source of energy storage that used in the HEV and; the power supply designing with an appropriate weight, cost, life, cycle and size are the major challenges. However, the Plug-in HEVs have potential to introduce as the most significant solution to overcome the challenges involved in HEVs. The comparison between different electric vehicle, HEV and the plug-in hybrid is discussed. The significance of PHEV is that it having dual characteristics of conventional HEV and the ICE; moreover, PHEVs is a kind of hybrid electric vehicle, which contains the rechargeable batteries that helps to restore the full charge in batteries through connecting a plug-in device to an external source of electric power. Also this paper survey the different state-of-art techniques involved in Electric Vehicles and some top rated HEVs with their specifications are discussed.

Keywords: Electric Vehicles (EVs); Hybrid Electric Vehicles (HEVs); Internal Combustion Vehicle (ICV); Plug-in HEVs.

I. Introduction

The environmental protection and the conservation of energy are the major growing concerns all over the world; the diesel oil and the gasoline will be quickly depleted and that emanation will effect in 'greenhouse effect'. Although the researches attention was drawn at electric vehicle (EV), the Hybrid-EV (HEV) concept attains lot of interest at the era of 1990s, when many people were thinking that the EVs would never succeed the objective of 'energy is saving'. Afterwards, the Ford Motor Cop. were taken initiative at challenge of HEV, which drew lots of efforts from the well-known universities in order to develop the hybrid models of production automobiles.

The EV is type of road vehicle that includes the electric propulsion [1], which can be categorised into three different types; Pure-EV, Fuel-Cell-EV and HEV. In present days, there are different development stages because of existing technologies, in that the oriented field control and variable voltage frequency are widely adapted, which is communal technique used in EV. The initial cost of battery and the management of battery create difficulty in Pure-EVs in focus of 'zero-emission'; these problems related to battery cannot be resolve in upcoming years, therefore, the temporary solution of the Pure-EVs is HEVs till the Pure-EVs becomes full commercialize. The long-term possibility of Fuel-Cell-EV is high for the futuristic vehicles [2], but the development technologies of its refueling and cost system is in initial development stage [1], therefore at present scenario HEV seems to be better choice.

A vehicle that stores the energy in two 'or' more than two forms are called as a Hybrid Vehicle. In a general HEV there are two forms to acquire energy; one form is bidirectional 'electrical storage' system and other form is electric engine, which is having energy source of oil or gas. In HEV, there are many different methods that will help to reduce the consumption of fuel such as; engine downsizing, energy recovery during brake, shutting down the engine when its not in use and by efficiently operating the engine [3].

TABLE 1: COMPARISON BETWEEN EV, ICV AND HEV [4]

Vehicle Type	**EV (Electric Vehicle)**	**ICV (Internal Combustion Vehicle)**	**HEV (Hybrid Electric Vehicle)**	
Propulsio n Devices	Motors	Engine	Engine + Motors	
Source of Energy	Batteries	Oil/Gas	Oil/ Gas	Batteries /Su per Cap acitor /Fu el Cells
Signilican ce	Zero Emissio n	Less refuelling time, Less capital cost	High fuel Economy	

Here, table 1 represents the brief comparison of EV, ICV and HEV, where EVs is the most cleanest transportation that have zero emission of carbon and also called as zero emission vehicle. Whereas, emission from HEVs are considerably less compared to ICV, the important advantage of HEVs over the ICVs is that it include improved efficiency, better mileage and very less dependency on oil/gas and small amount carbon footprint, due to complete or partial traction generated by 'electric motors'. However, in order to provide better driving experiences and emission reduction, more charging time, high capital cost and smaller range of driving are several factors, which produce difficulty to capture the greater market of HEVs

Simulation of 48 Pulse GTO STATCOM

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Abstract: Hear presents a study on the modeling of a shunt connected STATCOM used for reactive power compensation. Models of both power circuit and control system have been implement Hear investigates the operation of control scheme for Static Synchronous Compensator (STATCOM) based on a new full model. This device use for compensating both reactive power and voltage fluctuation in the system. When the output voltage is increased above the source voltage that time generates capacitive reactive power. When the output voltage is decrease below the utility bus voltage that time absorbs inductive reactive power. Use power factor correction control circuit in STATCOM.

Key words: FACTS devices, 48-pulse Gate Turn-Off (GTO) thyristor model STATCOM, power factor

I.INTRODUCTION

Electricity suppliers are nowadays connected about the quality of the power delivered to customers with the developments of power electronics, several solutions have been proposed to compensate for the fluctuations observed on the distribution network in order to ensure highest possible power quality for the customers

(1). these ―power quality devices‖ are power electronics converters connected in parallel or in series with the lines and the operation is controlled by a digital controller

(2). the interaction between the PQ device and the network is preferably studied by simulation. The modeling of these complex systems that contain both power circuits and control systems can be done of different bases.

We are ready to accept and on the degree the degree of accuracy of what we want to study. The modeling abstraction degree in these systems can be thus adapted to the study requirements. Commercial availability of Gate Turn-Off (GTO) thyristor switching devices with high-power handling capability and the advancement of the other types of power-semiconductor devices such as IGBTs have led to the development of fast controllable reactive power sources utilizing new electronic switching and converter technology. These switching technologies additionally offer considerable advantages over existing methods in terms of space reductions and fast effective damping.

The GTO thyristors enable the design of the solid state shunt reactive compensation and active filtering equipment based upon switching converter technology. These Power Quality Devices (PQ Devices) are power electronic converters connected in parallel or in series with transmission lines and the operation is controlled by digital controllers. Flexible Alternating current transmission systems (FACTS) devices are usually used for fast dynamic control of voltage, impedance, and phase angle of high-voltage ac lines. FACTS devices provide strategic benefits for improved transmission system power flow management through better utilization of existing transmission assets, increased transmission system security and reliability as well as availability, increased dynamic and transient grid stability, and increased power quality for sensitive industries The FACTS systems is giving rise to a new family of power electronic equipment for controlling and optimizing the dynamic performance of power system, e.g., STATCOM, SSSC, and UPFC

This paper deals with a novel cascaded multilevel converter model, which is a 48-pulse (three levels) source converter. The voltage source converter described in this paper is a harmonic neutralized, 48-pulse GTO converter. It consists of four three-phase, three-level inverters and four phase-shifting transformers. In the 48-pulse voltage source converter, the dcbus Vdc is connected to the four three-phase inverters. The four voltage generated by the inverters are applied to secondary windings of four zigzag phase-shifting transformers connected in Y or Δ. The four transformer primary windings are connected in series, and the converter pulse patterns are phase shifted so that the four voltage fundamental components sum in phase on the primary side.

II. THE STATCOM

I. The STATCOM is a VSC-based shunt device. It is made up of a voltage source converter (VSC), DC capacitor, shunt transformer and a controller associated with VSC as depicted in Fig.1. In general, STATCOM is capable of generating or absorbing independently controllable real and reactive power at its output terminals, when it is fed from an energy source or energy storage device at its input terminal. If there is no energy storage device coupled to the DC link and the losses are neglected, then shunt converter is capable of absorbing or generating reactive power only. Functionality, from the standpoint of reactive power generation, their operation is similar to that of an ideal synchronous machine whose reactive power output is varied by excitation control.

II.

A. OPERATING PRINCIPLE

A STATCOM is a controlled reactive-power source. It provides the desired reactive power generation and absorption entirely by means of electronic processing of the voltage and current waveforms in a voltage-source converter (VSC). The reactive power exchange of STATCOM with the AC system is controlled by regulating the output voltage amplitude of voltage source converter.

Aerodynamic Windmill with Reverse Charge Protection Using IoT

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Abstract: Energy is a major input for overall socio-economic development of any society. Wind energy is the fastest growing renewable energy. From centuries man has been trying to convert wind power to mechanical and more recently, electric power. Wind technology has improved significantly over the past two decades and wind energy has become increasingly competitive with other power generation options. Wind power has negligible fuel costs. A key challenge for wind energy is that electricity production depends on when winds blow rather than when consumers need power. The amount of electricity generated from wind has been growing rapidly in recent years. The power in the wind can be computed by using the concepts of kinetics. The wind mill works on the principle of converting kinetic energy of the wind to mechanical energy. The power available in the wind increases rapidly with the speed hence wind energy conversion mechanics should be located preferable in areas where the winds are strong and persistent.

Keywords: **microcontroller, LCD display, relays, battery, inverter, IOT technology**.

Agricultre Drone for Spraying Pesticides

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Abstract: There are too many developments in precision agriculture for increasing the crop productivity. Especially, in the developing countries like India, over 70% of the rural people depends upon the agriculture fields. The agriculture fields faces dramatic losses due to the diseases. These diseases came from the pests and insets, which reduces the productivity of the crops. Pesticides and fertilizers are used to kill the insects and pests in order to enhance the crop quality. The WHO (World Health Organization) estimated as one million cases of will effected, when spraying the pesticides in the crop filed manually. The Unmanned aerial vehicle (UAV) – aircrafts are used to spray the pesticides to avoid the health problems of humans when they spray manually.

Automated Seed Sowing & Pesticide Spraying Robot Using Bluetooth

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***Abstract*— In India, near about 70% people are dependent upon agriculture. So the agricultural system in India should be advanced to reduce the efforts of farmers. Various numbers of operations are performed in the agriculture field like seed sowing, weeding, cutting, pesticide spraying etc. Very basic and significant operation is seed sowing. But the present methods of seed sowing are problematic. The equipments used for seed sowing are very difficult and inconvenient to handle. So there is a need to develop equipment which will reduce the efforts of farmers. This system introduces a control mechanism which aims to drop seeds at particular position with specified distance between two seeds and lines while sowing. The drawbacks of the existing sowing machine will be removed successfully in this automatic machine.**

Keywords **- Seed sowing, Arduino MC, Relay, Gear motors, Bluetooth.**

Diagnosis of Internal Faults in a Slip ring Induction Motor

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ABSTRACT- Induction machines play a vital role in industry and there is a strong demand for their reliable and safe operation. The online monitoring of induction motors is becoming increasingly important. The main difficulty in this task is the lack of an accurate analytical model to describe a faulty motor. Faults and failures of induction machines can lead to excessive downtimes and generate large losses in terms of maintenance and lost revenues, and this motivates the examination of on-line condition monitoring. A finite element analysis approach may help to diagnose induction motor faults.

Keywords: Slip ring Induction motor, Finite Element Analysis

I. INTRODUCTION

The condition monitoring of the electrical machines can significantly reduce the costs of maintenance by allowing the early detection of faults, which could be expensive to repair. The main faults of induction motors can be broadly classified as follows:

- Bearing related faults: 40%
-Stator winding related faults: 38%
-Rotor related faults: 10%
-Other faults: 12%

Because of costly machinery repair, extended process down time, and health and safety problems, a trend in modern industry is to focus attention on fault detection and predictive maintenance strategies for industrial plant [1-2]. It is known that approximately 38% of induction motor failures are caused by failure of the stator winding, and it is believed that these faults begin as undetected turn-to-turn faults in a coil, which progress to catastrophic phase-to-phase or phase-to-ground short circuit faults. To achieve prior warning of failure, shorted turns within the stator and rotor winding coil must be detected or predicted in effect to avoid catastrophic failure.

II FINITE ELEMENT ANALYSIS

The induction motor is made up of the stator, or stationary windings, and the rotor. The stator consists of a series of wire windings of very low resistance permanently attached to the motor frame. As a voltage and a current are applied to the stator winding terminals, a magnetic field is developed in the windings. The rotor construction is laminated and slotted, the slots contains the rotor winding. The three ends of the winding are connected to the slip rings. The rotor and stator are separated by an air gap which allows free rotation of the rotor.

In general, fault diagnosis of induction motors has concentrated on sensing failures in one of three major components, the stator, the rotor, and the bearings [3]. In this paper we will address rotor faults and stator turn-to-turn faults. Approximately 36% of induction motor failures are caused by failure of the stator windings. These faults usually begin as undetected turn-to-turn faults in a coil, and progress to phase-to-phase or phase-to-ground short circuit faults. Rotor failures account for 5–10% of total induction motor failures [5]. Modelling of induction motors with internal faults is the first step in the design of the fault detection systems. For internal faults the situation is more complex because the field picture totally changes. Finite element can be used to model the induction motor under different internal faults. The FE analysis has been coupled to circuit simulation. This external circuit coupling allows us to simulate the operating conditions of the induction motor with the real power supply connections. The resulting equations are solved by a time-stepping approach

III. COUPLED CIRCUIT-FE MODEL

The magnetic field inside the induction motor is represented by the following nonlinear partial differential equations:

In studying the performance of induction motors, the FEM modelling can be divided basically into: (1) Circuit methods; (2) Eddy-current methods . In circuit methods the simulation is based on the traditional equivalent circuit approach. FEM, as a complement to the circuit method, is used to compute the circuit parameters. The stator and rotor currents are calculated outside the field solution. With this method the computation time is relatively short although its accuracy is limited by the circuit concept. In eddy-current methods, the simulation is based on the field concept. The behaviour of the machine is determined directly by the distribution of magnetic fields and current density. The stator currents and the rotor current densities can be computed concurrently. Skin effect can then be taken into account. The disadvantage is that it will take more computation time.

For the sake of clarity and simplicity, the following description will focus mainly on the different mathematical models used in various electromagnetic field computations.

Monitoring of Highway Wind Power Parameter and Controlling Highway Light Through IOT

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Abstract:-In the proposed work the wind turbines is designed to produce wind energy from the highway due to rapid move of vehicles. The fast growing source of energies are wind and solar. In this we are using the wind energy as it is freely available everywhere. Due to the movement of vehicles, the wind energy is enormously produced on the highways which are unused. So, we can make use of this energy to produce power and to overcome some problems of electricity. Now, we can place the windmill or wind turbines at the mid of the highway, because it can generate the energy when the vehicles move on the both sides. The generated power is used for nearby streetlights. All this parameters are controlled and monitored through IOT from the base station.

Key words: IOT, Powers, Raspbeerypi, Hybrid, Street light monitoring

I. INTRODUCTION

The fast growing source of energy is wind. The major problem with wind energy if fluctuation of wind. Energy will not be constant every time. So, if we use wind turbines on the highway, there will be constant wind due to rapid moving of vehicles. This power is stored in rechargeable battery that power is used during night hour automatically and the power statues we can monitor from base station through the IOT. The demand of electricity is increasing day by day as population increasing [1]-[5]. Electricity can be generated by two different resources either by conventional or nonconventional energy resources. Generation of energy by conventional resources like diesel, nuclear power plant, coal, etc have negative effect on the environment. It pollutes the air, soil degradation, etc. this conventional resources are very costly [2]. The nuclear waste is harmful and cause negative effect on the body. As days goes on the conventional resources may not exits so we must find some alternative method for generation of electricity [4]- [5]. The non-conventional resources are an alternative source for generation of electricity. There are different types of non-conventional resources mainly wind, solar, tidal, etc. In this project we are using wind for generation of energy as it is freely available everywhere and there is no need is pay for the resources.

II. CONFIGURATION OF THE SYSTEM

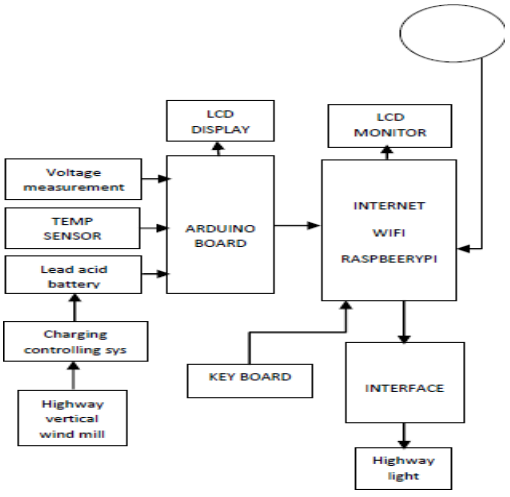

Fig.1: Block diagram of proposed work

Fig.1 shows the block diagram of the proposed system. Initially the energy generated from the highway windmill is send to charge controlling system. This energy is stored in the lead acid battery. The energy generated is used to arduino board which is also connected with voltage circuit and temperature sensor. Voltage circuit measures the voltage of windmill when its voltage goes below 8V. Temperature sensor is connected to check whenever the temperature goes above 350. Arduino is also connected with LCD display, to display temperature and voltage. It is connected with Raspbeerypi, which is used to store the program in SD card and it is operated using internet or WIFI, this generated energy is used to for nearby street light. It consist of different hardware components mainly,

Controlling and Modelling of Fuel Cell based Stand-Alone Power Generation System

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***Abstract*— this paper presents a power supply to the variable demanding load. The DC voltage supply from fuel cell is maintained constant by a closed loop boost converter and thereby given to isolated loads to provide a stable supply during load variations. The aim of the work is to maintain the dc bus voltage at constant level 350V. This is achieved by closed loop boost converter. Inverter is controlled to maintain a constant voltage and frequency across the load. Dynamic modeling and simulation study of this system are accomplished in MATLAB/Simulink platform.**
Keywords— Polymer Electrolyte Membrane (PEM), closed loop boost converter, feedback system.

I. INTRODUCTION

In current world, all are attracted towards alternate sources of energy due. Everyone is very keen in exploring uses of fuel cell which is proving to be very value as it does not cause any of environmental pollution, there will be no mechanical vibrations, less losses and also less maintenance these things leads to one go with fuel cell. Nowadays in industries and domestic sectors energy demand has been increased but we are not able to meet the demands of energy supply. Traditional power supplies must be large in scale to provide required supply and good efficiency but in fuel cells, required amount of power and higher efficiency in any scale and are portable in size. There are various types of fuel cell, but in this paper Polymer Electrolyte Membrane (PEM) fuel cell is used due to its long life and better power density.

Papers [1] and [2] describe the modeling of two different types of fuel cell. The output of the fuel cell is modeled as the function of partial pressure of the gases involved and their flow rate. The book [3] gives the details of the power converters and their design. In [4], an inverter control strategy is proposed for voltage and frequency regulation. The standards to be met by a power generating system are described in [5]. The design of filters used for obtaining sinusoidal AC supply is described in [6]. In this work a fuel cell based system is analyzed by realizing controllers for both boost converter and inverter for regulating the power supplied to consumers.

The paper is structured as follows: Section II describes about the configuration of the proposed system, section III briefs about the model of fuel cell used for the scheme followed by control strategy of inverter in section IV, simulation results and conclusions in section V and section VI respectively.

II. CONFIGURATION OF THE SYSTEM

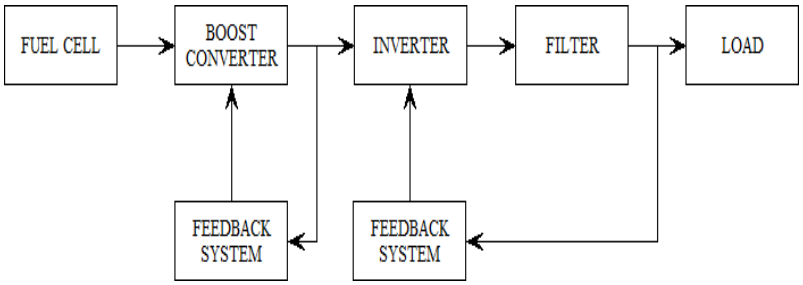

Fig. 6 Block diagram of the system.

Fig.1. shows the block diagram of the system. The system considered in this work consists of fuel cell stack controlled using a boost converter for supplying a constant DC voltage to the inverter. The output is converted to AC power by an H-bridge single phase inverter and the output is filtered by an LCL filter and then fed to single phase variable load. Inverter is controlled to maintain a constant voltage and frequency across the load.

III. MODELING AND CONTROL METHOD

Modeling of fuel cell

In 1838 Christian Freindrich Schonbein a German scientist discovered the principle of fuel cell (FC). Welsh scientist and Barrister sir William Robert grove demonstrated the first fuel cell in the year 1839.Though it was discovered way back in 1838, the concept was commercially used nearly after 117 years. NASA used fuel cell developed by UTC in Gemini space mission in 1962. In 1980‘s US Navy used fuel cell in submarines and it was only in 2007 when fuel cell were sold as Auxiliary Power Unit (APU) for backup power.

Fuel cell consists of two electrodes which are in contact with electrolyte layer; one fuel with hydrogen (anode) and the other fuelled with oxygen (cathode).The oxidant and fuel are continuously fed to fuel cell. The electrolyte acting like a membrane permits the flow of positive ions from anode to cathode while acting as an insulator for electrons. The hydrogen fuel electrode produces electron, these electrons after decomposition gets stable by moving towards cathode which is connected to an external circuit hence by this way electricity is generated. A fuel cell system comprises of four different subsystems such as cathode for a supply system of air flow anode for supply system of hydrogen flow and humidification

Anti- Smuggling of Trees using Flex Sensor and GSM

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***Abstract*-Nowadays there are many incidents about smuggling of trees like Sandal, Sagwan etc. These trees are very costly and meager. They are used in the medical sciences, cosmetics. To restrict their smuggling and to save forests around the globe some preventive measures needs to be deployed. We have developed a system which can be used to restrict smuggling. The design system uses three sensors Flex sensor (to detect the inclination of tree when its being cut), Fire sensor (to detect forest fires), Metal detector sensor(Metal detectors are useful for finding metal inclusions hidden within objects, or metal objects buried underground).Data generated from these sensors is continuously monitored with the aid of IOT. With respect to the sensors, their output devices are activated through relay switch. For Flex sensor and Metal detector sensor a buzzer is activated and for Fire sensor a water pump is activated. Generated data is stored in Server over the Ethernet module. Forest officials are notified when any event occurs so that appropriate action can be taken.**

***Keywords*- Flex Sensor, Fire Sensor, Arduino Uno, Metal detector, Ethernet Module, Ethernet shield.**

Development of Fishplate Tampering Detection System for Railway Security Based on Wireless Sensor Network

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***Abstract:* Intelligent sensors with cognitive ability when wirelessly networked can be deployed in a wide range of applications. This paper reports a novel fishplate tampering detection system for railway security based on wireless sensor network. Fish plates are tampered when the nuts and bolts are loosened so that the railway lines wouldn't remain perfectly aligned, leading to derailment of trains. The existing efforts use long length fiber optic cables which are complex to install and expensive. The smart system with cognitive wireless sensors proposed in this paper employs sensitive, cost effective and flexible piezo resistive pressure sensors which show large changes in resistances as soon as the nuts and bolts of the fishplates are loosened. These changes are processed with a MSP430 microcontroller and transmitted through the CHIPCON CC2500EM at a frequency of 2.4 GHz. Further, power saving schemes has been adopted to minimize the consumption of power along with other safety precautions. Thus the system sends early warning messages to the nearest control room whenever an unforeseen tampering act is attempted.**

Key Words: Application of Wireless Sensor Network in Railway Security which is a part of Urban Development.

Dorsal Hand Vein Reorganization using Digital Image Processing

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***Abstract*- The dorsal hand vein pattern is unique biometric identity of the human beings. The dorsal hand vein recognition is a recent biometric technique which is used for authentication purposes in various applications. Different techniques used for designing the system has discussed here. A dorsal hand vein recognition system consists of the following steps: Image acquisition from the database and pre-processing, finding of region of interest, extraction of dorsal hand vein pattern features and recognition. The aim of this paper is just to review the ideas published earlier. This model is used to improve the accuracy and response time of dorsal hand vein authentication and use neural networks for the final evaluation of the testing sample and training samples to recognize the person.**

***Keywords*- Microcontroller, Relays, web camera.**

Key Forwarding and Vehicle Parking Technology Using IOT

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Abstract: **We will definitely get wonder if all the electronic things start to talk with each other and able to take its own decision, this can be done by using Internet of Things. Internet of Things is nothing but connecting the electronic device by using the internet. By using these IOTs here we are communicating with a vehicle through the mobile for key forwarding. Key forwarding is nothing but accessing the vehicle digitally over the internet. In automatic gate control, it automatically controls all the activities of the gate and displays the free slots available at the parking. It also monitors the parking slots and updates the status of the vehicle to the owner when they requests through the GSM technology.**

[1] ***Key words*****-raspberry pi , Arduino, GSM, RFID, Wi-Fi.**

Plant Disease Detection using Image Processing

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Abstract**— In India, 70% of its people are in the Agriculture sector. The remaining 30% of people are an inseparable part of this field. Because from agriculture, we get various raw materials and especially crops, which serve as a staple food for people. But The crops and plantations get destroyed mainly due to two major reasons, first reason is destruction by natural calamities such as flood, earthquake, drought, famine, etc. and second reason is the destruction by the pathogens.98% of the destruction is caused by the pathogens and 2% of the destruction happens due to natural calamities. So the need for the plant disease detection was felt. The traditional methods were inaccurate and not effective. So various researches in this field lead to inclusion of image processing for accurate detection of disease by using plant leaf. Various spots, patterns on plant leaf are useful in detecting the disease. Further advancement was use of digital image processing for more accurate results. The identification of disease on the plant is a very important key to prevent a heavy loss of yield and the quantity of agricultural product. The symptoms can be observed on the parts of the plants such as leaf, stems, lesions and fruits. The leaf shows the symptoms by changing color, showing the spots on it. This identification of the disease is done by manual observation and pathogen detection which can consume more time and may prove costly. The aim of the project is to identify and classify the disease accurately from the leaf images. The steps required in the process are Pre-processing, Training and Identification. The disease considered are Powdery Mildew, Downey Mildew which can cause heavy loss to Grape fruit. For identification of disease features of leaf such as major axis, minor axis etc. are extracted from leaf and given to classifier for classification.**

Keywords: **HSV, Edge Detection, Pixels, RGB.**

Portable Health Monitoring and Instant First Aid Gadget

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Abstract**-In the recent years many of victims in the world die due to absence of first aid within the stipulated time. The paper aims at proposing a flexible and reliable monitoring system based on raspberrypi. The main feature of the system is that, it monitors the person's vital parameters routinely monitored by the medical professionals and healthcare providers, and if parameters are abnormal; it suggests first aid according to the abnormality.**

Keywords**— Raspberry-pi, ECG sensor, Pulse-oximeter.**

Smart Helmet Using GSM & GPS Technology for Accident Detection and Reporting System

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Abstract: **The survey till 31 Mar 2017, clearly tells that total of 154.3 million two wheelers are there in India, considering only the registered and renewed vehicle as the density of the two wheelers increases, the main risk factor is to provide the security of the riders.70% of the accidents reported are subjected to two wheeler accidents in India. Accidents of two wheelers are because of high density roads, heavy traffic, rash or negligence driving, drunk & Drive and a Sleepy riding, many times even after the accidents, accidents will not be reported properly or even the medical aid or assistance will not be available to the riders because of poor or no communication of the accidents, which leads to many number of the death in the recent years. This Project is to design an intelligent or smart helmet, which act as a Security system and also a monitoring system for the two wheeler and its rider, This embedded system consists of the Sensors network with Communication modules, which helps to stop the drive or not to allow the driving at the critical or abnormal situations, and also an accident detection system is used.**

Keywords: **UV Sensor, MQ-3 sensor, buzzer, vibration sensor, ignition, Anti-theft.**

Smart Parking Assist System using IoT

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Abstract: **Recently parking has become a serious issue and even worsens, because of the increasing number of automobiles everywhere. In this paper we propose an IoT based guidance for user to monitor and book the parking space for the vehicle and for managing and monitoring free parking space, it provides an intelligent solution. It aims at implementing smarter and better parking guidance mechanism which significantly reduces difficulty in conventional parking system. The system can monitor the state of every parking slot by deploying a sensor node on the slot. Accordingly sensor senses the status of parking slot and sends status to central node server controller. The Node MCU collects the data from all sensor node and upload to the server where user can check the parking status from anywhere using internet and any browser.**

Keywords: **Ethernet Modem, Node MCU, Sensor node.**

Smart Street Lighting

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Abstract- **Today electricity is a major concern worldwide and most of the power generation stations are based on conventional fuels like coal but we have limited sources of these nonrenewable fuels. So as to minimize the dependence on these sources, we have to move on to new and renewable sources like solar and wind, etc. However proper usage of electricity could also be one of the effective tools for saving the conventional fuels. Street lights are one of the most crucial parts for public lighting systems which consume a major part of the generated electricity. The conventional or manual controlled street lighting system has demerits like high power consumption, high cost and absence of effective monitoring system. This paper describes an energy efficient approach of smart street lighting system, which can automatically control the switching and intensity of street lights based on surrounding light intensity. Basically a smart street lighting system is a flexible street lighting system consists of various sensors and a controller which make it an intelligent street lighting system. This system can effectively overcome the demerits of any conventional street lighting system.**

Keywords- **Energy efficient system, Light Emitting Diode (LED), Raspberry pi, Passive Infra Red (PIR) sensor, automated lighting**

Smart Bus Alert System for Easy Navigation of Blind

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***Abstract*-There are many techniques which are used for navigating the visually challenged people, navigation in real time traffic is the main problem. Objective of the project is to provide a solution with the aid of wireless sensor networks (WSNs). ZigBee system is used for indicating the presence of blind person in the bus station. Voice module and APR9600 audio playback systems are used to update and inform the blind person about the bus arriving and reaching destinations and to guide him as to what he has to do next. Microcontroller analysis the information provided and generates the corresponding bus number. ZigBee transceiver sends the bus number and announced in the microphone attached with the system. The system is connected with GPS which indicates the destination given. Audio output is generated by the voice synthesizer. The expected outcome of the this project is to obtain an easy navigation system for people with visually impaired.**

***Keywords*: APR9600, ARM7, GPS, Voice module, ZigBee.**

Wireless Mobile Charger

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***Abstract* - The main objective of Wireless Charger System is to charge the mobile battery by using wireless charger. The technology will replace cables and standardize on one interface, potentially being able to charge 1000mAh battery. This is done using charging a resonant coil from AC and then transmitting subsequent power to the resistive load. The project is meant to charge a low power device quickly and efficiently by inductive coupling without the help of wires. Wireless charging system described by using the method of inductive coupling. In this project, oscillation circuit converts DC energy to AC energy (transmitter coil) to transmit magnetic field by passing frequency and then induce the receiver coil. The properties of Induction coupling are wave (magnetic field-wideband), range (very short in cm), efficiency (height) and operation frequency. The project shows as a small charging for 5V battery of phone in this method. The system bases on coupling magnetic field, then designed and constructed as two parts. There are transmitter part and receiver part. The Ampere's law, Biot-Savart's law and Faraday law are used to calculate the inductive coupling between the transmitter coil and the receiver coil. The calculation of this law shows how many power transfer in receiver part when how many distance between the transmitter coil and the receiver coil. The system is safe for users and neighboring electronic devices. To get more accurate wireless charging system, it needs to change the design of the few keywords. Research was conducted to investigate the current and future applications of wireless power transmission.**

***Keywords*- Wireless Mobile Charging Vehicle, Optimization, Routing path, Adaptive Decision System, Scalability, Wireless energy transfer, Wireless Sensor Network.**

An Overview of 3D Integrated Circuits

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Abstract — **An overview of three-dimensional integrated circuits (3D ICs) is presented in this paper. The key potential applications of 3D ICs that have the most impact in terms of performance, power and area are highlighted, followed by a brief overview of the different technology approaches to implement 3D ICs. Further, the key challenges to 3D integration are discussed here.**

Keywords — **3D Integration, Through Silicon Via (TSV), interconnect, Via-first, Via-middle, Via-last, interposer, heat removal, IC test.**

Audio Spotlighting

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Abstract- **Audio spot lighting is a revolutionary new audio technology that creates focused beams of sound similar to light beams coming out of a flashlight. By _shining' sound to one location, specific listeners can be targeted with sound without others nearby hearing it. It uses a non-linear acoustics for its working. This acoustic device comprises a speaker that fires inaudible ultrasound pulses with very small wavelength which act in a manner very similar to that of a narrow column. The ultra sound beam acts as an air borne speaker and as the beam moves through the air gradual distortion takes place in a predictable way due to the property of non-linearity of air. This gives rise to audible components that can be accurately predicted and precisely controlled. Audio Spotlight that is made of a sound processor, an amplifier and the transducer. Audio spotlight can be either directed at a particular listener or to a point where it is reflected.**

IoT Based Energy Control System using RECOS

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Abstract: **With the wireless smart socket and internet of things house energy consumption will play a significant role in energy control system of residential buildings The implementation of energy control on some appliances is an effective method to save energy at a residence, since it prevents users Sthis the user can have a track on amount of energy consumed. In this paper, an intelligent energy control scheme, named the residence energy control system (RECoS) is proposed and developed. RECoS is mainly built by two aspects one is smart socket and another one is internet of things (IOT). The wireless smart socket and IOT technology to minimize energy consumption of home appliances without deploying sensors. RECoS provides four control modes, including peak-time control, energy-limit control, automatic control, and user control. The former two are operated for all smart sockets in a house, while the latter two are used by individual smart sockets, aiming to enhance the functionality of energy control. Computational results, obtained by applying control modes are provided and discussed. Keywords: The RECoS Architecture ,System conrol modes. Energy control system, Internet of Things (IOT), neural network, smart socket, smart living.**

Advanced Vehicle Parking Using PLC

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***Abstract*: The first aim of project is design an advanced vehicle parking system this system will automatically park the car without using the driver. The driver parks his car on the passage of the vehicle park. After driver selects parking space on the computer, the vehicle will transported to the parking space. In order retrieve the car, the driver selects the location of the pallet or number of vehicle on the computer. These systems will retrieving the car from parking space and then send the car in the original position while driver is waiting. Plc is used in the advanced vehicle parking system. The PLC is used to control the movement of necessary to park the car and recover the car to and from the available parking space is choose the driver. A program needs to be created for the PLC. By using in this project ladder diagram programming are used. Steeper motor or (DC) motor is used to provide the movements of transporting the car in the parking system. Then proximity sensor is detected the available parking space and also the location of the carrier.**

Keywords: **Dc motor, Multi floor, Programmable logic control, Proximity sensor, Relay, SMPS.**

Smart Paper Technology a Review Based On Concepts of E- Paper Technology

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***Abstract*: Smart paper is one of the next generation paper technologies . It is a portable reusable storage display medium that in physical appearance looks like an ordinary paper but we can erase and write on it more than a thousand million times. These smart papers have a battery power applications such as pager, watches, hand held computer, cell phones etc. Smart paper is the technology used for applications such as ebooks, electronic newspaper, portable signs & and foldable, rollable displays. It is reflective and can be easily read in bright sunlight and also dim or dark environment. It can also be seen virtually in any angle just like a paper. It is light in weight from factor allowing it to be ideal for highly portable application. It is also be low in cost.In case of building a smart paper many new and different technologies exist in it for making it a flexible device. It is not a digital paper which is written with a pad and digital pen.**

***Keywords:* Smart paper, Epaper , Electronic ink, Construction ,Front plane, backplane, working, Gyricon , Electrophoretic, Electrowetting, electrofluiding, comparison of e-paper and LCD.**

Chat Assistant Device for Blind, Dumb and Deaf People by Using Raspberry-pi

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***Abstract*: One of the most precious gifts to a human being is an ability to see, listen, speak and respond according to the situations. But there are some unfortunate ones who are deprived of this. Making a single compact device for people with Visual, Hearing and Vocal impairment is a tough job. Communication between deaf-dumb and normal person have been always a challenging task. This paper proposes an innovative communication system framework for deaf, dumb and blind people in a single compact device. We provide a technique for a blind person to read a text and it can be achieved by capturing an image through a camera which converts a text to speech (TTS). It provides a way for the deaf people to read a text by speech to text (STT) conversion technology. Also, it provides a technique for dumb people using text to voice conversion. The system is provided with four switches and each switch has a different function. The blind people can be able to read the words using by Tesseract OCR (Online Character Recognition), the dumb people can communicate their message through text which will be read out by espeak, the deaf people can be able to hear others speech from text. All these functions are implemented by the use of Raspberry Pi.**

Keywords: Raspberry Pi, Tesseract OCR (Online Character Recognition), espeak, Speech to text (STT), Text to Speech (TTS).

High Protection Voice Identification Based Security System and Live Image Authentication

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***Abstract:* When human beings were on earth, need of various things emerged. As years passed and with tremendous development people started earning money, property, jewellery and many more precious things. With huge development people felt a need to secure their earnings. In today‘s a man‘s life the money security is an important aspect as he earns the money by his hard work, and banking is known for this. It is not enough to have these accessories, but security of this is very important, for this purpose we keep them in a bank locker. Still, we often hear or read in a newspaper that some fake person has access the locker of another person and have stolen money. In order to overcome this type of frauds, authentication of the person who wants to use the locker is very important. To overcome this security threat, a security system has been proposed using voice identification, face detection and GSM technology.**

***Keywords*: Arduino uno, GSM, Matlab.**

Smart Antennas for Wireless System

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Abstract: **In this article we discuss arrays can provide. We describes as, smart antenna as using fixed beams, and adaptive antenna as for base stations, as well as antenna technologies for handsets. the show the potential improvement that these antennas can provide, including range extension, multipath diversity, interference suppression, capai:ity increase, and datarate increase.Theissuesinvolvedinincorporatingtheseantennasintowireless systems using CDMA, GSM, and IS136 in different environments, such as rural, suburban, and urban areas, as well a sin doors, are described.**

Keyword: **GSM, CDMA, IS136.**

Optical Computing

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Abstract: **Optics has been used in computing for a number of years but the main emphasis has been and continues to be to link portions of computers, for communications, or more intrinsically in devices that have some optical application or component (optical pattern recognition, etc). Optical digital computers are still some years away, however a number of devices that can ultimately lead to real optical computers have already been manufactured, including optical logic gates, optical switches, optical interconnections, and optical memory. The most likely near-term optical computer will really be a hybrid composed of traditional architectural design along with some portions that can perform some functional operations in optical mode.**

Keyword: **optical switches.**

M-Voting

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Abstract:**The foundation of a strong democracy is an informed and engaged citizenry. And what better way to both inform and engage citizens than through the power of today's information and communication technologies? Citizens around the world recognize and embrace the benefits of e-Government services such as online tax filing, license renewal, and benefits claims. Now governments are initiating strategies that support e-democracy- and in doing so, engaging more citizens in democratic processes. This brief addresses the highly formal processes of e-democracy-in particular e-voting to offer governments and democratic-based entities worldwide the infrastructures, applications, and services necessary to implement and manage reliable, secure e-voting systems. In this paper, an electronic voting scheme using GSM based Mobile technology is presented. By integrating an electronic voting scheme with the Mobile infrastructure, we are able to exploit existing Secure Mobile authentication mechanisms and provide enhanced voter authentication and mobility while maintaining voter privacy.**

Keywords: - Mobile Equipment (ME), International Mobile Subscriber Identity (IMSI), Home Location Register (HLR), Authentication Centre (AC), Subscriber Identity Module (SIM),

Mobile Phone IC

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Abstract **—An overview of three-dimensional integrated circuits (3D ICs) is presented in this paper. The key potential applications of 3D ICs that have the most impact in terms of performance, power and area are highlighted, followed by a brief overview of the different technology approaches to implement 3D ICs. Further, the key challenges to 3D integration are discussed here.**

Keywords**— 3D Integration, Through Silicon Via (TSV), interconnect, Via-first, Via-middle, Via-last, interposer, heat removal, IC test.**

Wireless Power Transfer System for High Power Application and a Method of Segmentation

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Abstract: **This paper develops the idea of wireless power transfer system for high power application. We proposed power supply system, power receiver system and itsintegration. We assembly six supply and receiver pairs to obtain high power output using proposed resonance compensation. we verified proposed system by simulation and experiment. We were able to transfer 490kW over 11cm air gap. We discuss the practical applicability of this system and suggest directions for further study. Index Terms—Inductively Coupled Power Transfer (ICPT), High power transfer, Resonance compensation, Automatic Segmentation.**

Review on Antenna Design for Mobile Devices & Satellite Devices

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Abstract--- **Antenna is the metallic object which converts electro-magnetic signals to electric signal and vice versa. Commonly used antennas in the mobile phone are of various types such as helix type, planar inverted F type, and whip or patch type. Micro strip based patch type of antennas are popular among mobile phones due to its size, easy integration on the PCB and multi frequency band of operation. Today's mobile phones support various GSM bands and also various technologies such as CDMA, LTE, WiMAX and also WLAN, Bluetooth and so on.**

***Key words*— Helical Antenna, PIFA, and Patch Antenna**

I. INTRODUCTION

The history of antennas dates back to James Clerk Maxwell (a Scottish scientist) who unified the theories of electricity and magnetism, and eloquently represented their relations through a set of profound equations best known as Maxwell's Equations. His work was first published in 1873. He also showed that light was electromagnetic and that both light and electromagnetic waves travel by wave disturbances of the same speed.

In 1886, Professor Heinrich Rudolph Hertz (a German physicist) demonstrated the first wireless electromagnetic system. • It was not until 1901 that Guglielmo Marconi was able to send signals over large distances. • From Marconi's inception through the 1940s, antenna technology was primarily centered on wire related radiating elements and frequencies up to about UHF. It was not until World War II that modern antenna technology was launched and new elements (such as waveguide apertures, horns, reflectors) were primarily introduced.

While World War II launched a new era in antennas, advances made in computer architecture and technology during the 1960s through the 1990s have had a major impact on the advance of modern antenna technology, and they are expected to have an even greater influence on antenna engineering into the twenty-first century. • Beginning primarily in the early 1960s, numerical methods were introduced that allowed previously intractable complex antenna system configurations to be analyzed and designed very accurately. With the advent of radar, centimeter wavelengths became popular and the entire radio spectrum opened up to wide usage. GPS, cellular phone, planets of the solar system, aircraft and ships, all types of wireless device.

II. TYPES OF ANTENNA

A. HELICAL ANTENNA

Helical antenna or helix antenna is the antenna in which the conducting wire is wound in helical shape and connected to the ground plate with a feeder line. It is the simplest antenna, which provides circularly polarized waves. It is used in extra-terrestrial communications in which satellite relays etc., are involved.The below image shows a helical antenna system, which is used for satellite communications. These antennas require wider outdoor space.It consists of a helix of thick copper wire or tubing wound in the shape of a screw thread used as an antenna in conjunction with a flat metal plate called a ground plate. One end of the helix is connected to the center conductor of the cable and the outer conductor is connected to the ground plate. The radiation of helical antenna depends on the diameter of helix, the turn spacing and the pitch angle.

Modes of Operation:

The predominant modes of operation of a helical antenna are –

- Normal or perpendicular mode of radiation.
- Axial or end-fire or beam mode of radiation.

Design and Implantation of Costas Loop Demodulator for BPSK Signals

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***Abstract*—This paper presents a method of demodulation of BPSK signals. It presents the overall architecture of the Costa's Loop along with the detailed design information. This paper presents mainly the design of LPF (low-pass filter), LF (loop filter) and VCO (voltage-controlled oscillator).**

Keywords— **BPSK signals, Loop filter, VCO, LPF**, **costas loop**

1. INTRODUCTION

Costas loop is a kind of closed-loop and auto tracking system that can be applied in tracking the input signal's phase [1]. The Costas loop performs both phase-coherent suppressed carrier reconstruction and synchronous data detection within the loop. It is widely used in fields of radio-technology and has become an indispensable part of communication, radar, navigation, electronic equipment and other devices. Phase-Locked-Loop (PLL) has wide application just because of its unique narrowband tracking performance [2]-[3]. The merits of its performance in electronic design have great significance.

In this paper, the SIMULINK model of Costas loop is established. [4]- [5]

II. THE MATHEMATICAL MODEL OF COSTAS LOOP

Costas loop is also known as the in-phase and quadrature loop, its principle [6] is shown in Fig.1. Costas loop basically consists of three multipliers called mixers; two low-pass filters (LPF), loop filter (LF), a voltage-controlled Oscillator (VCO) and a 90 degree phase shift.

. The block diagram of costas loop demodulator is shown in the figure 1.

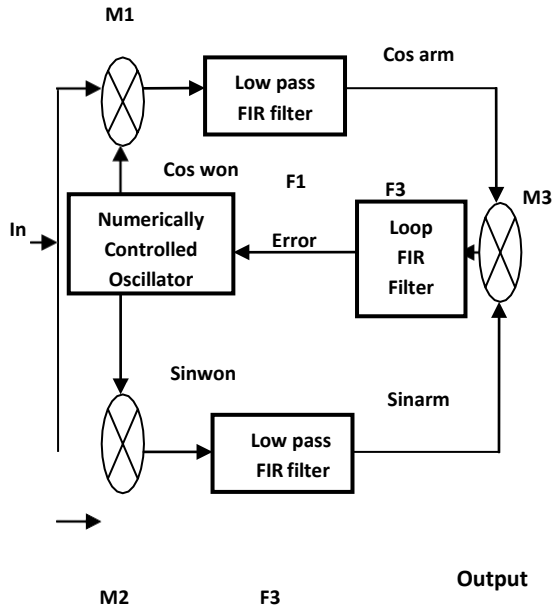

Fig.1 Block diagram Costas loop

In Fig.1, it is assumed that the loop is locked and noise signal is not considered. To be specific, suppose an amplitude signal of the form

$$s(t) = A(T)cos(2\pi f_c t + \Phi) \qquad (1)$$

It can be demodulated by multiplying$s(t)$ with the Carrier reference

$$v1 = \cos(2\pi f_c t + \Phi_1) \qquad (2)$$

After multiplication

$$v3 = s(t)v1$$

A Review on Wireless Sensor Network and WSN in Monitoring the Quality of Water

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ABSTRACT: **The field of Wireless Sensor Networks (WSNs) is experiencing a resurgence of interest and a continuous evolution in the scientific and industrial community. The use of this particular type of ad hoc network is becoming increasingly important in many contexts, regardless of geographical position and so, according to a set of possible application. WSNs offer interesting low cost and easily deployable solutions to perform a remote real time monitoring, target tracking and recognition of physical phenomenon. WSNs consist of sensor nodes. Each sensor node accoutered with low cost sensor, small battery and a microcontroller. The uses of these sensors organized into a network continue to reveal a set of research questions according to particularities target applications. Despite difficulties introduced by sensor resources constraints, research contributions in this field are growing day by day. W IRELESS sensor systems employ wireless sensors to carry out specific task(s), and include wireless sensor networks (WSNs) and internet-of-things (IoT). WSNs and IoT are key resourceful technologies that have revolutionized the field of environmental monitoring in recent years. In this paper, we present a comprehensive review of most recent literature of WSNs and outline open research issues in this field. In this paper on some of the major approaches developed to address energy issues in wireless sensor systems, and dedicated to the monitoring of water quality applications in a way that contextualizes the considered solution methods.**

***Keywords*- Wireless Sensor Networks, internet-of-things**

I. INTRODUCTION

A wireless sensor is a veritable embedded system with a wireless communication function, and that is capable to: Collect physical quantities such as heat, humidity, temperature, vibration, radiation, sound, light, movement, etc. Convert them into digital values which are sent as sensed data to a remote processing station or base station. In general, there are two types of sensors: generic sensors and gateways sensors. A generic sensor has a role of collecting measures from the deployment area while the gateway sensor has more capacity in terms of computing resources, storage and transmission. Gateways sensors are generally used in a particular type of WSN architecture. A general architecture of WSN is given in figure 1. A WSN meanwhile can be defined as an adhoc network especially consisting of a number of wireless sensors that are deployed on a given area, to ensure an accurate task, either for monitoring or for tracking or for both. some aims of WSN design as following:

self-organization, auto-recovery of faults, autonomous detection and correction of intrusions, scalability, adaptability, reliability and cooperative effort of sensor nodes, low power consumption, low node cost, routing, fault tolerance, QoS, security, survival to a change of topology in case of arrival and departure of node, survival to resources constraints. Each sensor has an operating system. Tiny OS is the specifically operating system designed for sensors and is thereby the most used. It's an event-driven operating system which provides a framework for programming embedded systems. Moreover, there are other sensors operating systems more or less popular: SOS cormos, EYES, PEEROS, MantisOS, Contiki, Kos, Senos, Nano-RK, LiteOS .

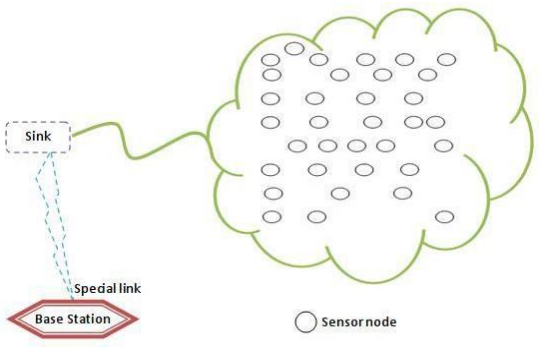

Fig. 1 Sensor architecture.

II. TYPES OF WSNS

Depending on the deployment environment on earth, underground or underwater, there are several types of wireless sensor network.

Terrestrial: In this type of sensor networks, hundreds to thousands of sensors deployed randomly or pre-deployed on a given area. This type of WSNs is mainly used in the field of environmental monitoring and presents a challenge to the sustainability of the network in terms of management of energy.

Advancement in 5G Technology

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Abstract: **This paper deals with the comparative analysis of cellular technologies from 1st generation (1G) to 5th generation (5G). Nowadays 3G offers high data rates, improved communication links by restraining the noise interference and provides multimedia services in addition to video calling and quality of service (QoS). Similarly, 4G systems provide better services. In addition to HD video calling, high dates throughput, better QoS, streaming online gaming services are the key features. Now the cellular technology enters in 5th generation (5G) which is typically based on 4G network. Hence, 5G cellular infrastructure eager to design for users to offer FHD video calling, fast and reliable communication services, IOT, advancement in online secure banking etc.**

In this paper, the goal is to address technology standards, data rates and frequencies to express the evolution of mobile cellular technologies and their progression over the years.

Keywords: **Mobile cellular communication, data rates, frequency, IOT, 3G, 4G and 5G**

Gi-Fi Technology

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Abstract: Gi-Fi will really helps op us wireless communications to faster drive. For ages cables ruled the globe. Optical fibers played a dominant role due to the higher bit rate sandals of transmission. Therefore most of the Bluetooth which could cover 9-10mts.Wi-Fifollowedit having cover age section of 91mts.Gi-Fi. Gi-Fi or Gigabit Wireless commit be the world's first transceiver integrated about the same chip that operates at 60GHz about the CMOS process. It will permit wireless transfer of audio and video disclosure up to 5 gigabit ten times the latest ceiling wireless transfer urge, at one tenth of fee, usually with in a selection of 10meters. It utilizes a 5mm square chip as well as a 1mm wide antenna burning under 2 watts of power to transmit data wirelessly around short distances, much including Bluetooth. The development will permit the truly wireless office and home in to the future. As the integrated transceiver is extremely small, it can become embedded into devices. The break through will mean then networking of office and equipment without wires will finally be a reality. In this we present an inexpensive, and excessive broad band motherboard, which will be note worthy in enabling the digital economy directed to ward the future.

Keywords: Wi-Max, Optical fibers, Gigabit Wireless, high broad band chip.

Haptic Technology - A Sense of Touch

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Abstract:**Hapticsisthescienceofapplyingtouch(tactile)sensationandcontroltointeractwithcomputerapplications.Haptic devicegivespeopleasenseoftouchwithcomputergeneratedenvironments,sothatwhenvirtualobjectsaretouched,theyseem realandtangible.Hapticstechnologyreferstotechnologythatinterfacestheuserwithavirtualenvironmentviathesenseoftou chbyapplyingforces,vibrations,and/ormotionstotheuser.Thismechanicalstimulationmaybeusedtoassistinthecreationof virtualobjects(objectsexistingonlyinacomputersimulation),forcontrolofsuchvirtualobjects,andtoenhancetheremoteco ntrolofmachinesanddevices.Thispaperincludeshowhaptictechnologyworks,aboutitsdevices,itstechnologies,itsapplicat ions,futuredevelopmentsanddisadvantages.**

Keywords: Human sense of touch, tactile feedback, Virtual object creation and control, Phantam, Haptic rendering

Plastic Solor Cell

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***ABSTRCT* --Wood ber cellulose has been used for more than 2000 years as an ingredient for making paper. The cellulose paper that we see in our everyday lives consists of bers with diameters of tens of micrometers. Using chemical or enzymatic pretreatments followed by high-pressure homogenization, the micrometer-sized cellulose bers can be disintegrated into nano brillated cellulose (NFC) with a diameter of around 10–20 nm and a length of 2 mm. By compressing the NFC pulp with the right composition in a sheet-former, highly transparent nanocellulose paper can be produced. The nanocellulose paper has large light scattering in the forward direction, which is very useful for solar cell applications. The nanocellulose paper can be coated with a wide variety of conductive materials, such as carbon nanotubes, silver nanowires and tin-doped indium oxide (ITO), to produce transparent conductive paper. By depositing a thin layer of ITO, the conductive nanocellulose paper can be used as a substrate for making organic solar cells.**

Laser Communication

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***Abstract:* Satellite communications is an important segment of near term and future hybrid network architectures of orbital and terrestrial systems, allowing rapid access to multimedia information services. Recent technological advances in the supporting technologies have now enabled laser communication subsystems to support the anticipated high-performance characteristics needed by future networks. In this paper we describetheadvantages of space borne optical communications for inter satellite links and the application to the emerging information infrastructures. We also present an overview of worldwide efforts to demonstrate the capability of this emerging technology.**

***Keywords:* laser communication, free-space, inter satellite-links, space networks, space communication**

Multicore Processor

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Abstract:MulticoreCentralProcessingUnits(CPU)arebecomingthestandardforthecurrenteraofprocessorsthroughthesignificantlevelofperformancethatCPUsoffer.Thisincludesmultiplemulticorearchitectures,differentlevelofparallelism, differentlevelsofperformance, -core Central Processing Units(CPUs).

Keywords: Multi-core processors, multi-core CPUs, performance measurement, parallelism

Hadoop Performance Tuning to improve Big Data Security

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Abstract-**The capability of cloud computing to furnish user a cost-effective and flexible way to access large volume of data on-request make the cloud widely utilized in the domain. In this task work, the proposed methodology was utilized to improve the execution of encryption or Decryption of file by utilizing Advanced Encryption Standard and One Time Password algorithm coordinated on Hadoop. Encryption or Decryption in past works utilized AES algorithm, the size of the encoded file increments by half from the first document estimate. The proposed methodology improves this proportion as the size of the encoded file decrease compare to previous work. Additionally, we will contrast this methodology and the recently actualized technique to improve the processing time of the file as well as execute this new way to deal with security in HDFS.**

Keywords- **Hadoop, HDFS, Big Data, Encryption, Decryption**

I INTRODUCTION

Cloud computing is as of now getting impressive consideration in multiple organizations, which gives the client's product assets, stockpiling, and gigantic processing on interest. Big data is the most essential issue for the cloud computing, regularly enormous quantity of information are transferred in the advanced world which required bunches of storage room, figuring assets and framework execution, many cloud computing structures have showed up available for vast scale information handling. For instance, Google's framework (GFS and MapReduce [3]) is a notable cloud computing structure. Recognizing the dangers by information investigation expanded the odds of the prescient capacities examination and Big Data attributes [5].

Many cloud issues emerging, for example, constrained customization, security, cost, execution, incongruence, uptime, vendor lock-in, and compliance. Each issue has its own undertaking of getting by in the cloud and for the most part concentrating on security issues. The size of data has turned out to be vast and ceaselessly expanding from a couple of terabytes to numerous beta bits of information. Henceforth, it needs a lot of methods to get bits of knowledge from informational indexes that are unpredictable and differing [6]. There are different clarifications of Big Data challenges, for example the 4 V's [7]-

Volume, Velocity, Variety, and Veracity.

The Hadoop [8], is one of the ongoing patterns in innovation which is a framework that allows for the distributed processing of large data sets across clusters of computers using simple programming models, and comprises of two modules that are, MapReduce and Hadoop Distributed File System (HDFS). MapReduce is a programming model appropriate for processing of immense data. Hadoop is fit for running MapReduce programs written in different dialects- Java, Ruby, Python, and C++. MapReduce programs are parallel in nature, subsequently are exceptionally valuable for performing substantial scale information investigation utilizing various machines in the cluster. The adaptability of Hadoop has been demonstrated by the prominence of these applications. However it is designed without security for stored information.

The security service architecture in Hadoop project is basic record consent and access control mechanism. Along these lines, encryption is the best answer for verifying HDFS records that are put in Datanodes and for exchanging documents among Datanodes while executing MapReduce occupations.

When utilizing cryptography there are a few targets that can be accomplished in Hadoop like data confidentiality and data integrity.

A few investigations [15-17] were actualized utilizing Encryption algorithm, its outcomes demonstrated that data size expanded to one and half of the main file and the data uploaded time additionally expanded.

The fundamental reason for this research is to address the information security issue in Hadoop so as to verify information on the Hadoop. We will propose an execution of another approach which coordinates HDFS file with Advanced Encryption Standard and One Time Password encryption algorithm to improves uploading\downloading time and lessen the span of the encrypted document. The rest of the paper is organized as follows. In Section 2, We discussed the related work. The HDFS documents encryption utilizing AES and OTP execution are introduced in Section 3. At long last, Section 4 finishes up this paper.

II RELATED

HDFS requires security strategies to ensure its information and requires encryption of its files . For the safe of HDFS, a couple of studies expect that encryption is connected to HDFS.

The standard guideline proposed in [1] is an achieve Hadoop engineering anyplace encryption and decryption capacities are added to the HDFS. Additionally HDFS is verified by including the AES encode/decode class in Hadoop. Tests on Hadoop

An Algorithmic Approach for Data Mining Classification Techniques

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***Abstract* -Data mining refers to extracting or mining knowledge from large amount of data. It is also defined as finding hidden information from a database. It is a technique which is used primarily for discovering unknown patterns and that converts raw data into user understandable information. Nowadays it is being increasingly used in science and technology to extract the vast amount of data. Classification is the separating the given data according to their characteristics similar to one another. These are some of the classification methods Naïve Baye's Classifier, Decision tree, Neural Networks, and Support Vector Machine**.

***Keywords- Data mining, Classification, Decision tree, Naïve Bayes Classifier, Neural Networks (NNs), Support Vector Machine(SVM*)**

I. INTRODUCTION

Due to the advancement in technology there are large amount of unprocessed information. It is time consuming to view or extract the needed information. In such a situation we are in need to develop a strategy which is useful to obtain the necessary information. Since there are large amount of data decision making process is tedious. To overcome these pitfalls the concept of Data Mining is used. The techniques of data mining will help the users to acquire the essential information[1].

Data mining is the process of filtering relevant data according to one's business interestsfrom the huge collection of data using different techniques and algorithms such as Association, Clustering and Classification[17]

The steps involved in knowledge extraction are as follows-

1. Data Cleaning- The information obtained may contain some errors which is pre-processed in Data Integration- Data available in various forms that are to be integrated.
2. Data Selection- The data which is suitable for userapplication.
3. Data Reduction- Since they are large amount of data it occupies more space, so using this method we reduce the space but it achieves the same results.
4. Data Mining- A new methodology to extract the essential data.
5. Pattern Evaluation- It is the process in which a pattern is identified.
6. Knowledge Representation- This is the final stage in which the knowledge is represented using different visualization techniques.

The classification is one of the major tasks in data mining. The idea behind this is to classify the given data records into one of the many possible cases which are known already. Classification tasks can make use of any one strategy. If the data are classified without looking at the training data, this kind of classification is known as priori classification. But in converse if the data were classified with the help of training data this is known as posteriori classification.

II. CLASSIFICATION

Data mining techniques broadly classified into two categories. They are predictive and descriptive. Both of these methods are used to extract the hidden patterns from huge amount of data. Classification is the process of converting the data records into set of classes. It is divided into Supervised classification and unsupervised classification. In supervised classification, the data that are to be classified is previously known based on few assumptions. In Unsupervised classification, the set of cases were not predicted by the users. By some assumption it is the job of the user to classify the given data and try to assign the name for those cases. This type of classification is known as clustering.

Classification involves predicting a certain outcome based on a given input. In order to predict the results, it needs to fetch the data already available. Based on this data the records are classified. The data sources can be categorized into training set and test set. The training set contains the data which are classified before and it used as a reference for classification purpose. With the help of the attributes the results are predicted.

Multitasking Agricultural Robot for Crop Field Monitoring and Smart Irrigation System

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Abstract**: Smart farming based on IOT technologies will enable farmers to reduce waste and enhance productivity. But Technical Advancement in agriculture is lesser as compared to other fields. To minimize the use of resources and to maximize the output, farmers should involve technology in the field of agriculture by using agricultural robots or agribots. The Main aim of this project is to propose a multitasking robot for Agriculture to assist farmers in getting Live Data with the help of sensors (Temperature, Light, Soil Moisture, humidity) & Automating the irrigation system.This project presents the crop development at low quantity water consumption and Prevents External objects (such as animals, birds) from damaging the crops. The Agriculture stick being proposed via this project is integrated with Raspberry pi Technology, mixed with various sensors and live data feed can be obtained online through cloud. The Scope/Objective of this paper is to develop a Multitasking robot for agriculture to assist farmers in getting live data for efficient monitoring of crop field. It helps farmers in determining the minimal amount of water required by the crop thereby reducing wastage of water & yielding maximum crop irrespective of Dry land or irrigated land. Itprovides Animal & bird detection technique by using RFID technology, which avoids the damage of crop. It also supports live video streaming of crop position & development in the field and sends it to the farmer. It links to the nearest weather monitoring station to get prior knowledge about weather conditions to protect crop from fickle changes in weather.**

Keywords-**Raspberry Pi 3, Soil Moisture Sensor, Humidity Sensor, RFID, pH Sensor, Temperature Sensor(LM 358),IOT, Cloud Computing.**

Improving Smart Home Security and IoT Based Monitoring for Smart Homes.

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Abstract: **This project discusses the development of A smart home security. This project aims at designing a basic home automation system of controlling multiple appliances which can be monitored and accessed from anywhere in the world with very low cost. This technology comes with new and exciting opportunities to increase the connectivity of different devices within the home for the purpose of home automation. This project discusses the development of a smart home security. This project aims at designing a basic home automation system of controlling multiple appliances which can be monitored and accessed from anywhere in the world with very low cost. This technology comes with new and exciting opportunities to increase the connectivity of different devices within the home for the purpose of home automation.**

Keywords: **Home Automation, Raspberry Pi, Web Server, MQTT, cost effective**

Action Recognition Using Dynamic Annotation of Image to Video

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Abstract: **Action recognition is most challenging task to explore type of action from motion videos or still images. Human action recognition can be successfully addressed by appropriate action knowledge from different type of media e.g videos or images. main challenge in action recognition is lack of data set where image and video should containing the similar object where knowledge conveyer plays major role to identifying the same type object in both images and video along with labeled tag. Most of the existing video action recognition methods suffer from the problem of lacking sufficient labeled training videos. In such cases, over-fitting would be a potential problem and the performance of action recognition is restrained. In this paper DAIV address labeled training dataset which can reduce effort and improve the performance of action recognition.**

Keywords: **action recognition, over-fitting, DAIV, labeled tag,BoWs.**

I INTRODUCTION

Action recognition in videos is currently in the focus of scientific research due to improvements made in automatic analysis of static images and greater availability of processing power. Action recognition task involves the identification of different actions from video clips where the action may or may not be performed throughout the entire duration of the video. This seems like a natural extension of image classification tasks to multiple frames and then aggregating the predictions from each frame. Despite the stratospheric success of deep learning architectures in image classification, progress in architectures for video classification and representation learning has been slower.

Many action recognition methods followed the conventional framework. First, a large number of local motion features are extracted from videos. Then, all local features are quantized into a histogram vector using bag-of-words (BoWs) representation. Finally, the vector-based classifiers (e.g., support vector machine) are used to perform recognition in testing videos. most of the knowledge adaptation algorithms require sufficient labeled data in the target domain. In real world applications, however, most videos are unlabeled or weak-labeled. Collecting well-labeled videos is time consuming and labor intensive. Previous studies have shown that simultaneously utilizing labeled and unlabeled data is beneficial for video action recognition.

In order to improve the performance of action recognition dynamic annotation of image to video is important which can reduce time consuming and labor intensive.

Below fig shows semantically related images may have the same pose, object, and appearance, which could also be found in related videos. If these information are taken into account, we can further obtain the coherent semantic of human action in motion videos and achieve better recognition accuracy.

Recent studies of knowledge adaptation from images to videos have shown better performance in applications of cross-media recognition and retrieval . Thus if we take a labeled video dataset as the target domain and an related image dataset, the adapted knowledge can help improving the performance of video action recognition.

II PREVIOUS WORK

Action recognition in videos is currently in the focus of scientific research due to improvements made in automatic analysis of static images and greater availability of processing power. The paper provides an overview of the key models and methods for action recognition that comprise human models and methods based on estimation of joint trajectories, silhouettes and template matching and spatio-temporal local descriptors. To deal with compound actions and activities,

Providing Security for Data's through current Security Technologies

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Abstract: **Most of the existing servers like File servers, Network attached storage systems and etc are Used for storing and accessing data in the networks. These servers are building over single server architecture that is centralized manner. –Data Security‖ is a key requirement for these servers. But these file servers are becoming a major threat as it is subjecting to hacking. This paper presents a technique where data can be secured in an efficient manner and can be used in many applications, in existing system there was no security for stored data in the server side, so there were chances that third party can easily identify the data and chance of modifying the data was more, This paper present a model for storing the data for longer duration and managing the data in distributed environments.**

Keywords: **Grids, Ontology, Blow Fish, Information Object Storage, Cryptography.**

I. INTRODUCTION

Ontology now a days has been brought in to the action by various agencies and medias in recent times following various attacks all round the world. It has been came to know that these hackers, apart from using state of art communication advancements and media, are utilizing cryptography and in addition Ontology to aid themselves with their objectives.
We all need privacy for the data stored in our system but since all our transactions takes place through a single server there were possibility of many attacks taking place across the world. So, there was no absolute protection guaranteedfor stored data. So that hacker can easily identify the data and he can modify it, so we need to protect data from unauthorized access. This is achieved by using Ontology concept. In the Ontology concept, the data file is divided into number of parts and each data part is stored into several different sub-systems. So that hacker could not identify the data from different sub-systems, so we can avoid the modification or loss of data.
The main objective of file servers is to store data files. File server is nothing but a computer which is connected to a network that are having a purpose of providing possible locations for different shared disk access i.e., document files, text files, image documents, films, information constructs thus with respect to, that can be associated to a computer network. A file server basically does not perform any calculations or it does not run any program on behalf of their clients. It is primarily designed for retrieving data where computations are heavier in particular workstations.

File servers are generally used for offering some kind of securities to the system for accessing limits to the records to determined clients or particular gatherings. Document servers has basically got different security risks, since it is supporting the various transformation of unencrypted, text files which are clear or not modified over a network. These file servers are subjecting to the point of hacking. But Present security infrastructure in this type of servers is complex.
So this paper presents a security enhancing technique that can be used for storing and retrieving the data efficiently in a distributed environment in a server side, it provides an architecture that has four sub servers that stays behind the scene stores the equally fragmented and encrypted part of data each. Here the main server which is visible to the users presents only the view and does not store data.
This paper presents a technique for storing the data efficiently in a distributed environment. So our objective is to propose a cryptographic infrastructure to protect server data, to provide a flexible architecture, to propose a technique that can be adopted in different distributed environments.

II. RELATED WORKS

Kelvin Curran of the school of figuring and wise frameworks at university of Ulster analyzes how matrix registering is enhancing endeavour operations. Many large corporations such as Boeing and Pratt & amp, Whitney are currently using computational grids to enhance their operations. However future matrices will permit an association to exploit computational frameworks without having to develop a custom in-house solution. One case of an organization using the network is a centuries old financial publishing firm, Bowne & amp; co. Bowne launched a a humble generation lattice and therefore, the organization has cut in half processing time for key application that helps shared store clients meet monetary reporting controls. Boeing has utilized lattice grouping innovation to help in the aerodynamics analysis of their new set of rockets.
In both the above mentioned scenario data sharing were always deployed in an antagonistic situation and defenceless against various security threats. Authentication, Security, reliability, privacy was a major concern in various fields.
It is very difficult in an antagonistic situation and defence less against various security multiple servers securely. Therefore we will try to overcome the above mentioned problems by using a combination of grid and ontological infrastructure in our proposed projects.

Meta Data Hiding Service Model on Cloud

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Abstract**: Cloud computing is a rising innovation for giving processing assets and capacity to a wide range of clients. Since the primary party that has physical access to information storage is the provider and to monitor where data is located for explicit customers. The providers keep meta-data in their own databases where some of the time it leads towards security and information assurance issue. If meta-data is compromised then unapproved access to client data is possible. For the protection of client data, I present a Data Transparency Unit (DTU) in this research project. It is the duty of DTU to store user information on those devices and cloud suppliers do not have direct access to information storage on those devices.**

Keywords: **Meta data, cloud computing, SaaS, PaaS, IaaS, DTU, security, privacy.**

I INTRODUCTION

Cloud computing has expanded its significance consistently. With extended customer base and availability of various applications cloud computing is standing out in Computer sciences and it has strengthened its case to being a champion among the most propitious innovation in the Computer World today. Cloud computing is comprehensively used by solitary customers and moreover little, medium and broad affiliations. Cloud Systems offer a couple of remunerations to its customers some of which are significantly reviving, for instance, on demand self-advantage, access to arrange and different assets, flexibility and some other essential Services[2].

Service models portray the dimension of inattentiveness at which a User's interfaces a Cloud Computing condition. There are three essential service models for the cloud system which are (SaaS), (PaaS) and (IaaS). SaaS gives application organizations to its customers and that customers of the SaaS cloud don't impact the shrouded gear and programming running on the cloud such as Microsoft Office. In PaaS platform is given by the cloud and applications are produced by the clients that keep running in the cloud, this is usually done through API. Case of such cloud can be Microsoft Azure and Google AppEngine [2].

With all the incredible things said concerning cloud computing, there are a couple of points that ruin this service. One such point of view is data security and protection. At the point when a customer stores information on the cloud he/she has no physical access to the establishment securing the data or information. He may be given insistence by the cloud expert centers that information is secured but those affirmations are not physically verified. This implies proposing another Transparency advantage model for information security and protection.

*A **ABOUT CLOUD COMPUTING***

Computer Science and IT is relied upon to develop rapidly. In this style of registering versatile and, productive resources give services to its clients through the internet. It additionally takes out the need to gain substantial assets this enables clients to exploit the adaptability gave by the cloud rapidly. Because of these reasons technology is hot on the market and it has all the abilities to provide services for little and medium business associations and also home clients.

*B **Cloud computing deployment models***

Computational power is conveyed in cloud computing model utilizing systems. There are three main types of cloud service models- SaaS, PaaS, and IaaS [1].

1) Platform As a Service

This service model of cloud computing is also known as PaaS, which gives a computing stage and method (SaaS). In PaaS, client makes a product utilizing apparatuses or libraries from the service providers. Many sorts of PaaS sellers offer application facilitating and an arrangement domain alongside different incorporated services.

2) Software As a Service

A product delivery system is known as ―Software-as a- Service‖ which introduces software in the cloud structure, and its related information is also put away in the cloud [1]. Utilizing a web program, SaaS is gotten to by clients. Customer Relationship Management (CRM) prompts be the biggest market for SaaS.

3) Infrastructure As a Service

The infrastructure is the base of cloud computing. IaaS gives delivery of computing as a common service decreasing the speculation cost, maintenance and operation of equipment. Infrastructure ought to be reliable and adaptable for usage and services of applications, resources delivery, for example, servers, storage and system segments as a service brings down

Abnormal Activity Detection in ATM Surveillance

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Abstract: **Posture recognition is one of the most interesting fields in computer vision because of its numerous applications in various fields. The problem is to face with simple camera can be solved by the usage of a 3D camera. In this paper, explore a technique of using skeleton information provided by Kinect 3D camera for posture recognition for effective real-time ATM intelligent monitoring. To achieve posture recognition we can use kinect to track bone joints and their positions. By analyzing the position information, the system detects abnormal behaviors.**

Keywords**: Abnormal behaviour, Kinect, Posture recognition**

I INTRODUCTION

ATM came into popularity in terms of research and usage in the early to mid 1990s. In the last few decades, ATM has become one of the most important facilities used by consumers worldwide for withdrawal of cash or to carry out other transactions. With the popularity of ATMs, banking has become much convenient. But at the same time ATMs are one of the most vulnerable sites. For this reason, ATMs have a video surveillance system installed. Unfortunately, the current systems are not so efficient to detect abnormal behaviour due to many reasons. If a criminal suspect is wearing a hat, a mask, or sunglasses, it is not possible to get a clear picture of the suspect with recognizable facial features [1]. What we need are intelligent systems that can automatically give proper warning feedback in real time. In this paper, we design a real-time system for ATM monitoring which checks for abnormal behaviours in the ATM. Using Kinect, the system tracks the people present in the ATM room and calculates their position relations, and derives features which can be used to effectively analyze the person‘s behaviour. When the system detects an abnormal behaviour, it alarms the people present in the ATM as well as the ATM monitoring employees.

II RELATED WORK

There is a lot of work that has been proposed for posture recognition. However, most of this work utilizes color information captured from simple RGB cameras. In [2], Chella et al. proposed a system for simultaneous people tracking in real life also detecting posture abnormality in any kind of environment in the context of human-computer interaction. As soon as the tracking algorithm tracks a person, the system also estimates his/her posture. In [3] Bernard, B. proposed a real-time, generic, and operational approach for recognition of human posture with a static camera. The 2D techniques represent the silhouettes of the observed person to provide a real-time processing. The proposed approach is composed of two main parts- the posture detection that recognizes the posture of the person in observation by using information computed on the studied frame, and the posture temporal filtering that filters the posture by using information about the posture of the person on the previous frames. The above mentioned human posture recognition works are dedicated to color cameras. In these works, in order to recognize human posture, region of interest in image has to be determined. The main disadvantage of these works is that their approach is sensitive to the change in clothing and lighting conditions. Unlike these works, the work proposed in this paper aims at detecting human posture from the skeleton (using depth camera). It is therefore going to react the same in day or night, whether it executing outside or inside irrespective of lighting intensity which makes it suitable for application for ATM surveillance.

III METHODOLOGY

An overview of our proposed model is presented in the figure 1. Our model consists of three modules- data acquisition, data processing and feature extraction,and posture recognition. The technique we have used to label a posture as normal or abnormal is Logistic Regression. To estimate the probability of a posture being abnormal depending on the skeleton information, regression analysis is a good approach to this problem. Moreover, as our dependent variable is dichotomous (normal behavior and abnormal behavior), Logistic Regression will be an efficient regression model in this case. The whole process from data acquisition to posture recognition is described below.

Figure 1- Project Components

Analysis of IoT Based Waste Management Using Smart Dustbin for Smart City

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ABSTRACT: -**Today garbage bins or Dustbin are placed at public places in the cities are overflowing due to increase in the waste everyday. As the population is growing, the garbage is also increasing. It creates unhygienic condition for the people and creates bad smell around the surroundings this leads in spreading some deadly diseases & human illness; to avoid such a situation we are planning to design –Analysis of IoT Based Waste Management Using Smart Dustbin for smart city‖. Here we have considered multiple dustbins located throughout the city or the Campus, these dustbins are provided with a sensor which helps in tracking the level of the garbage bins and aunique ID will be provided for every dust bin in the city so that it is easy to identify which garbage bin is full. When the level reaches the threshold limit, the device will transmit the level along with the unique ID provided. Once the bins are full then user will not be able to access the bins. In such circumstances the bin displays the direction of the nearby bins on LED display also generate the voice messages if the user place the waste on the floor. The status of the bin is accessed by the concern authorities from their place with the help of Internet and an immediate action taken to replace overflowing bins with the empty bins.**

Keywords: **8051microcontroller, RF module, IR Sensors, RFTransmitters, IntelGalileoGen2, RFReceiver.**

I. INTRODUCTION

Today main issue for pollution is Garbage Overflow. Unhygienic condition, deadly diseases & human illness. To avoid all such situations we are going to implement a project called IoT Based waste management using smart dustbin. Implementation is done with the help of IoT concept. The Internet of Things (IoT) is a concept in which surrounding objects are connected through wired and wireless networks without user intervention. Objects communicate and exchange information Objective of this project is to design and build a prototype for an automatic open dustbin that can automatically open the lid when it detects the people who want to throw out their trash. It also can detect the level of the trash that inside the dustbin. If the dustbin is full of trash at the certain level, the lid will not open even when there are people who want to throw out their trash.

Curb side collection is the most common method of disposal in most countries, in which waste is collected at regular intervals by specialised trucks. Waste collected is then transported to an appropriate disposal area. Thesmart,sensorbaseddustbinwilljudgethelevelofwasteinitandsendthe message directly to the municipal corporation.Itcansenseallthetypeofwastematerialeitheritisintheformofsolidorliquid.According to the filled level of the dustbin, the vehicles from the municipal corporation will choose the shortest path with the help of the–TRANSPORTATION SOFTWARE‖, which will save their time.It emphasizes on –DIGITALINDIA‖.The system is simple .If there is any problem with any equipment in the future, that part is easily replaceable with new one without any difficulty.

II. EXISTING SYSTEM

In our city many times we see that the garbage bins or dustbins placed at public places are overflowing. It creates unhygienic conditions for people. Also it creates ugliness to that place. The universal truth is that wastage of anything is harmful for the society.

[1] IoT Based Smart Garbage and Waste Collection Bin *S.S.Navghane1, M.S.Killedar2, Dr.V.M.Rohokale3.* 1, 2- SKN-SITS, Dept. of E&TC, Lonavala 3- Asst. Professor, SKN-SITS, Lonavala This systems architecture would be based on context of operations and processes in real-time scenarios.

Advantages-This project work is the implementation of smart garbage management system using IR sensor, microcontroller and Wi-Fi module.

Disadvantages- Major part of this project depends upon the working of the Wi-Fi module which is operable only in small distances.

[2] IOT Based Intelligent Bin for Smart Cities- Meghana K C,Dr. K R Nataraj

Sensors are connected to the all the bins at different areas. It senses the level of garbage in bin.

Advantages-Weight sensor, this is not efficient because it doesn't identify the level of waste in the bin. Hence Infrared sensor (IR sensor) is used.

Disadvantages-high cost

[3] Vikrant Bhor, PankajMorajkar, aheshwarGurav, DishantPandya –SmartGarbage Management System‖ International Journal of Engineering Research & Technology (IJERT) ISSN- 2278-0181 Vol. 4 Issue 03, March-2015 Here there are

A New Vision of Digitalizing the Blood Bank Management System Using IoT

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Abstract: **Although much of the work has been done until today to realize the Internet of Things (IoT) into practice, most of the work focuses on resource-constrained nodes, rather than linking the existing embedded systems to the IoT network. In this paper, we propose a new architecture designed to host IoT services on common embedded systems, like Blood Bank. As they often need to provide a number of sophisticated functions compared to simple sensor nodes. The latter plays a crucial role for keeping the knowledge and data required for practical complex IoT services. In addition, we provide a software framework for embedded appliance nodes, designed to reduce the burden of embedded appliance manufacturers by providing an intuitive, consistent, and easy-to-use, our framework provides functions to build Restful services in addition to the low-level communication. We have evaluated our system through a case-study, and showed that our framework can be used effectively to implement practical IoT applications over existing embedded systems with a small programming effort.**

Keywords: **Blood bank, IoT, aurdino, server ,accidents**

A Survey on Intelligent Things adopted in Internet of Things

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*Abstract:***Internet has affected the daily life. Its a dynamic entity which keeps changing. As the broadband and sensor technology is cheaper, the Internet connectivity is ubiquitous i.e. now we can connect everything, anywhere and anytime. This is the reason why Internet is called as future of Internet. Where things can be defined as animals, people, vehicle, building, device and any object equipped with sensors, actuators, software that are connected to the Internet and having the capability to capture, compute and transfer data over the network.. When the things in an Internet are powered by Artificial Intelligence, then it is known as Internet of Intelligent things. In this paper we will discuss the basic component of Internet of Intelligent Things and some important application areas where it is used. This paper provides a comprehensive view of Internet of Things to the beginners, business managers and futuristic policymakers.**

Keywords : Internet of Intelligent Things, Sensors, Actuators, Broadband, Ubiquitous, Artificial Intelligence.

I.INTRODUCTION

Internet of Things term was introduced by Kevin Ashton, who is cofounder and executive director of the Auto-ID Center at MIT, in his presentation to Procter & Gamble in year 1999. IOT is an extension of Internet. In 2007, Ashton detailed on his phrase in a piece that- ―If we have a tendency to had reasons that knew all things there was too acquainted concerning things – mistreatment knowledge they collected with none help from America – we'd be ready to track and compute everything, and greatly decrease waste, forfeiture and value. we'd remember once things required subbing, repairing, or recalling, and whether or not they were recently created or past their best‖. we have a tendency to need to authorize computers with their own strategies of gathering data, thus they'll read, hear and odor the planet for themselves, altogether its random glory. RFID and detector technology empower computers to watch, acknowledge and perceive the planet – while not the shortcomings of human- entered knowledge.‖ Later, Rand Europe in 2012 would realize to any outline the ―Internet of Things‖ during a analysis report back to the ecu Commission. within the report it had been said- ―The net of Things makes out from today‘s net by building a current and self-organizing network of connected, classifiable and on the market physical objects empowering application development in and across key vertical sectors by the employment of embedded chips, sensors, actuators and less-cost shrinking.‖[6.].There is no standard definition IOT .Different organizations have defined it differently- CCSA define ―A network which can gather information from the physical world objects by diverse deployed devices with the ability of perception, computation, execution and communication, as well as support communications among human and things or among things by transmitting, classifying, categorizing and processing information.‖[10] ‖.ITU-T define ―A worldwide infrastructure for the information society, enabling advanced services through interconnecting(physical and virtual) things based on existing as well as evolving interoperable information and communication technologies‖[10]. IETF defines ―a worldwide network of interconnected objects peculiarly addressed based on standard communication protocols.‖[5].The whole paper is divided into three parts. First part describes the important components of IOT. Second part describes the role of Artificial Intelligence in Internet of Things and the third part gives the application areas where AI and IOT are being used.

II. IOT COMPONENTS-

There are six main elements of IOT are as follows-

A. Identification- Naming +Addressing(IPV4+IPV6***)***

In order to access each object from anywhere, anytime we need unique identification of object. Identification can be provided by naming and addressing. For naming we use EPC code and for addressing we can use IPV6.Each of them are capable to provide unique identification of objects but at the same time one cannot serve both functions i.e. **object** identification and routing. We have to take them altogether.

B. Sensing- Sensing is done by sensors (such as cameras), which collects the information about the environment or the objects they monitor.

C. Communication- By using communication technologies , the collected information are send to databases for analysis purpose.

GSM Based Automatic Motor Control and Protection System

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***Abstract*: Every system is automated in order to face new challenges in the present-daysituation. Automatedsystemshavelessmanual operations, so that the flexibility, reliabilities are high and accurate. Hence every field prefers automated control systems. Wireless Control System for agricultural motors incorporating with the global GSM technology is developed with the aim of providing economical and easy control solutions using a cell phone. A motor or device may be switched on/off by phoning the cellular number assignedtothedeviceandalsocancheckthestatusofthemotor.Andalsowecandetectwherethecablewireisdamaged.Itwillp revent the motors from single phasing, dry run, overload etc. If the said problems are existing, the remote farmer will be getting message regarding problem details on the components and automatically it will make the motorOFF.**

Structural and Magnetic Studies of Some Multilayered Films

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Abstract: **Magnetic studies on multilayers have been of great interest in the recent years. Particularly, the multilayers consisting of magnetic and nonmagnetic metals were intensely pursued for structure, magnetic and electrical studies. The role of nonmagnetic spacer in tuning the interlayer exchange coupling between two neighboring magnetic layers has been of greater focus. By following electron beam gun evaporation technique, the multilayers in the configuration, $[Mn(60nm)/Al(20nm)]_n$; n =1, 2 and 9 were deposited at elevated temperature of 473K, under high vacuum conditions of the order 10^{-6} mbar in a Hindhivac make Vacuum Coating Unit Model 15F6D. Film thickness was measured during deposition using quartz crystal thickness monitor. Films were left in the chamber for more than 10 hours for annealing. Samples were subjected to grazing incidence X- ray diffraction (GIXRD) studies and from that the grain sizes were determined to be of the order of few nanometers. The magnetization as a function of field at 150K and 200K has been measured using SQUID based vibrating sample magnetometer (VSM). From the hysteresis loops, coercive field, saturation magnetization, remanent magnetization and antiferromagnetic coupling were determined. All the three films hinted at the existence of at antiferromagnetic interaction between Mn layers through Al layer. This is for the first time [Mn/Al] multilayers of present configuration were studied for surface structure and magnetic properties and, antiferromagnetic coupling between Mn layers through interfacer layer have been noticed.**

Keyword: **Maltilayers, X- ray diffraction, Saturation magnetization, Remanent magnetization and Antiferro-magnetic coupling**

1. INTRODUCTION

In the past three decades, the magnetic and electronic properties of multilayeres consisting of magnetic and nonmagnetic layers have been intensely studied due to their multifunctional applications ranging from magnetic sensors to memory alloys [1, 2]. The role of nonmagnetic spacer in tuning the interlayer exchange coupling (IEC) between two neighboring magnetic layers has been first reported by Grunberg. Subsequently, giant magnetoresistance (GMR) was simultaneously discovered [3, 4] followed by the detection of oscillations in IEC with varying width of the nonmagnetic spacer [5]. Thin films of Al with varying thickness in the range 10-200nm have been grown on (111) Si which revealed that grain size increases with increase in thickness [6]. In some studies, chromium (Cr) spacer instead of copper (Cu) has been used and investigated the effects of interface roughness [7,8] magnetic and electronic structures [9]. An anomalous behavior of low temperature resistivity has been observed in the structure, Co/M/Co (M = Cr or Cr/Ag or Ag/Cr) [10]. The effect of Cu interlayer on grain size and stress has been investigated in sputtered Fe/Cu multilayers [11]. The structural and magnetic properties were studied for Fe/Cu multilayers as a function of Fe layer thickness [12]. Some of the studies were aimed at optimizing the planar structure of (111) Au/Co/Cu trilayers [13]. The idea of diffusing metals from nonmagnetic under layer and over layer into magnetic grain boundaries have been reported for materials C, Cr , Pt [14,15], Ag [16], Al, Cu, and so on[17]. Some Mn-based alloys and compounds exhibit ferromagnetism although they do not contain ferromagnetic elements. Mn/Al [18], Mn/C/Si [19,20] and Mn/SiO2/Si [21] multilayers exhibit ferromagnetism at room temperature. The results suggest that the Mn lattices become ferromagnetic and that the ferromagnetic regions are located near the Mn/Al interfaces [22]. Carbon addition can increase the thermal stability of the coercivity of Mn–Al thin films [23]. It is known that the interlayer coupling sensitively depends on the thickness of spacer layer. Here we report investigations on structural and magnetic properties of films, Mn(60nm)/Al(20nm), labeled as MAM1, MAM2.

II. EXPERIMENTAL

The $[Mn\ (60nm)/Al\ (20nm)]_{n=\ 1,\ 9}$ labeled as MAM1, and MAM2 films were deposited in a Vacuum Coating Unit using electron beam gun evaporation techniques at a pressure 7 x 10^{-6} mbar and at a temperature of 473K. Structural investigations were carried out by grazing incidence X- ray diffraction (GIXRD), using Brucker-D8 advance diffractometer

Magnetic Properties of Ni/Fe Multilayer Thin Films

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Abstract: **The magnetic multilayers, $[Ni(100nm)/Fe(100nm)]_n$; n = 1, 2, 3 and 5 were deposited by electron beam evaporation method, under high vacuum at 473 K. The magnetization as a function of field was measured using vibrating sample magnetometer (VSM). The parameters such as coercive field, saturation magnetization, remanent magnetization and squareness ratio were determined from the M-H loops. The coercivity and remanent magnetization were found to be increasing with increasing number of bilayers and this is ascribed to the magnetic hardening of the films with increasing number of bilayers, n.**

Keywords: **Multilayers, magnetization, coercive field and squareness ratio.**

I. INTRODUCTION

In the past a decade or so magnetic and electrical transport studies on magnetic multilayers have been intensely pursued [1]. These studies also include investigations on crystal structure, nature of layers and interfaces. For example, $[Ni(86Å)/Fe(29Å)]_{11}$ multilayer was probed for texture and magnetic properties as a function of deposition temperature [2]. The multilayers, $[Fe(29Å)//Ni(86Å)]_{10}$ and $[Fe(50Å)//Ni(50Å)]_{10}$ were probed for interfacial properties and magnetization as a function of annealing temperature [3,4]. The effect of thickness of Fe layer over Ni layer on the magnetization and structural properties were investigated [5]. Several multilayer systems of the type $[Fe/M]_n$, M = Cu, Al, Au were studied for magnetic interlayer coupling [6-11] and n stands for number of repeats or bilayers. The Ni/Fe bilayers are technologically very important because of their soft magnetic properties such as low coercivity, high squareness and low saturation field. From the above cited literature, it is clear that the comprehensive studies on structural and magnetic properties of [Ni/Fe] multilayers have not been reported so for. In view of this, we studied structural and magnetic properties of multilayers, $[Ni/Fe]_n$; n = 1, 2, 3, and 5. The films are labeled as NF1, NF2, NF3 and NF4 respectively.

II. EXPERIMENTAL DETAILS

The multilayers, $[Ni(100nm)/Fe(100nm)]_n$; n = 1, 2, 3 and 5 were deposited on to the well cleaned glass substrates at a temperature of 200^{o}C and a pressure of 5 x 10^{-6} mbar. In the cleaning process, the glass substrates were kept immersed for half an hour in boiling chromic acid solution and then left them for ten hour in the solution. After that they were washed with detergent soap solution and finally rinsed with acetone. Before loading into the vacuum chamber, they were cleaned and dried [12]. The Ni and Fe layers were deposited by evaporating the nickel and iron sources from two separate molybdenum crucibles using two independent electron beam guns. The thickness of the layers was measured during deposition with the help of quartz crystal thickness monitor. The films were annealed to room temperature slowly in the vacuum chamber. Structural investigations were carried out by grazing incidence X- ray diffraction (GIXRD) studies using Brucker-D8 advance diffractometer with Cu-Kα radiation of 1.5406 Å wavelength. Room temperature magnetization was measured using vibrating sample magnetometer (Model ADE-EV9) with a maximum applied field of 0.1T.

III. RESULTS AND DISCUSSION

A. Magnetization

The Vibrating Sample Magnetometer (VSM) has been used to study magnetic properties of the films and the effect of number of bilayers on these properties. The room temperature magnetization, M has been measured with field, H applied parallel to the surface of the films. The recorded hysteresis (M versus H) loops are shown in Fig.2.

Ixora Coccinea Extract-Mediated Green Synthesis of Silver Nanoparticles: Photodegradative and Antimicrobial Studies

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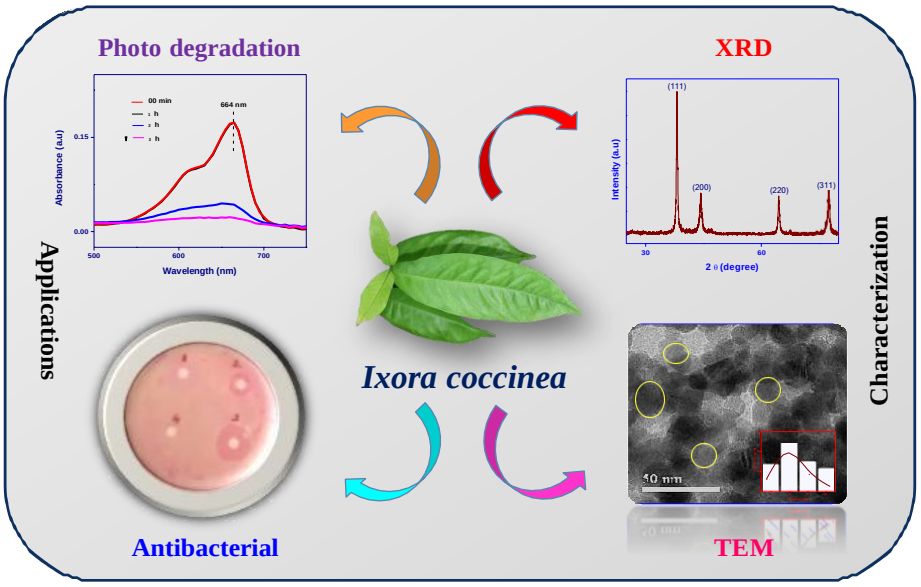
Abstract: **Silver nanoparticles (Ag NPs) was synthesized by green synthesis method using *Ixora coccinea* leaves extract as fuel. The structure and morphology of the product was characterized by Powder X-ray Diffraction, UV–Visible spectroscopy, Scanning Electron Microscopy and Transmission Electron Microscopy. The nanoparticles (NPs) were subjected to photocatalytic and antimicrobial studies. PXRD pattern demonstrate that the formed product belongs to cubic crystal system. SEM images show that the particles are agglomerated to form spherical like structure and the average crystallite sizes were found to be 20 nm. The prepared Ag NPs exhibit excellent photocatalytic activity for the photodegradation of methylene blue (MB) indicating that the Ag NPs are potential photocatalytic semiconductor materials. Ag NPs exhibit significant bactericidal activity against gram-positive (*Pseudomonas aeruginosa*, *Escherichia coli* and *Klebsiella aerogenes*) and gram-negative (*Staphylococcus aureus*) bacterias using the disc diffusion method. The study successfully demonstrates synthesis of Ag NPs by simple eco-friendly route employing *Ixora coccinea* as fuel that exhibit superior photodegradative and antibacterial activities.**

***Keywords*: Green synthesis, *Ixora coccinea*, Photocatalyst, Dye degradation, Antibacterial**

Graphical abstract



I INTRODUCTION

In recent years, nanomaterials have been widely studied compared to their bulk materials due to their interesting chemical and physical properties [1]. Silver is considered as an important material among nanomaterials of transition metal. These metals find application in various fields ranging from catalysis to drug delivery including optical, electrical electrochemical sensing and biological properties. These make Ag a multitasking material that finds applications in biosensors, light emitting material for spintronics solar cells, photocatalysts and antibacterial, etc. [2,3].

Among nanoparticles, silver nanoparticles have potential applications in the area of life sciences especially in food chemistry, forensic science, agriculture and cosmetics [4–7]. The diversity and importance of these applications has generated a great deal of interest in developing versatile methods to synthesize silver nanoparticles with well-defined and controlled properties. Several approaches used to date include reduction in solutions, chemical and photochemical reaction in reverse micelles, thermal decomposition of silver compounds, radiation-assisted, electrochemical biosynthesis and, recently, biosynthesis using living-plant systems [8–21].

Strongly soft minimal open and strongly soft maximal open maps in soft topological spaces

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Abstract: **In this paper, we introduce a new class of soft maps called strongly soft minimal open and strongly soft maximal open maps in soft topological spaces. A map $f:(X,\tau,E)\to(Y,\mu,E)$ is called strongly soft minimal open if f(F,E) is soft minimal open set in Y for every soft minimal open set (F,E) in X.A map $f:(X,\tau,E)\to(Y,\mu,E)$ is called strongly soft maximal open if f(F,E) is soft maximal open set in Y for every maximal open set (F,E) in X. Also some of their properties have been investigated.**

Keyword: **Soft sets, Soft topology, Soft minimal open sets and soft maximal open sets.**

I. INTRODUCTION

In year 2001 and 2003, F Nakaoka and N Oda [11, 12, 13] presented and contemplated minimal open (resp. minimal closed) sets and maximal open (resp. maximal closed) sets, which are subclasses of open (resp. closed) sets. The complements of minimal open sets and maximal open sets are known as maximal closed sets and minimal closed sets respectively. In year 1999, Russian specialist Molodtsov [8], started the idea on soft sets as another scientific instrument to manage vulnerabilities while demonstrating issues in building material science, software engineering, financial aspects, sociologies and restorative sciences. In Molodtsov [6], connected effectively in bearings, for example, smoothness of functions, game theory, operations research, Riemann-integration, Perron integration, probability and hypothesis to estimation.The soft set is an accumulation of inexact portrayals of an article. Likewise he also indicated why soft set hypothesis is excluded from the parametrization deficiency disorder of fuzzy set hypothesis, rough set hypothesis, probability theory and game theory. In 2008, Z Kong, L Gao, L Wong, S Li [2], presented the thought of ordinary parameter decrease of soft sets and its utilization to explore the issue of imperfect decision and included a parameter set in soft sets.

In 2011, Muhammad Shabir and Munazza Naz and Naim Cagman et al. started the investigation of soft topology and soft topological spaces independently. Muhammad Shabir and Munazza Naz [9], presented the thought of soft topological spaces which are characterized over an underlying universe with a settled arrangement of parameters and demonstrated that a soft topological space gives a parameterized group of topological spaces. In 2011, S S Benchalli, Basavaraj M I and R S Wali [1] presented the idea On Minimal Open Sets and Maps in Topological Spaces. In 2015, Hai-Long Yang , Xiuwu Liao and Sheng-Gang Li[5] presented the idea On soft continuous mappings and soft connectedness of soft topological spaces. In 2017, Chetana Cand Naganagouda K[3, 4],presented the idea on Soft Minimal Continuous and Soft Maximal Continuous Maps in soft topological spaces.

We review the accompanying statements, which are requirements for present study.

1.1 Definition [11]: Let U be an initial universe and E be the set of parameters. Let P(U) denote the power set of U and A be a non-empty subset of E. A pair (F, A) is called a soft set over U, where F is a mapping given by F: A → P(U).

Definition [8]: For two soft sets (F, A) and (G, B) over a common universe U, we say that (F, A) is a soft subset of (G, B) if

i) $A \subseteq B$ and

ii) for all $e \in A$, F(e) and G(e) are identical approximations.

We write (F, A) $\tilde{\subset}$ (G, B). (F, A) is said to be a soft super set of (G, B), if (G, B) is a soft subset of (F, A). We denote it by (F, A) $\tilde{\supset}$ (G, B).

Definition [6]: Two soft sets (F, A) and (G, B) over a common universe U are said to be soft equal if (F, A) is a soft subset of (G, B) and (G, B) is a soft subset of (F, A).

Definition [6]: Let E = {e_1,e_2 ,e_3. . . ,e_n} be a set of parameters. The NOT set of ¬P denoted by ¬E is defined by ¬E={e_1,e_2 ,e_3. . . , e_n }, where ¬e_i= not e_i for all i.

Definition [6]: The complement of a soft set (F, A) is denoted by $(F,A)^c=(F^c, \neg A)$ where, F^c: ¬A → P(U) is a mapping given by $F^c(\alpha)$ = U \F(¬α), for all α∈¬ALet us call F^c to be the soft complement function of F. Clearly $(F^c)^c$ is the same as F and$((F, A)^c)^c$= (F , A).

Definition [6]: A soft set (F, A) over U is said to be a NULL soft set denoted by −ϕ‖ if ∀ε∈A, F (ε) = ϕ.

Definition [6]: If (F, A) and (G, B) are two soft sets then (F, A) AND (G, B) denoted by (F, A)Λ(N, B) is defined by (F, A) Λ(G, B) = (H, A × B), where H((α, β)) = F(α) ∩ G(β), for all (α, β) ∩ A × B.

Definition [6]: If (F, A) and (G, B) are two soft sets then (F, A) OR (G, B) denoted by (F, A) V (G, B) is defined by(F, A) V (G, B) = (O, A × B) where, O((α, β)) = F(α) ∩G(β) for all (α, β) ∩A × B.

Definition [6]: The union of two soft sets of (F, A) and (G, B) over the common universe U is the soft set (H, C), where C = A∪B and for all e ε C,

Curling number of Rooted product of General Graphs

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Abstract: A curling subsequence is a maximal subsequence C of the degree sequence of a simple connected graph G for which the curling number $Cn(G)$ corresponds to the curling number of the degree sequence and hence the curling number of the graph G. The curling number of a graph G may be defined as the number of times an element in the degree sequence of G appears the most and compound curling number of G is the product of multiplicities of the degrees of vertices in G. In this paper we establish the results for curling number and Compound curling number of rooted product graph $G\Theta H$.