

ICARI-ME-14-02-101

## Lubricating Film Analysis in the Inlet and Work Zones at the Die/Billet Interface in Hydrostatic Extrusion of Aluminum Alloys

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**Abstract:** The objective of this paper is to investigate numerically the existence of thermal minimum film thickness at the die-billet interface in the inlet and work zones in the hydrostatic extrusion of aluminum alloy by incorporating the viscous heat dissipation in the lubricating film. Governing equations (Reynolds equation, energy equation, Roe lands viscosity relation, and film thickness geometry relation) have been solved herein using lobatto quadrature technique. Computed minimum film thickness, temperature, and pressure at the exit of inlet zone have been used as boundary conditions in the work zone analysis. In the proposed work zone analysis, heat transfer by convection along the lubricating film, conduction across the film, uniform billet heating by plastic deformation and strain hardening of billet material have been accounted. About 4 to 5 times less thermal minimum film thickness has been achieved with respect to the corresponding isothermal minimum film thickness at the exit of the inlet zone.

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ICARI-ME-14-02-102

## Evaluation of Thermal Performance of Low Cost Plastic Collectors for Rural Applications

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**Abstract:** Energy is a critical input in the national development process. In fact, it is the basic requirement for human life, agriculture, industry, transportation, communication and many other economic activities of the present civilization. In the present day, the depleting fossil fuels in the various countries, the terms of energy crises underlines the need of paying serious attention to the effective /efficient utilization of existing conventional and non conventional energy sources in terms of energy conservation through effective management for maximum agricultural production

In this paper, experimental studies on solar air/water heating cum storage systems using low cost plastic films have been carried out and periodic thermal model has been proposed. Explicit expressions have been obtained for air and absorber temperatures. The utility of the thermal model was established by conducting experiments on various systems for several days. Closed agreement between theoretical and experimental results validates the proposed methodology.

ICARI-ME-14-02-103

## Energetic and Exergetic Based Comparison Multiple Evaporators with Compound Compression and Flash Intercooler with Individual or Multiple Throttle Valves

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**Abstract:** The utility of second law analysis on vapour compression refrigeration systems is well defined because it gives the idea for improvements in efficiency due to modifications in existing design in terms of reducing exergy destructions in the components. Due to effect of global warming and ozone depletion the comparison and impact of environmental friendly refrigerants (R507a, R410a, R290, R600, R600a, R1234yf, R404a, R125, R717, R152a and R407C) on multiple evaporators at different temperature with compound compression and flash intercooler with individual and multiple throttle valves is important for calculating first law and second law performance on the basis of energetic and exergetic approach. Comparison was done for multiple evaporators with compound compression and flash intercooler with individual throttle valves (system-1) and multiple evaporators with compound compression and flash intercooler with multiple throttle valves (system-2) in terms of coefficient of performance, rational efficiency and total system defect. It was observed that for all considered refrigerants second law & first law efficiency of system-1 is lower than system-2 conversely system defect of system-1 is higher than system-2. In terms of energetic efficiency, rational efficiency and system defect for both systems R407C shows minimum performance and performances of R600, R152a and R717 better with comparison of other selected refrigerants for system-1 and system-2. But R600 is highly inflammable and R717 is toxic in nature and restricted to limited applications, so R152a is suggested for both systems.

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ICARI-ME-14-02-104

## A review of Pulse current gas tungsten arc welding for different alloys

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**Abstract:** Pulse current gas tungsten arc welding is an important joining technique for different metals like Aluminium, Magnesium, Steel, Titanium and their alloys. With increasing application of these metals and alloys in aerospace, aircraft, automotive, electronics and other industries PTIGW is the best technique evolved so far. In this document an attempt has been made to critically review this welding technique from different perspective for different metals and alloys. Some important PTIGW processing parameters and their effect on weld quality are discussed. The microstructure and metallurgical defects encountered during welding process such as porosity, cracking, oxide inclusions and loss of alloying elements are described. Mechanical properties of welds such as hardness, tensile and fatigue strength, and other important structural properties are discussed. The aim of the report is to review the recent progress in PTIGW of different metals and alloys and to provide the basis for follow-on research.

ICARI-ME-14-02-105

## Design and Fabrication of the High Pressure Effervescent Spray Combustion System

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**Abstract:** The purpose of the present work is to design and fabricate the high pressure effervescent spray combustion system for the study of high pressure spray effervescent combustion characteristics. In the present work, the high pressure effervescent spray cylindrical combustion chamber or system was developed by producing internal pressure and temperature due to combustion process approximately equal to 32 bar and 800 K respectively. It is found that curved surface thickness and closed end surface thickness of the cylindrical combustion chamber were 7.42 mm and 15.76 mm respectively.

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ICARI-ME-14-02-106

## Chemical Processing of Low Grade Manganese Ore

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**Abstract:** About 95% of the world production of manganese ore is used in steel industry in the form of Ferro-manganese but the specification required for Ferro-manganese production is generally not met by low grade Manganese ore. Rest 5% of world production of Manganese ore is used for non-metallurgical purposes such as dry batteries, chemicals, paints, glass & ceramic industries. In these industries Manganese is added in the form of MnO<sub>2</sub>/Mn ore. The quality required by these industries is generally not met by most of the ores. Considering the importance of Manganese concentrate for metallurgical and non-metallurgical purposes the present investigation has been undertaken to upgrade Manganese ore. The main objective of the study is to improve MnO<sub>2</sub> content along with Mn/Fe ratio. Non-coking coal has been used as reducing agent and low intensity magnetic separator has been used for beneficiation purpose. The effect of roasting time, C/Mn ratio and roasting temperature has been studied. It has been found that Mn/Fe ratio increases with increase in roasting temperature. The next series of experiment has been carried out on leaching of roasted Manganese ore using dilute hydrochloric acid as leach ant. This treatment resulted into increased Mn/Fe ratio by dissolution of excess iron.

## An Overview on Manufacturing of Lubricating Greases and Testing Processes

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**Abstract:** Lubricating grease is one of the basic needs of Industrial and Automobile sector to upgrade the durability and dependability, serviceability and service efficiency of mechanisms, machines and equipment. Grease is manufactured through various processes with the help of pressure vessels or open cooking kettles under high temperature and pressure. Lubricating greases were manufactured on the basis of application required. Grease-making can be a long, energy-consuming, high-maintenance and multi-step process but new technologies have been developed to reduce as these processes to very much extent. Manufacturing of grease require raw materials such as mineral oils, a thickener and additives to reduce the friction and temperature between moving components. Testing of greases as per ASTM /IP/BIS Standard is a very important aspect to categories grease under NLGI grades. Various testing methods for greases have been described in this study.

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## Factors for Improving Quality in Education Institutions

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**Abstract:** In this paper it has been tried to bring out a clear status of higher education and emergent needs to enhance the quality of higher education. In order to fuel the socio-economic development of the country, higher education is playing a more active role in our country and this requires a paradigm shift in terms of governance and service delivery. Higher education institutions must become more innovative leading to quality institutions of knowledge production and dissemination. Realizing the importance of higher education, a lot of innovative experiments are being done to improve the performance of this sector. Application of TQM concepts is one of such measures, which will go a long way in revolutionizing the higher education system. The paper attempts to theoretically conceptualize TQM in higher education.

ICARI-ME-14-02-109

## Analysis and Synthesis of Discrete-Time Repetitive Controllers of Dynamic Systems, Measurement and Control Energy Saving Camless Engines

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**Abstract:** This paper presents the design of Camless Internal Combustion (IC) Engine using the Magnetic platter Disk Sensor instead of conventional mechanism for operating valves. In this work an attempt has been made to integrate the concepts of mechanical and electronics for designing economical, low emission, high performance Camless engine. Objective of this work is to make use of Disk Sensor for developing Camless IC Engine. The paper describes design, implementation and results as follows.

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ICARI-ME-14-02-110

## Irriversibility Analysis of Multi-Evaporators Vapour Compression Refrigeration Systems Using New and Refrigerants: R134a, R290, R600, R600a, R1234yf, R502, R404a and R152a and R12, R502

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**Abstract:** The methods for improving first law and second law efficiency have been considered in this paper. Detailed energy and exergy analysis of multi-evaporators at different temperatures with multiple compressors and multiple expansion valves in parallel and series with intercooler and flash chambers in the six type vapour compression refrigeration systems for finding irreversibility in the systems have been done in terms of performance parameter for eco-friendly R134a, R290, R600, R600a, R1234yf, R1234ze, R404a and R152a and conventional R12, R502refrigerants. The numerical computations have been carried out for six systems. It was observed that first law and second law efficiency improved by 22%. It was also observed that performance of above six systems using R600 and R152a nearly matching same values under the accuracy of 5% can be used in the above system .But difficulties using R600, R290 and R600a have flammable problems therefore safety measures are required using these refrigerants, therefore R134a refrigerant is recommended for practical and commercial applications although it has slightly less thermal performance than R152a which is not widely used refrigerant for domestic and industrial applications.

ICARI-ME-14-02-111

## Durability Analysis of Lightweight Crankshafts Design Using Geometrically Restricted Finite Element Simulation Techniques for Camless Engines

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**Abstract:** In this study a dynamic simulation was conducted on a crankshaft for a single cylinder four stroke camless Engine. Finite element analysis was performed to obtain the variation of stress magnitude at critical locations. The pressure-volume diagram was used to calculate the load boundary condition in dynamic simulation model, and other simulation inputs were taken from the engine specification chart. The dynamic analysis was done analytically and was verified by simulation in FEA. The load was applied to the FEA model in NASTRAN, and boundary conditions were applied according to the engine mounting conditions. The analysis was done for different engine speeds and as a result critical engine speed and critical region on the crankshaft were obtained. Stress variation over the engine cycle and the effect of torsional load in the analysis were investigated. Results from FEA analysis were verified by strain gages attached to several locations on the crankshaft. Results achieved from aforementioned analysis can be used in fatigue life calculation and optimization of this component.

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ICARI-ME-14-02-112

## Thermal analysis of a Claude system for Liquefaction of Various Gases

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**Abstract:** From various Cryogenics systems a detailed thermo analysis of Claude cryogenic system for various gases is done. A comprehensive Second law analysis of Claude system is carried out by using various properties variables in system to find out the more efficient statics of system included exergy efficiency of system After applying numerical computational technique to Claude system it find out the Methane gas is more suitable than any other observed gas and 350 and 500 bar is best compressor pressure per kg of gas, other than this it is noticed from analysis that the inlet pressure is kept between in range of 3 to 5 bar and inlet temperature is kept below for high second law efficiency.

## GASIFICATION OF NON-COKING coals

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**Abstract:** Increasing energy demand in different sectors such as residential sector, commercial sector, industrial sector and transportation sector is affecting future energy demand-supply chain. Due to the depletion of natural gas and oil sources future energy demand is highly dependent on coal. In India coal is a primary energy source which contributes around 70% in electricity generation. However, Indigenous coal has several drawbacks such as high ash content, lower efficiency and causing environmental pollution which has drastic effect on global warming. Therefore, there is a need of clean coal technology which reduces the causes of CO<sub>2</sub> emission which is badly affecting global warming. Integrated Coal Gasification Combined Cycle (IGCC) technology is developed worldwide to reduce carbon dioxide emission by carbon capture and sequestration. Therefore gasification of coal becomes necessary to meet environmental regulations. In this paper an attempt has been made to compile the investigations carried out by various researchers on coal pyrolysis and gasification.

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## Thermo Economic Analysis and Optimization of Thermal Insulations

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**Abstract:** Thermo-economic mathematical modeling of thermal insulation has been carried to find out the effect of various parameters such as payback period, rate of interest, heat transfer co-efficient and temperature differences in the cost of insulation, cost of heat losses and the total cost for a cylindrical surfaces and flat surfaces. It was observed that cellular plastic gives better properties of insulation than other materials.

ICARI-ME-14-02-115

## Thermodynamic Analysis of a Claude system for Liquefaction of Gases

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**Abstract:** Detailed thermodynamic analysis of Claude cryogenic system for oxygen, argon, methane, fluorine, air, nitrogen gases is carried out for finding first law efficiency (COP). Second law analysis of Claude system is carried out by using various property variables in system to find out the exergetic efficiency of system. Numerical computational was carried out for Claude system it is found that the methane gas is more suitable than any other observed gas and 350 and 500 bar is best compressor pressure per kg of gas, and it was found that by keeping the inlet pressure between in range of 3 to 5 bar and inlet temperature is kept to be low for achieving high second law efficiency.

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ICARI-ME-14-02-116

## Macrostructure and Mechanical Properties of AA6082/SiC Composite Produced By Mechanical Stir Casting Process

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**Abstract:** In the present study, AA6082/SiC metal matrix composite with different size of reinforcements (75 $\mu$ m, 50 $\mu$ m and 25  $\mu$ m) were fabricated by mechanical stir casting route. Macrostructural analysis, tensile test, hardness test, impact test were performed to find out microstructure and mechanical properties of the metal matrix composites. Minimum porosity was observed for the 25  $\mu$ m of silicon carbide. The mechanical properties showed that the reduction of the size of SiC particles led to the improvement in tensile strength, hardness and toughness. It indicates that size of reinforcement is the effective factor influencing the mechanical properties.



ICARI-ME-14-02-117

## Application of Taguchi Method in Optimizing Biodiesel Production Yield

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**Abstract:** Nowadays biodiesel is considered a potential alternative to diesel fuel. It is renewable as well as environment friendly. There are hundreds of species of vegetable oils, through them biodiesel can be prepared. To optimize the parameters that give optimum biodiesel production yield, a large number of experiments are required. This is very much expensive both in terms of time and money. In this work a model is prepared for the production of vegetable oil with Taguchi-ANOVAs approach to determine optimum operation parameter using Minitab software. Linear graph theory L9 (orthogonal array) has been utilized to determine experimental trial effective parameter that effect experimental mostly. In order to determine maximum yield signal to noise ratio related with higher production yield. This optimizes the production yield and also reduces the number of experiments.

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ICARI-ME-14-02-118

## A Review on Properties of Phase Change Material for Solar Thermal Storage System

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**Abstract:** Thermal energy could have several geneses but storage of solar thermal energy is one of the principal areas of investigation. The various conventional and unconventional materials are investigated for their capability to store thermal energy. These thermal energy storage devices (TESD) are selected on the basis of some essential properties like, thermal, physical, chemical properties and economic aspects. Melting point, heat of fusion, density, heat capacity, thermal conductivity, compatibility with container and cost of production are the chief parameters for selection of phase change material. Phase change materials (PCMs) have the capability of storing heat (latent heat storage units) and phase transition point to the environment of the operating temperature. This research paper focuses on assessment of PCMs properties and economic aspect for rural and industrial applications. The design and development of thermal storage system depend on fundamentals of thermodynamic or heat transfer analysis.

ICARI-ME-14-02-119

## Performance Testing On an Agricultural Diesel Engine Using Waste Cooking Oil Biodiesel

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**Abstract:** This research work focused on the production of waste cooking oil biodiesel through mechanical stirring followed by the performance testing of WCO biodiesel blends on an agricultural diesel engine. Results show higher biodiesel yield is obtained using molar ratio 6:1 as compare to molar ratio 4.5. As per performance testing performed in this work it is evident that waste cooking oil biodiesel blends gives better thermal efficiency and have got safer impact on environment as compared to diesel fuel.

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ICARI-ME-14-02-120

## Inverse prediction of Friction Stir Welding parameters using Artificial Neural Networks

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**Abstract:** Friction Stir Welding has become an invaluable joining process in aerospace and automotive industry. It is often required that the independent input parameters (traverse speed, pin diameter, rotational speed etc.) in Friction Stir Welding (FSW) be predicted from response values such as tensile strength and hardness. This will enable the use of input parameters that gives the desired results. If this is attained, near optimal results can be achieved without use of many resources. It also allows the selection of the closest input parameters available on the machine. Artificial Neural Networks (ANN) has been successfully applied in determining the input parameters in Friction Stir Welded materials when given the tensile strength. This procedure is however problematic at times since there may be several combinations of input parameters that gives the same result. In this research ANNs were used to predict the input parameters required to give a tensile strength of 300, 340, and 345 MPa of an aluminum alloy AA6082-T6. The predicted speeds were rotational speeds of 532.7 rpm at a traverse speed of 11.8 mm/min to obtain a tensile strength of 300 MPa. For tensile strength of 340 and 345 MPa, 437.1 rpm at a traverse speed of 13.6 mm/min were predicted as the input parameters.

ICARI-ME-14-02-121

## Optimization of Machining Parameters on quality characteristics in Wire-EDM process

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**Abstract:** This study presents the investigation of the effects of machining parameters of M2-High Speed Steel (HSS) on material removal rate (MRR) in Wire-EDM process. The investigated machining parameters are pulse peak current, pulse-ON time, Pulse-OFF time, wire feed, wire tension (WT) and flushing pressure. Analysis of variance (ANOVA) is used to analyze the machining variables affecting the MRR. The results show that pulse peak current, pulse- ON time and flushing pressure are the significant parameters to maximize the MRR. After analysis, the predicted optimal value of MRR is 0.0249 g/min. The surface morphology of M-2 HSS is also examined by scanning electron microscope (SEM) which explores the necessity to optimize the MRR in order to get better surface texture after the machining.

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ICARI-ME-14-02-122

## Economic Automobile Immobilizer

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**Abstract:** The number of vehicles stolen in India per year is significantly high. While there have been advancements in the modern vehicular security mechanism, we must notice the fact that modern day security is digitized. Digitization of security led to the involvement of ECUs in vehicles. ECUs are expensive pieces of machinery and increase the cost of a vehicle. Thus, a lot of entry level vehicles do not come equipped with an ECU in the first place.

The automobile immobilizer that we've designed, provides security to vehicles without involving an ECU at all. By shutting down the fuel supply to the engine, we manage to completely stop the ignition of the vehicle, thus preventing it from being driven away by anyone else but the legitimate driver.

In order to show how this will work, the shutter shall be fabricated from Steel and shall be tested on a rubber pipe attached to a suction pump. This demonstration shall let us know about the feasibility of this design and shall bring in further insights into this model.

ICARI-ME-14-02-123

## Study of Aluminum Oxide Abrasive on Tempered Glass in Abrasive Jet Machining Using Taguchi Method

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**Abstract:** The abrasive jet machining (AJM) is a non-conventional machining process in which a abrasive particles are made to impinge on the work material at a high velocity. The jet of abrasive particles is carried by carrier gas or air. The high velocity stream of abrasive is generated by converting the pressure energy of the carrier gas or air to its kinetic energy. The high velocity abrasive particles remove the material by micro-cutting action as well as brittle fracture of the work material. Abrasive jet machining is generally good for cutting hard or brittle materials and is usually performed to furnish machining or finishing operation such as cutting, debarring, etching, etc. This project deals with the fabrication of the Abrasive Jet Machine and machining on tempered glass, calculating the material removal varying various performance parameters like pressure, angle & abrasive grit size so on. Before performing the experiment, fabrication done on AJM which are also discussed.. The different problem faced while machining on tempered glass are also discussed. Taguchi method and ANOVA is used for analysis of material removal rate.

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ICARI-ME-14-02-124

## Exploring Manufacturing Competencies of a Two Wheeler Manufacturing Unit (A Case Study)

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**Abstract:** The two wheeler industry of India is one of the most dependable industries as every person has at least a two wheeler with him, if not any four wheeler. Earlier there were scooters like Bajaj Chetak, Priya but with evolution of motorcycles like splendor, splendor+, etc. the scooter market started declining but with arrival of gearless scooters like Honda Activa, Scooty Pep, etc. the market place has become increasingly competitive in recent time and industries are facing tough test of improving products and thus market share. The competitiveness among industries is an important issue. Competency development is a vital tool to enhance the competitiveness of industries. Based, on aggregate performance of a firm, it comprehensively explores the varying importance of manufacturing competencies and drives of industrial competitiveness. Hence by, exploring the manufacturing competencies of a two wheeler industry, one can reflect the competitiveness of two wheeler manufacturing industry as a whole. This study presents various factors of manufacturing competencies affecting industrial competitiveness as the significance of these competencies is increasing day by day in two wheeler manufacturing industry.

ICARI-ME-14-02-125

## Exploring Manufacturing Competencies of a Tractor Manufacturing Unit (A Case Study)

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**Abstract:** The tractor industry of India is one of the most important industries. With arrival of certain new brands like new Holland, John Deere, etc. the global market place has become increasingly competitive in recent time and industries are facing tough challenge of improving products and thus customer base. The competitiveness among industries is an important issue. Competency development is a vital tool to enhance the competitiveness of industries. Based, on aggregate performance of a firm, it comprehensively explores the varying importance of manufacturing competencies and drives of industrial competitiveness. Hence by, exploring the manufacturing competencies of a tractor industry, one can reflect the competitiveness of tractor manufacturing industry as a whole. This study presents various factors of manufacturing competencies affecting industrial competitiveness as the significance of these competencies is increasing day by day in tractor manufacturing industry.

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ICARI-ME-14-02-126

## Performance Evaluation of a Four Stroke Si Engine at Gasoline & At Varying Gasoline- Methanol Blends

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**Abstract:** Methanol has greater octane number, high heats of evaporation, Oxygen contents by weight % higher than other fuels which result that better engine performance and decrease in HC, NOx, CO emission .In the present work the properties of methanol have been analysed from the point of view of its applications to spark ignition engine vehicles. Use of methanol – gasoline blends up to 15 percent methanol by volume requires only minor engine modifications. However, miscibility of methanol and gasoline is poor and in order to avoid fuel separation, mixture of these fuels requires fuel additives. Morse test was also performed to evaluate the performance of each cylinder for gasoline as well as gasoline – methanol blends There was distinct variation in brake specific fuel consumption and brake thermal efficiency in shorting each cylinder due to mixture distribution reaching the cylinders due to their positioning with respect to intake manifold and also due to phase separation of gasoline and methanol at higher loads and speeds when the engine was run on methanol – gasoline blends. The feasibility of the use of methanol as an automotive fuel for SI engine is discussed from technical and economic points of view.

ICARI-ME-14-02-127

## Study of 4 Wheel Steering Systems to Reduce Turning Radius and Increase Stability

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**Abstract:** Nowadays, the every vehicle existed mostly still using the two wheel steering system to control the movement of the vehicle whether it is front wheel drive, rear wheel drive or all wheel drive. But due to the awareness of safety, four wheel steering vehicles are being used increasingly due to high performance and stability that they bring to the vehicles. In this report, the performance of four wheels steered vehicle model is considered which is optimally controlled during a lane change maneuver in three type of condition which is low speed maneuver, medium speed maneuver and high speed maneuver. Four-Wheel Steering – Rear Wheels Control. For parking and low-speed maneuvers, the rear Wheel steer in the opposite direction of the front wheels, allowing much sharper turns. At higher speeds, the rest wheels steer in the same direction as the front wheels. The result is more stability and less body lean during fast lane changes and turns because the front wheels don't have to drag non-steering rear wheels onto the path.

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ICARI-ME-14-02-128

## Experimental and Numerical Analysis of Negative Spring Back In V-Bending Of If Steel

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**Abstract:** One of the most sensitive features of sheet metal forming processes is the elastic recovery during unloading, called spring-back, which leads to some geometric changes in the product. This phenomenon will affect bend angle and bend curvature, and can be influenced by various factors. In this research, the effects of anisotropy i.e., the rolling direction of 0°, 45° and 90° of ultra low carbon steel Interstitial Free (IF) Steel in V-bending with a punch corner radii of 7.5mm, were studied by experiments and numerical simulations. Comparison between the experimental and the finite element simulation results are also presented and found to be in close agreement.

ICARI-ME-14-02-129

## Review of Tribological Properties of Lubricating Oils with Nanoparticle Additives

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**Abstract:** With the advent of nanotechnology, research into lubricants and lubricant additives has experienced a paradigm shift. Instead of traditional materials, new nanomaterials and nanoparticles have been recently under investigation as lubricants or lubricant additives because of their unusual properties. Now, there are numerous different types of nanomaterials with potentially interesting friction and wear properties described the literature. This study assays the tribological properties liquid paraffin, with surface modified Ag, Y<sub>2</sub>O<sub>3</sub>, and TiO<sub>2</sub> nanoparticles used as additives. The friction and wear experiments were performed using a four ball tribotester. The experimental results show that nanoparticles promise reduced friction and wear among the mating surfaces in machines.

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ICARI-ME-14-02-130

## Life-Cycle Assessment for Lithium-Ion Battery

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**Abstract:** This paper is generalized study on the life-cycle assessment of lithium-ion batteries. A special importance is given on constituent-material and the manufacturing of aforementioned battery. Particular interest is the prediction or estimation of the impact of materials recycling on battery production. Life cycle assessments are done because some of the materials come from comparatively less plentiful resources, therefore a discussion is presented on the recycling of these batteries and its potential impact on battery manufacturing life-cycle impacts. This study represents the early stage of lithium-ion battery life-cycle analysis, in which processes are characterized preparatory to detailed data. Due to the lack of data on battery-materials production, we estimate that the energy use and greenhouse gas emissions associated with battery manufacturing make up only a few percent of a plug-in hybrid vehicle's total life-cycle energy use. Further, the recycling of battery materials can potentially significantly reduce the manufacturing energy.

ICARI-ME-14-02-131

## Experimental Investigation on Hydrodynamic Journal Bearing using SAE 10W30 Multi Grade Oil

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**Abstract:** This paper presents an experimental study of pressure distribution on hydrodynamic journal bearing with SAE 10W30 multi grade oil. Hydrodynamic Journal bearing test rig (HJBTR) is used to test the 40 mm diameter and 40 mm long bearing ( $l/d = 1$ ) made of Bronze. Test bearing is located between two antifriction bearings and loaded mechanically. The space between the shaft and the bearing is filled with SAE 10W30. A constant load of 800 N is applied at various journal rotational speeds of 1000, 1500, 2000 rpm. Various parameters like frictional torque, oil temperature and pressure at 10 different sensors along circumferential direction were recorded from Hydrodynamic Journal Bearing Test Rig (HJBTR). These results were used for experimental calculations and theoretical verification using Raimondi and Boyd charts for practical design. The experimental plot of pressure ratio vs sommerfeld number indicates that the working conditions are in the stable hydrodynamic regime. Also experimental results were following the same trend as MCKEE's investigation curve.

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ICARI-ME-14--02-132

## Experimental Studies for Accessing the Influence of Micro-Dimple Area Density on Tribological Performance of Mating Contacts

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**Abstract:** The present research has been done to investigate the influence of the relative motion of a plane surface with the other having micro-circular dimples throughout the contact. Using pin-on-disk setup, experiments have been carried out to study the influence of micro-dimple area density on friction and specific wear rate at the interface of two materials. Circular dimples are distributed in spiral array on the disk face. Based on the experiments, better tribological results have been achieved in the starved boundary lubrication mode.



ICARI-ME-14-02-133

## An Approach towards Brain Actuated Control in the Field Of Robotics Using Eeg Signals: A Review

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**Abstract:** This paper reviews the use of Electroencephalogram (EEG) signals for controlling in the field of robotics and using a suitable mapping process known as Brain-Computer Interface (BCI). Various decomposition techniques of the EEG signal for feature extraction have been proposed by many researchers. The central idea is to capture and study the brain rhythm associated with actual human movements and using the same in robotics field for the control of Mobile Robots, Humanoids, and even Robotic Wheel-Chair. The main challenges have been to understand what these signal sources are (here, we focus on EEG signals), how can they be recorded and then decoding those signals for building a suitable brain-machine interface (BMI) or BCI. Preparing a database for the decomposition of robot movements is an extremely important part of the process in order to support and validate the control process. The purpose of this paper lies solely in increasing the interaction of human with computers mainly for people with severe disabilities to assist them through a better life.

ICARI-ME-14-02-134

## Computational Fluid Flow Analysis of Cryogenic Turboexpander

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**Abstract:** Cryogenic turboexpander is the most critical component of cryogenic plant to achieve low temperature refrigeration. A cryogenic turboexpander has many components like expansion turbine, compressor, heat exchanger, instrumentations etc. Expansion turbine is the component where temperature of gases decreases due to expansion and produce the coldest level of refrigeration in the plant.

This project deals with the computational fluid flow analysis of high speed expansion turbine. This involves with the three dimensional analysis of flow through a radial expansion turbine using nitrogen as flowing fluid. This analysis is done using cfd packages, bladegen, turbogrid and CFX. Bladegen is used to create the model of turbine using available data of hub, shroud and blade profile. Turbogrid is used to mesh the model. CFX-Pre is used to define and specify the simulation settings and physical parameters required to describe the flow through turboexpander at inlet and outlet. CFX-Post is used for examining and analyzing results. Using these results variation of different thermodynamic properties inside the turbine can be seen.

Various graphs are potted indicating the variation of velocity, pressure, temperature, entropy along streamline to analyze the flow through cryogenic turbine.

ICARI-ME-14-02-135

## Computer Simulation of Trombe Wall for Porous and Non-Porous Structures

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**Abstract:** Computer simulation of porous Trombe wall has been carried out for providing comfortable thermal environment. During sunshine hours excess heat is stored within the porous absorber and there is stratification in the porous layer. For two different porous materials viz. marble and quartzite, explicit expressions for heat flux and thermal efficiency of the porous system have been developed. The experimental results have been validated with numerical computations using the developed model. It has been observed that Trombe wall contributes 20% to 30% of the total heating of the buildings depending upon type of material. The average thermal efficiency of the wall has been found to be 29.09% for brick wall, 37.27% for concrete wall, 45.35% for marble wall and 57.2% for quartzite wall respectively. The results from presented mathematical model would help the designers of passive solar systems to use this model for selecting optimal constructive parameters of the non-porous Trombe wall.

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ICARI-ME-14-02-136

## Friction Stir Processing of Aluminum alloys for Defense Applications

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**Abstract:** Friction stir processing (FSP) is a surface modifying Technique, which was developed, based on the basic principles of friction stir welding (FSW), but FSP is used to modify the local microstructure and does not join metals together..A rotating tool with pin and shoulder is inserted into a single piece of material and traversed along the desired path to cover the region of interest. Friction between the shoulder and workpiece results in localized heating which raises the temperature of the material to the range where it is plastically deformed. During this process, the severe plastic deformation and thermal exposure of material, results in a significant evolution in the local microstructure. FSP has been successfully used for formation of nanograin, increase the surface hardness and also enhances the wear resistance, tensile strength and fatigue strength of the material. This review paper, the current scenario and development of FSP of various materials mainly (a) formation of nanograins, microstructure and mechanical properties. (b) Effect of FSP/W process parameters.

ICARI-ME-14-02-137

## Theoretical analysis of a compression-absorption refrigeration cycle using flat plate collector

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**Abstract:** This analysis shows the First law analysis of the proposed compression-absorption cycle. In the proposed cycle, the vapor compression cycle using R134a as refrigerant fluid is cascaded to the absorption cycle so that low temperature refrigeration effect can be produced by without much compressor work input. In this cycle, the desired heat needed for generator of the absorption cycle is extracted by solar radiations through flat plate collector using water as the heat transfer fluid whereas the absorption refrigeration cycle used LiBr-H<sub>2</sub>O solution as the working fluid. The first law efficiency of the proposed cycle is about 34%. The effects of some influenced parameters like; generator temperature and the evaporator temperature have been observed on the cycle performance.

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ICARI-ME-14-02-138

## Simulation Study of Enhanced Performance Three Phase Induction Motor Drive Using PI Controller

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**Abstract:** High dynamic performance, which is obtained from dc motors, became achievable from induction motors with the recent advances in power semiconductors, digital signal processors and development in control techniques. By using field oriented control, torque and flux of the induction motors can be controlled independently as in dc motors. The control performance of field oriented induction motor drive greatly depends on the correct stator flux estimation. In this thesis voltage model is used for the flux estimation. Stator winding resistance is used in the voltage model. Also leakage inductance, mutual inductance and referred rotor resistance values are used in vector control calculations.

## Simulation of single slope solar still at different inclinations using CFD

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**Abstract:** The solar still is the one of the good and cost effective method for obtaining the fresh water from contaminated water. Hence for increasing the performance of solar still it is necessary to model and investigate the effect of different parameters as condensing cover. In this paper two condensing covers at inclination 150 and 300 slope studied to analyze the effect on rate of evaporation. Simulation is carried out from 40-600C with 20C interval. For 150 and 300 inclination various contours have been plotted and studied for each simulation. There is a good agreement between simulated data and available experimental data. Hence CFD is powerful tool in design of solar still and studying effective parameters on the performance.

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## Experimental Investigation of Defective Ball Bearings with Vibration Analyser

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**Abstract:** Ball bearings provide rotational freedom and support for transmitting the load between two ends of machine. Roller bearing defect is a major factor of failure in rotating machinery that affects its proper functioning which results in substantial time and economic losses. Therefore, condition monitoring of roller bearing is important and the study of severity of defects are necessarily required in order to avoid catastrophic consequences. The analysis of signal resulting from measurements taken from outer machineries has proven to be effective, by detection of failure in bearings over rotating shaft. The authors have used a method based on the vibration analysis for detection of defects in rolling element bearings with single or multiple defects on different components of the bearing structure using the time and frequency domain parameters. A dynamic loading model is used in order to create the rotary motion of bearings. A vibration analyser is used for vibration diagnosis and on-site measurements of the model. Vibration analysis has been done at the free end of shaft. In non-defective bearings the variation of velocity was found to be smooth and decreasing with respect to time, whereas an interruptive upward trend was there in defective ball bearing which is very useful in detecting defects in rolling ball bearings.

ICARI-ME-14-02-141

## Projects of Regenerating Energy from Human Kinematics

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**Abstract:** Practice of Energy harvesting is very old, which has been based on established principles and theories, which is utilized in various machines and devices. for powering sensor networks and mobile electronics. Systems can scavenge power from human activity or derive limited energy from ambient heat, light, radio, or vibrations. Ongoing power management developments enable battery-powered electronics to live longer. Such advances include dynamic optimization of voltage and clock rate, hybrid analog-digital designs, and clever wake-up procedures that keep the electronics mostly inactive. Applying such techniques to larger machines such as treadmill and bicycle, by using various dynamometers in a gym facility or at home can also produce renewable energy in large amount. Humans release a lot of energy from their everyday activities, such as simple breathing and walking. Energy harvesting's true legacy dates to the water wheel and windmill, and credible approaches that scavenge energy from waste heat or vibration have been around for many decades. Nonetheless, the field has encountered renewed interest as low-power electronics, wireless standards, and miniaturization conspire to populate the world with sensor networks and mobile devices. This article presents a whirlwind survey of energy harvesting using various conversion technologies, spanning historic and current developments in the world today.

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ICARI-ME-14-02-142

## Enhancing Productivity at Assembly Line: A Study in Automobile Manufacturing Sector

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**Abstract:** This paper consists of the study of the assembly line and logistics area held in the RENAULT NISSAN AUTOMOTIVE INDIA PVT. LTD. Plant in Chennai. It was required by the company that new cars (to be launched) production is desired in the same plant with the same infrastructure and same man power available.

As a result, take time of the workers was calculated and extra inventory near the assembly line was displaced and space for new spare parts (of new cars) made there at assembly line. Analyzing the present work structure, proper time study sheets were made and layout planning was done both of logistics area and assembly line. A final job allocation of workers were changed and allotted jobs in which lag time and other wastage of time was comparatively less.

## Mutual Fund as an Indicator of Growth: Customers' Opinion

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**Abstract:** Mutual fund is a kind of investment that uses money from many investors to invest in stocks, bonds or other types of investment and the fund manager decides how to invest the money. The objective of present study is to analyze the customers' opinion regarding mutual fund as an indicator of growth with tentative hypothesis that there is no significant difference in customers' satisfaction and demographic factor such as age, qualification, occupation, income and gender. By adopting random sampling a sample 160 respondents have been taken from the Sirsa district. The data was analyzed by using various statistical techniques and tools, such as mean, percentage, frequency and Chi-square has been used. Further it is concluded that the response of majority of respondents on different demographic factors such as age, qualification, occupation, income and gender wise are dissatisfied regarding mutual fund as an indicator of growth because of low return on the investment of mutual fund after long span of time.

## Solar Air-Conditioning: Design for a compressor-less system using Peltier effect

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**Abstract:** Air-conditioning is one of the major consumers of electrical energy in many parts of the world today and already today air-conditioning causes energy shortage in for example China. The demand can be expected to increase because of changing working times, increased comfort expectations and global warming. Air-conditioning systems in use are most often built around a vapor compression system driven by grid-electricity. However, most ways of generating the electricity today, as well as the refrigerants being used in traditional vapor compression systems, have negative impact on the environment. Solar air-conditioning might be a way to reduce the demand for electricity. In addition many solar air-conditioning systems are constructed in ways that eliminate the need for CFC, HCFC or HFC refrigerants. This research work is based on the peltier effect with which we can cool a specific area without using compressor which take a huge consumption of electricity. And this system is driven by solar energy using solar plates, battery, transformer peltier module and heat sink. This paper deals with a wide range of components, from room air-conditioners to solar collectors, which can be used as subcomponents in a solar air-conditioning system. However, most of the components and subsystems covered are not only suitable for solar air-conditioning. Some components are used for electrically, mechanically or heat driven air-conditioning. And of course other sources of mechanical energy or heat could be used for powering these components. Other components are used for solar energy collection and storage, which can be used in solar energy system with other purposes than just driving a solar air-conditioning system. In this research work the idea was to build an alternative for AC and to provide Air conditioning effect. The research aims to design and build a miniature prototype of thermoelectric cooling system for a conventional air conditioned to provide air conditioning to reduce the consumption of electricity and to reduce the pollution.

## Computer Vision Based Tracking Of Biological Cells-A Review

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**Abstract:** With the advent of highly advanced optics and imaging system, currently biological research has reached a stage where scientists can study biological entities and processes at molecular and cellular-level in real time. However, a single experiment consists of hundreds and thousands of parameters to be recorded and a large population of microscopic objects to be tracked. Thus, making manual inspection of such events practically impossible. This calls for an approach to computer-vision based automated tracking and monitoring of cells in biological experiments. This technology promises to revolutionize the research in cellular biology and medical science which includes discovery of diseases by tracking the process in cells, development of therapy and drugs and the study of microscopic biological elements. This article surveys the recent literature in the area of computer vision based automated cell tracking. It discusses the latest trends and successes in the development and introduction of automated cell tracking techniques and systems.

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## Application of Selective Inventory Control Techniques for Cutting Tool Inventory Modeling and Inventory Reduction-A Case Study

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**Abstract:** The study shows the need of inventory control and inventory reduction in the industries. It shows the importance and need of Zero inventory (JIT system) in the industries. In this work ABC and VED selective inventory control techniques are applied for cutting tool inventory modeling in an industry. It was suggested that the conventional inventory model formulated as per their convenience is not very effective. A 2-D matrix of the ABC-VED analysis has been constructed for inventory modeling to achieve high efficiency. For Inventory reduction Ageing analysis, Analysis of Scrap and Lead Time analysis was carried out on the cutting tools. The results showed that there are a number of items present as scrap and a lot of items are just being accumulated and are not in use. It was suggested that to sell off the scraps and extra unused items in order to reduce the inventory holding costs and empty the space which have been un-necessarily being occupied. Feasibility of JIT system was carried out for the cutting tools and it was found that it cannot be applied to the plant. The reasons for the same were stated. The research helped the company to understand their current inventory model and the failures of the model. The study helped them to examine their inventory more effectively and hence later it helped them to reduce the inventory which added increased productivity, business growth and reduce the losses.

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ICARI-ME-14-02-147

## Multiple Criteria Decision Making Techniques in Manufacturing Industries -A Review Study with the Application of Fuzzy

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**Abstract:** Manufacturing industries are facing stiff market competition, work pressures and a very competitive environment. This has forced them to be alert and take the desired decisions in order to achieve their goals. In this paper, a review study has been made on MCDM techniques in Manufacturing Industries. We found that the managers and engineers of the industries face a number of problems and situations in which decision making is very difficult and the margin of safety is very less. Any wrong decision would lead to losses. These situations are mainly of multiple criteria decision making, in which decision has to be taken by analyzing various criteria's and then select the best alternatives among various alternatives present to him. These situations become more tough and complex when the data available for the analysis is not precise. The data is in imprecise form and vague. This requires use of Fuzzy Logic techniques to deal with these types of data. In order to overcome both the problems, the paper proposes Fuzzy MCDM techniques which can deal with these situations.

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ICARI-ME-14-02-148

## Pneumatically Actuated Vehicle as an Alter-Native

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**Abstract:** As we know, the world we live in is facing energy crisis and all kinds of conventional sources of energy are on the verge of exhaustion and also causing pollution. Therefore, alternate sources of energies are being explored, one of which is air. Air is a natural resource which is found in bulk, yet we have hardly been able to tap its potential as an energy fuel. The authors of this paper present an idea to construct a vehicle that runs on compressed air, is a clean source of energy and economic too, if applied on a large scale. The paper explains various mechanisms involved in running the vehicle.



## Theoretical Review of Renewable Energy for Rural Applications

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**Abstract:** This paper gives a detailed theoretical review of various types of renewable energy for rural applications. This paper provides an overview of renewable energy to increase electricity production in rural areas. RETs in electricity generation from renewable sources such as wind, solar, water, tidal and geothermal. These kinds of technologies have long been subject to international debate and action as a means of expanding access to electricity by means of off grid or grid extension programmes. Similarly, there are variety of components which supplies electricity in off grid or rural areas like PV modules, small wind turbines, towers, small hydro turbines, winds and solar pumps, inverters, and variety of decentralized systems have also been developed and used to run various house hold appliances, micro grid and mini grid are also used for off grid power electricity generation.

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## Theoretical implementations of the torrefied biomass as a fuel in gasification process

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**Abstract:** To meet the on growing energy demands and compensating for the emissions caused due to fossil fuels biomass gasification process is employed. Torrefied biomass gasification provides clean energy with fewer emissions as compared to fossil fuels like coal.

In the present paper an attempt is made to study the viability of torrefied biomass as an alternate source of fuel, its scope and its limitation in the gasification process. The torrefied biomass has been found out to be a better fuel than the original biomass and quite competent to coal in the gasification process. Also a design has been proposed for integrating the torrefaction and gasification process.

ICARI-ME-14-02-151

## Integration of Water-Lithium bromide absorption refrigeration system with Diesel engine: A thermodynamic study

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**Abstract:** This paper examines through a thermodynamic analysis the feasibility of using waste heat from marine Diesel engines to drive an ammonia-water absorption refrigeration system. An energy balance of a diesel engine shows that sufficient waste heat is provided. The results illustrate that higher performance of the system is obtained at high generator and evaporator temperatures and also at low condenser and absorber temperatures.

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ICARI-ME-14-02-152

## Theoretical Investigation of the Torrefaction Process and the Enhanced Properties of the Torrefied Fuel

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**Abstract:** Biomass has long been used as a source of renewable energy but its use has been surpassed by fossil fuels due to its lower calorific value and long term storage and Handling Problems. In Order To Enhance The Use Of Biomass Torrefaction Process Has Been Developed.

Torrefaction Is A Pretreatment Process In Order To Increase The Efficiency Of Biomass. Torrefaction Is A Mild Form Of Pyrolysis Carried Out Between Temperature Range Of 200-3000C In The Absence Of Oxygen. The Resulting Torrefied Biomass Is A Better Hydrophobic Fuel With Higher Calorific Value Than The Original Biomass, Low SO<sub>2</sub> And NO<sub>x</sub> Emissions And Much Easier Storage And Handling.

The Paper Is Literature Synthesis Of The Principles Of Torrefaction, The Process Technology And Compares The Properties Of The Torrefied Product With The Original Biomass. It Also Pays Attention To The Scope Of The Torrefaction Process And Its Utilization In Development Of Green Energy.

ICARI-ME-14-02-153

## Analysis of Pressure Distribution between Two Bodies Having Relative Motion with Fluid Using Matlab

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**Abstract:** Scientist is continuously working on saving of energy. Most of the energy exposed as friction loss in environment. It increases the temperature and finally global warming. Researchers are concern with the virtual effect and use the modern software for their results. Authors have used mathematical modeling process to calculate the variations of pressure distribution with fluid film between two surfaces which were in relative motion. The main governing equation is Reynolds's Equation whose non dimensionalization and discretization are carried out to develop a relation between the pressure distribution and fluid film thickness. MATLAB was used to obtain the graphs between pressure and fluid film for various profiles. The study found that thickness of fluid film between the two surfaces plays a major role in developing hydrodynamic force required to keep the mating surfaces apart.

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ICARI-ME-14-02-154

## Bond Graph Modeling Of Shoe Sole

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**Abstract:** The daily physical activity of human being requires excessive movement, which in turn produces fatigue on legs. Keep in view this problem best design of footwear are manufactured across the country in order to provide best comfortably and flexibility, which further contribute towards efficiency of humans. Different physical conditions requires different kind of Shoes according to their comfortably and Reliability, keep this in view modeling of Shoe sole has been done using Bond Graph Technique by taking spring-damper arrangement in Shoe Sole. Bond Graph Modeling can be applied to any multi energy domain system to analyze it. In this model the stiffness of sole material and all postures of standing with excitation are considered, hence the overall modeling is done using several springs with different stiffness and same damper material.

## Human following load carrier

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**Abstract:** Human-following vehicles have been researched currently these decades due to its various applications in daily life and manufacturing. A human-following robot can be used for obstacles avoidance and target detection. Various approaches of following robots have been developed such as using ultrasonic sensors, voice recognition sensors, and laser range sensors and so on. A mobile robot such as human following robot is controlled to follow a walking human using distributed intelligent sensor as stably and precisely as possible. In this paper, we have presented future applications of HFCL such as it can be used as a pram for carrying a baby, assisting waiters in luxurious hotels for serving food thus reducing human effort and service time and so on. This paper also presents a new kind of four-wheeled drive which enables it to take accurate turns along the central axis, at low speed.

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## Thermal Effects on Minimum Film Thickness in Fully Flooded and Starved Inlet Zones in Cold Rolling of Metallic Strips

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**Abstract:** Understanding and prediction of minimum film thickness at the roll-strip interface in the cold rolling process have been the issue of concerns for the designers/engineers since last couple of decades for effective controlling of the performance behaviors of the cold roll mills. For having awareness about the minimum film thickness variation in the inlet zone at the cold rolling of metallic strip at elevated roll speeds, an efficient thermo-hydrodynamic analysis of the fully flooded and starved inlet zones has been carried out and reported herein. The effects of roll speed (up to 50.0 m/s), reduction ratio (0.05–0.20), and slip (up to 20%) on the minimum film thicknesses (isothermal and thermal) are rigorously investigated. Significant reduction in minimum film thickness (thermal) with respect to isothermal minimum film thickness has been achieved with increase in the roll speed, reduction ratio and slip.

ICARI-ME-14-02-157

## Analysis of Drag and Lift Force Acting On the Flat Plate

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**Abstract:** Analysis of the drag and lift forces acting on the surface of a flat plate was done as flat plate is most fundamental of all the design configurations. The analysis was done under various conditions of the fluid flow viz. laminar and turbulent and the plate configuration was changed from horizontal to gradually inclined positions. When the top surface of the flat plate is considered, air velocity was found to increase on moving along the plate's length. Different results of drag and lift forces were obtained, when analyzing the flow on flat plate at different angles.

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ICARI-ME-14-02-158

## CFD Analysis of an Energy Scavenging Axial Flow Micro Turbine using Automotive Exhaust Gases

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Email:

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**Abstract:** Analysis of the drag and lift forces acting on the surface of a flat plate was done as flat plate is most fundamental of all the design configurations. The analysis was done under various conditions of the fluid flow viz. laminar and turbulent and the plate configuration was changed from horizontal to gradually inclined positions. When the top surface of the flat plate is considered, air velocity was found to increase on moving along the plate's length. Different results of drag and lift forces were obtained, when analyzing the flow on flat plate at different angles.

## Review Paper on the Utilisation of Waste Heat for Electricity Generation

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**Abstract:** The application of the alternative green technology in converting waste-heat energy directly into electrical power improves the overall efficiency. Thermoelectric generators (TEG) have emerged as a promising alternative green technology due to their distinct advantages. TEG works on the principle of Seebeck effect. This review includes experimental analysis on a T-type thermocouple subjected to a temperature gradient. The voltage obtained is a function of temperature gradient. Thermoelectric power generation offer a potential application in the direct conversion of waste-heat energy into electrical power where it is unnecessary to consider the cost of the thermal energy input.

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## Biofibre Composites: A Natural Material of Engineering Importance

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**Abstract:** Among several Engineering materials, there is a category of Composite materials, which is generally made by combining two or more distinct materials, for modifying the mechanical properties of the resulting mass. The composite materials are found to be better than that of the individual components, with properties like light weight and low density. Also, in the Composite materials, the individual components maintain their individual properties, which is its peculiarity and is opposite to that of the metallic alloys. In current context the Environmental consciousness has grown immensely, with increased industrial and developmental activities, which have been causing various environmental threats. With this viewpoint, Efforts are on in the field of Engineering Materials also to explore the prospects of bio materials as composites. With desired Physical, Chemical and Mechanical properties, Bio composite materials have found great prospects in various biomedical, automobiles, packaging and other engineering applications. Production of bio composites from renewable sources, would be Environmental friendly too. The current study is for investigating the mechanical aspects of such composites made with bio fibers. Due to good range of mechanical properties found with the bio-fibers produced from various natural sources like Jute, Flax, and Coir etc, the Bio composites can be utilized in various mechanical engineering applications. Also, the environmental sustainability of these Bio composites, have potential of making it indispensable, in coming future.

ICARI-ME-14-02-161

## A Comprehensive Study of Modern Flow Control Methods and Their Applications

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**Abstract:** Flow control is a rapidly developing technological area which is relevant to several engineering sectors with goals such as the reduction of drag and the reduction in flow-induced vibrations. It involves aero-acoustics, fluid instabilities and closed-loop control of unstable fluid systems. Development of control strategies involves simulation followed by laboratory testing of control models. To design a fluid flow system, a thorough understanding of the available flow control technologies is crucial. In this paper we will go through the developments in the flow control technology over last few decades and then study some modern techniques which will give us a whole new viewpoint on the science of flow control.

ICARI-ME-14-02-162

## Experimental Investigation of Defective Ball Bearings with Vibration Analyser

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**Abstract:** Ball bearings provide rotational freedom and support for transmitting the load between two ends of machine. Roller bearing defect is a major factor of failure in rotating machinery that affects its proper functioning which results in substantial time and economic losses. Therefore, condition monitoring of roller bearing is important and the study of severity of defects are necessarily required in order to avoid catastrophic consequences. The analysis of signal resulting from measurements taken from outer machineries has proven to be effective, by detection of failure in bearings over rotating shaft. The authors have used a method based on the vibration analysis for detection of defects in rolling element bearings with single or multiple defects on different components of the bearing structure using the time and frequency domain parameters. A dynamic loading model is used in order to create the rotary motion of bearings. A vibration analyser is used for vibration diagnosis and on-site measurements of the model. Vibration analysis has been done at the free end of shaft. In non-defective bearings the variation of velocity was found to be smooth and decreasing with respect to time, whereas an interruptive upward trend was there in defective ball bearing which is very useful in detecting defects in rolling ball bearings.

## Enhancing Productivity at Assembly Line: A Study in Automobile Manufacturing Sector

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**Abstract:** This paper consists of the study of the assembly line and logistics area held in the RENAULT NISSAN AUTOMOTIVE INDIA PVT. LTD. Plant in Chennai. It was required by the company that new cars (to be launched) production is desired in the same plant with the same infrastructure and same man power available.

As a result, takt time of the workers was calculated and extra inventory near the assembly line was displaced and space for new spare parts (of new cars) made there at assembly line. Analyzing the present work structure, proper time study sheets were made and layout planning was done both of logistics area and assembly line. A final job allocation of workers were changed and allotted jobs in which lag time and other wastage of time was comparatively less.

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## Comprehensive Study on Various Types of Particle Image Velocimetry with Explicit Instrumentation

Tomar Vishvendra Singh<sup>a,\*</sup>, Chawla Sahib<sup>a</sup>, Sangwan Vipul<sup>a</sup>, Singh Raj Kumar<sup>a</sup>, Dhyani Arun<sup>b</sup>

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**Abstract:** This paper reviews the recent advancements in Particle Image Velocimetry (PIV) along with the specific Instrumentation required. The conventional PIV systems often faced with various problems like longer time lag between pulses, object's shadow problem, opacity of the Test section, PIV errors, restricted Velocity range etc. To curb down these, various PIV systems have been proposed and still PIV is in development phase. Some of the recent developments discussed in this paper include Double-Wavelength Digital PIV, Ultrasonic or Echo PIV and PIV with three color pulsed lamps. To validate these systems, an efficient design and architecture for Real Time PIV based on FPGA technology has been discussed.



ICARI-ME-14-02-165

## Potential Application of Particle Image Velocimetry to Sub-Sonic Open Circuit Wind Tunnel

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**Abstract:** In this present work, Particle Image Velocimetry (PIV) as a flow visualization technique with vast potential is applied to determine the Flow Velocity Distribution around an object placed in the Test Chamber of a Sub-Sonic Open Circuit Wind Tunnel (SOWT) [Mach Number ( $M$ ) = 0.15]. The two challenging tasks to accomplish during the development of instrumental set up are: 1. Electronic System Development for reducing the flash time so as to have a sharp image of the particle flow. 2. Seeding System Development by incorporating the air bubbles generators. Some details of PIV hardware, programmable PIV processor and software architecture are also discussed, emphasizing the practical benefits of various features. Further, to relax the PIV, filtered motion blurring technique has been utilized using Auto-Correlation.

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ICARI-ME-14-02-166

## Theoretical Investigation and Flow Simulation of a Sub-Sonic Open Circuit Wind Tunnel Model

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**Abstract:** The Wind Tunnel has become an integral part of the design process in many industries, typically used to verify and tune the aerodynamic properties of solid objects with origin to Civil, Environmental, Automobile or Aeronautical Engineering. It provides the appropriate desired environment conditions (Pressure Distribution, Flow Velocity, Turbulent Kinetic Energy etc.) at the Test Chamber. Hence, it should have optimum design to generate the required conditions. In this present work, a suction type Sub-Sonic Open Circuit Wind Tunnel (SOWT) was designed and simulated in computer environment. The Mach Number ( $M$ ) taken for the model is 0.15 (Maximum Operating Speed = 50m/s). The guiding dimensions taken for the Test Chamber are: LT = 45cm, HT = 18cm and WT = 24cm. The design and development of the wind tunnel model was performed using the 3D solid modeling program, Solid-Works. The computer aided simulation was done using the Solid-Works Flow Express program. For the flow simulation through the tunnel, the theoretical ideal experimental conditions have been created on this model. The Pressure Distribution and Flow velocity curves are plotted against the tunnel length.

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## Design, Analytical Analysis, Instrumentation and Cost Estimation of Sub-Sonic Open Circuit Wind Tunnel Model

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**Abstract:** The Wind Tunnel is well known for its enormous amount of potential in Civil, Environmental, Automobile and Aeronautical applications. In today's world, Everyone's main focus is to save time, material and money which have compelled us to opt for the experimental testing on scale models, before the final product is to be shaped. The Wind Tunnel is one such platform, which provides us the appropriate desired environment conditions around the model scaled to the compatible dimensions. Therefore, to develop the favorable conditions, the design of the tunnel plays the foremost role in its proper functioning. In this paper, knowing the intricacy of the tunnel's requirements, A Sub-Sonic Open Circuit Wind Tunnel (SOWT) Model is developed having a Mach Number (M) of 0.15. The guiding dimensions taken for the Test Chamber are: Length (LT) = 45cm, Height (HT) = 18cm and Width (WT) = 24cm with maximum operating speed to be 50m/s. Using these, the secondary design parameters were estimated and the design is finalized. Moreover, the instrumentation of the Tunnel including Data Acquisition Systems (DAQs) is reviewed and the estimation of the cost for its fabrication is calculated.

## Design and Manufacturing of Honing Tool for Drilling Machine

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**Abstract:** Honing is an abrasive machining process that is the "best kept secret" at many leading gun barrel producers, whether the end product is a fine sniper rifle, a police service pistol or an aircraft cannon. Simply put, honing produces a more accurate barrel a better overall product for lower cost. The Aim of the research is to design and manufacturing a honing tool for a drilling machine that can give require surface finish and dimensional accuracy as given by a honing machine and since we know that honing machine are very costly and every manufacturer cannot afford it on the other hand drilling machine are cheap as compare to honing machine and are available even in small workshops so our basic aim to reduce the cost of surface finish is fulfilled and we are succeed in getting the same surface finish and dimensional accuracy obtain by a honing machine. The contents of this report include design, manufacturing and working of honing tool and their study as well. It is well known that a good honing machine is very costly and all manufacturers cannot afford it. We have also seen that hand honing is resorted to by road side repairers and their cylinders lack in the requirements of circularity/cylindricity& smoothness. The design is simple in the sense that any manufacture having a drilling machine and simple manufacturing facilities can manufacture on his own and achieve the necessary technical requirements of smoothness of surface as well as requirements of close tolerance on circularity and cylindricity. We use our tool in a drilling machine, because these are very cheap as compared to honing machines and are also available in every mechanical workshop. So our main aim is to reduce the cost of honing and at the same time achieve the desired accuracy as given by the honing machine i. e, in the range of 0.005 microns.

ICARI-ME-14-02-169

## Review of Effect of Tool Geometry Variation on Finish Turning and Improving Cutting Tool Life

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**Abstract:** The effect of cutting tool geometry has long been an issue in understanding mechanics of turning. Tool geometry has significant influence on chip formation, heat generation, tool wear, surface finish and surface integrity during turning. This article presents a survey on variation in tool geometry i.e. tool nose radius, rake angle, groove on the rake face, variable edge geometry, wiper geometry and curvilinear edge tools and their effect on tool wear, surface roughness and surface integrity of the machined surface. The cutting tool is an important basic tool required in the machining process of a part in production. It not only performs the cutting action but helps in getting required surface finish and accuracy of the part. In order to perform these tasks the tool has to be strong enough to withstand wear resistance and serve for long period of time to produce more number of components with the same accuracy. Machining is important in metal manufacturing process to achieve near-net shape, good dimensional accuracy and for aesthetic requirements. In modern machining process and using the CNC machine tools the cutting tool will play a vital role in machining process and in improving the surface finish. Many reputed cutting tool manufacturing organizations globally with their rich experience of research and development, invented different ways of enhancing the life of cutting tool in order to optimise the rate of the production and to reduce the cost of production, which is highly acceptable to the manufacturing Industry. This paper deals with the ways of improving the tool life by various coatings on tungsten based cemented carbide cutting tool.

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ICARI-ME-14-02-170

## Material Characterization of Tailor Welded Blanks- for Scratch free motor body

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**Abstract:** Mechanical properties of the weld zone are necessary for accurate modeling of forming processes involving tailor-welded blanks (TWB). Tailored blanks are usually produced with the help of laser welding. Due to small size of the weld cross-section it is not possible to use standard tests to determine mechanical properties of the weld zone. Special testing procedures must be employed. The stress-strain relationships for the weld zone in a steel laser welded blank obtained using different methods have been compared with one another. A method for measuring the properties of laser weld metal in tailor welded blanks is assessed. Tensile specimen in which the weld line is parallel to the axis of tension are pulled to failure and weld metal properties are determined using a rule of mixture type of calculation. Further test data were incorporated in abacus software for the simulation purpose.

Future scope of this is to substitute this material with composite material for higher strength. And basically to prevent dent and scratches, and dent and scratches could be removable by homogeneous welding or called heat treatment of developed composite material.

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ICARI-ME-14-02-171

## PAVAN: Pneumatically Actuated Vehicle as an Alter-Native

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**Abstract:** As we know, the world in which we live is facing energy crisis and all kinds of conventional sources of energy are on the verge of exhaustion and also causing pollution. Therefore, alternate sources of energies are being explored, one of which is air. Air is a natural resource which is found in bulk, yet we have hardly been able to tap its potential as an energy fuel. The authors of this paper present an idea to construct a vehicle that runs on compressed air, is a clean source of energy and economic too, if applied on a large scale. The paper explains various mechanisms involved in running the vehicle.

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ICARI-ME-14-02-172

## Computerized Determination of Air Flow around Airfoils and Optimization of the Design for fulfillment of the Objective

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**Abstract:** The paper presents the advantages of computational analysis for the preliminary analysis of the performance of the airfoil and the effects of wingtip devices in reducing the wingtip vortices. The output report proves that wingtip devices are a better alternative in increasing the aspect ratio which has its own limitations.

## Economic Load Dispatch Problem and Mat lab Programming of Different Methods

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**Abstract:** Economic Load Dispatch (ELD) is one of an important optimization tasks and operational decision which provides an economic condition for power systems. This paper presents overview of economic load dispatch problems and solution methodologies. MATLAB programming of different methods used for solving economic load dispatch problem was done and results are given in tabular form. Lambda iteration method is implemented for three cases of

- Without generation limits and losses
- With generation limits and without losses and

With generation limits and losses. Newton's and the dynamic programming methods were put into action for coding.

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## Hardware Implementation of Prototype Model of Two Port Network

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**Abstract:** The study of two port networks is important in the field of electrical engineering. Keeping in mind the importance of two port network in the electrical engineering field authors have designed and developed 2-port network prototype. The networks involved in the prototype are 12 V AC and DC purely resistive T-network,  $\pi$ -network, Series T-network and Parallel T-network. The parameters of a 2-port network completely describe the behavior of the system in terms of the voltage and current that may be measured at each port. For making prototype more viable author(s) have provided both AC and DC supply. The results of impedance, admittance, transmission, inverse transmission, hybrid and inverse hybrid parameters of these networks are shown in the paper.

ICARI-CS-14-02-102

## A Security Requirements Perspective towards a Secured Nosql Database Environment

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**Abstract:** Security has been and still remains a very pertinent issue to consider in database management systems development especially those handling and storing large volumes of data. Most researches have focused on security at hardware level, Operating system level and application level with only a little or no consideration for security at the database level. With the current Big Data scenario which has recently seen accomplished systems engineers scampering for new solutions to address the challenges, database security has emerged quite a pain to their efforts. The security challenges that were inherent in the previous database systems have not spared the NoSQL databases either. In this paper we evaluate NoSQL database security in line with security requirements proposed by Firesmith [1]. We consider the role played by security policy and security models in achieving adequate security and finally propose security mechanisms for a NoSQL database.

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ICARI-CS-14-02-103

## Vehicle Service Status Monitoring System

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**Abstract:** As urban living environment is becoming more and more complex, people wants upcoming new technology. Vehicles have become passion of everyone in the society. As the vehicles are there, its servicing is the main issue. In the current scenario, people were not able to track their vehicle in the servicing showroom. To solve such problems, a vehicle tracking system with the help of android has been developed. Recently, vehicle tracking technologies have brought some breakthrough in these areas: commercial vehicle operations, emergency rescue, hazard material monitoring, and security etc. Android is an open source available for application development. When a vehicle is sent for servicing, client can see the live status of his vehicle service on his mobile just by entering unique id in the mobile application. Client can see the current status in percentage on progress bar. This application will be time efficient as person will get the notification about completion of vehicle servicing along with the costing on the mobile.

## Maze using Hybrid Genetic Algorithm

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**Abstract:** Genetic concept does not measure well with complexity. That is, where the number of elements which are exposed to mutation is large there is often an exponential increase in search space size. This makes it extremely difficult to use the technique on problems such as designing an engine, a house or plane. In order to make such problems tractable to evolutionary search, they must be broken down into the simplest representation possible. And another problem of complexity is the issue of how to protect parts that have evolved to represent good solutions. In this paper describes the approach of solving Maze problem with Hybrid Genetic Algorithm. A method for generating the maze structure has also been described.

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## Overview of Search Engine and Crawler

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**Abstract:** Today, Internet is the most important part of human life but growth of internet is major problem of internet user due to internet down loading speed, quality of downloaded web pages and find out the relevant content in the millions number of web pages. Nowadays, internet offering the various services such as business, studies material, ecommerce and search engine on the internet. Due to it is increase the number of web pages in internet.

In this paper we are solve the internet related problem by the help of search engine and improve the Quality of downloaded web pages for internet etc. Search Engine is find out the relevant content for the World Wide Web. We have solve other problem of search engine by the help of web crawler and proposed a working architecture of web crawler. Solve the problem of web crawler by the parallel web crawler.

ICARI-CS-14-02-106

## Agent Unified Modeling Language in Agent Oriented Software Engineering: A Comprehensive Modeling Language Representing Agent Interaction Protocol

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**Abstract:** The concentrate of all earlier period programming experience and innovations for writing high-quality programs in cost effective and proficient ways have been systematically organized into body of knowledge. This comprehension forms the foundation of the software engineering principles. Software engineering discusses methodical and cost effective techniques to software growth. Agent Oriented Software Engineering techniques must be evaluated and compared to gain a better understanding of how Agent should be engineered and evolved. Unified Modeling Language is a standardized, general purpose modeling language in the ground of software engineering. The Unified Modeling Language includes a set of graphic notation techniques to produce visual models of Object Oriented Software intensive system. An Agent Unified Modeling Language is an extension of the Unified Modeling Language, a de facto standard for Object—Oriented analysis and design. AUML is not a language but it is only a proposal. In this paper, I am just presenting the mechanism to model protocol for multiagent interaction. Interaction is driven by interaction protocols.

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ICARI-CS-14-02-107

## Notification System using Android Bluetooth

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**Abstract:** As new and new Android phones are releasing and also Android and global 3G system are in process, the communications between Android phone and database server become more and more important. But there are some restrictions of the mobile phone such as capacity of memory, easy user interface and transmission cost. Due to these restrictions communication mechanism will require more stringent requirements. The communication mechanism, which we are describing here, uses the light-weight type JSON (Java Script Object Notation) data layout as the data broadcast medium. Then the mobile phone client will be a user interface to interact with the users. Using this JSON technology we will create an application which will help people standing at the bus stop to identify which bus is coming and the route of that bus.



## A Patient e-Health Care System Using Passive RFID

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**Abstract:** Radio Frequency Identification (RFID) technology not only offers tracking capability to locate equipment and people in real time, but also provides efficient and accurate access to medical data for doctors and other health professionals. Many researchers have introduced RFID-based solutions to enhance patient medication safety and avoid human errors during e-Health process. Although such RFID-based procedures are more efficient than traditional e-Health process, patient's information may be explored in the data transmission period and this will cause inappropriate medication use or medical errors.

In this system, we would be providing a RFID card to every patient. There would be web server server where all the patient information would be stored. When the patient visits the doctor for the first time his all identity details would be fetched from the database. Then the doctor would issue the patient an RFID card. Then he would examine the patient and may advice him to undergo some medical tests. The doctor would then upload all this information on the central server and he can upload the patient reports in the mobile phone. The doctor would also upload the medicine prescribed by him to the patient.

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## Image Inpainting using Exemplar based, DCT and FMM Algorithm

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**Abstract:** Inpainting is the art of restoring lost parts of an image and reconstructing them based on the background information. This has to be done in an undetectable way. The main aim of our project is to remove the unwanted objects or unwanted data from the original image but this change is not noticeable by the user. Hence this will be done by using the three algorithms namely: Exemplar Based Algorithm, DCT Based Algorithm, and Fast Marching Method. Digital Image Inpainting tries to imitate this process and perform the Inpainting automatically. Details that are hidden completely by the object to be removed cannot be recovered by any mathematical method. Therefore the objective for Image Inpainting is not to recover the original image, but to create some image that has a close resemblance with the original image. Such software has several uses. One use is in restoring photographs. Another use of Image Inpainting is in creating special effects by removing unwanted things from the image. Unwanted things may range from microphones, ropes, some unwanted person and logos, stamped dates and text etc. in the image. These parts can then be reconstructed using Image Inpainting. Natural images and photographs sometimes may contain stains or undesired objects covering significant portions of the images. The filling-in of missing information is very important in image processing, with applications including image coding and wireless image transmission (e.g.: recovering lost blocks) and image restoration (e.g.: scratch removal). Object removal from images is an image manipulation technique. The process of removing objects from images starts with mask out the undesired object, making the area where the object previously occupies a gap. Then the gap will be filled using graphical techniques. Among the graphical techniques that are used to fill the gap after object removal, two most commonly used are: Image Inpainting and texture synthesis. Exemplar based techniques and DCT based algorithm, which cheaply and effectively generate new texture by sampling and copying color values from the source. Exemplar based and DCT based algorithms is used for removing large objects from digital photographs and replacing them with visually possible backgrounds. The Fast Marching Method (FMM) is used to remove all scratches within the image.

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ICARI-CS-14-02-110

## Mobile Cloud Computing: The potential, Challenges & Applications

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**Abstract:** Mobile cloud computing is a technique or model in which mobile applications are built, powered and hosted using cloud computing technology. A mobile cloud approach enables developers to build applications designed specifically for mobile users without being bound by the mobile operating system and the computing or memory capacity of the smart phone. Mobile cloud computing centered are generally accessed via a mobile browser from a remote web server, typically without the need for installing a client application on the recipient phone. This concept is also sometimes referred to as MoClo, a combination of MOBILE CLOUD. Mobile Cloud Computing (MCC) has revolutionized the way in which mobile subscribers across the globe leverage services on the go. The mobile devices have evolved from mere devices that enabled voice calls only a few years back to smart devices that enable the user to access value added services anytime, anywhere. MCC integrates cloud computing into the mobile environment and overcomes obstacles related to performance (as battery life, storage, and bandwidth), environment (e.g. heterogeneity, scalability, availability) and security (e.g. reliability and privacy).

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ICARI-CS-14-02-111

## Content Based Image Retrieval Using Sobel's Edge Detection Algorithm

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**Abstract:** This paper presents an efficient Content Based Image Retrieval (CBIR) system using Sobel's edge detection algorithm. Content Based Image Retrieval (CBIR) is a process to retrieve a stored image from database by supplying an image as query instead of text. This can be done by proper feature extraction and querying process. A universal content based image retrieval system uses color, texture and shape based feature extraction techniques for better matched images from the database. In proposed CBIR system, shape features are used. Edge detection is a fundamental tool in image processing and computer vision. To do analysis of the shape of image there are different techniques one way is that first upon finding out edges of respective image and then matching the shape of identified images. We use the Prompt edge detection method to detect edge points, these edge points are detected using the Sobel edge detection algorithm. These features are then compared to the features of the images which are already stored in our image database and most similar images are retrieved.

## A Survey on Palindrome Pattern Matching

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**Abstract:** In the last decade there has been an explosion of interest in palindrome pattern matching. Factually hundreds of papers have introduced new algorithms to find exact palindrome, approximate palindrome and gapped palindrome. In this work we study of problems of palindrome pattern matching. A palindrome is a string that reads the same forward and backward. This paper presents a survey of existing work on palindrome pattern matching, describing variations among problems, general and specific solution approaches, evaluation techniques, and directions for further research.

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## Advanced Intrusion Detection System Using Data Mining

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**Abstract:** The number of hacking and intrusion incidents is increasing alarmingly each year as new technology rolls out. In this paper report, we designed Intrusion Detection System (IDS) that implements predefined algorithms for identifying the attacks over a network. In this paper we discuss the term Intrusion Detection System using Data Mining which is generally used with the net working applications where the hacking attempts are made by the hackers. The key ideas are to use data mining techniques to discover consistent and useful patterns of system features that describe program and user behavior and use the set of relevant system features to compute (inductively learned) classifier that can recognize anomalies and known intrusions.

ICARI-CS-14-02-114

## Semantic Web System using Web Caching Algorithm at Origin Server for different Web Services

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**Abstract:** In this paper we will discuss that today's the most popular web sites are suffering from the server congestion, and they are getting thousands of requests every second from the client. And in this regarding design a origin server algorithm whose manage the services. The heterogeneity and complexity of services and applications provided by web server systems is continuously increasing. Traditional web publishing sites with most static contents have being integrated with recent web commerce and transactional sites combining as dynamic and secure by services. The most understandable way to cope with growing service demand and application complexity is adding hardware resources because replacing an existing machine with a faster model provides only temporary relief from server overload. The need to optimize the performance of Web services is producing a variety of novel architectures.

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ICARI-CS-14-02-115

## Detection of Colon Cancer by Classification of Genes and Feature Selection using Microarray Data

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**Abstract:** The main aim of designing features selection learning algorithms is to obtain classifiers which use microarray data. It generally uses small number of attributes. These attributes gives differential future performance guarantees. The first goal is to the best of our knowledge, such algorithms that give theoretical bounds on the future performance. It doesn't have been proposed so far in the context of the classification gene expression data. PAC-Bayes learning settings for identifying a small subset of attributes perform reliable classification tasks. So, using PAC-Bayes approach we are dealing with colon cancer detection based on feature selection.

## Use of ultrasonic sensors, GPS and GSM technology to implement alert and tracking system for Blind Man

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**Abstract:** There is number of blind people in the society, who are suffering while exercising the basic things of daily life and that could put lives at risk while travelling. So to provide them with necessary equipment we use the technology for human welfare, so came the idea of this research in the design of obstacle detecting system using ultrasonic sensors and providing details of his location with the help of GPS via SMS to his/her relative.

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## Test Case Generation Technique By using Collaboration UML Diagram

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**Abstract:** Software testing is an important activity in the Software Development Life Cycle. To reduce the time and cost of manual testing and to maintain the reliability of the software, various tools and techniques for automation of software testing have been proposed. The automated test cases generation is viewed as a guarantee to carry out effective and maintainable software testing. UML is used to describe the design specification and generate test cases from gathered requirements. Our proposed method generates test cases using UML collaboration diagram. Test Coverage Criteria is also considered in this work. The proposed model detects faults, reduces software development time and effort besides, and increases the quality of generated test cases.

## Fraud Detection in Online Banking Using Hidden Markov Model

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**Abstract:** As online banking becomes the most popular mode of payment for both online as well as internet based transaction, cases of fraud associated with it are also rising. In this paper we model the sequence of operations in internet banking transaction processing using a Hidden Markov Model (HMM) and showing how it can be used for the detection of frauds. If an incoming online banking transaction is not accepted by the trained HMM with sufficiently high probability, it is considered to be fraudulent. At the same time, we will try to ensure that genuine transactions are not rejected.

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## Android-Based Resource Tracking and Management

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**Abstract:** Today's mail couriers have rushed onto real time tracking in postal services. The Post Office is rolling stone for tracking of mail couriers. Even in an growing environment, the postal service remains part of the social economy, serving its people and businesses. Before replacing in more robust form, "This program is an interim step for replacement of current scanners with a single device based on Smartphone technology using GPS & GPRS". This system aims to provide low cost means of monitoring resources of Courier Company like manpower, time and money. Customer gets the facility to request material just in one click without wasting time in going to courier office and request for material. This application helps administrator to assign tasks to the employees according to the destination to manage resources. Our application reduces the errors caused due to manual entries. Customer gets full assurance of material delivery within stipulated time. Our application is beneficial for courier boy in terms of saving his time to prepare his daily services reports and send it to the admin through application [3].

ICARI-CS-14-02-120

## Image Transmission on Wireless Network by Using Ofdm Technology with Rayleigh Fading Channel

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**Abstract:** In this paper, a gray scale (8 bit) bit map image is transmitted by the transmitter and by using the orthogonal frequency division multiplexing with through the Rayleigh fading channel. Individual frame is transmitted in parallel so that multi input channel can be used to increase efficiency.

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ICARI-CS-14-02-121

## Record Matching Over Query Result from Multiple Web Databases

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**Abstract:** Record matching, is the process of identifying the records that represent the same real-world entity, is an important step for data integration. Most record matching methods are supervised, which requires the user to provide training data. These methods are not applicable for the Web database scenario, where the records to match are query results dynamically generated, on the fly, such records are query-dependent and a pre-learned method using training examples from previous query results may fail on the results of a new query. To address the problem of record matching in the Web database scenario, we present an unsupervised, online record matching method, UDD, which, for a given query, can effectively identify duplicates from the query result records of multiple Web databases. This method has two cooperating classifiers, a Weighted Component Similarity Summing classifier (WCSS) and Support Vector Machine classifier (SVM), to iteratively identify duplicates in the query results from multiple Web databases. Using these two classifiers duplicate and non-duplicate vectors are calculated and non-duplicate vector is displayed as result.

## Fractal Image Compression Using Genetic Algorithm

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**Abstract:** A new method for fractal image compression is proposed using genetic algorithm (GA) with elitist model. The self transformability property of images is assumed and exploited in the fractal image compression technique. The technique described here utilizes the GA, which greatly decreases the search space for finding the self similarities in the given image. This correspondence presents theory, implementation, and analytical study of the proposed method along with a simple classification scheme. Comparison with other fractal-based image compression methods has also been reported here.

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## A New Method of Edge Detection Using Objective Function and Non-Maxima Repression

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**Abstract:** In this paper proposed an edge detection technique for gray level images, and which can overcome the limitations of gradient based edge detection methods. The 3 x 3 mask in the image is measured and two pixels S0 and S1 in the mask are used to define an objective function. The objective function value consistent of four directions determines the edge intensity and edge pixel in the mask. The edge map and direction map are generated, and then apply an extended Epanechnicov function as a fuzzy set membership function for each class where class assigned to each pixel is one with the greatest fuzzy truth about membership. This classification is done then used to the non-maxima repression method to extract the edge points. The proposed technique can detect the edge successfully, while double edges, thick edges, speckles edges can be avoided.



## Data Mining: Pattern and Trends by Using Biocomputers

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**Abstract:** This paper gives a good overview of Data and Information or Knowledge has a significant role on human activities. Data mining is the knowledge discovery process by analyzing the large volumes of data from various perspectives and summarizing it into useful information. Due to the importance of extracting knowledge/information from the large data repositories, data mining has become an essential component in various fields of human life. Advancements in Statistics, Machine Learning, Artificial Intelligence, Pattern Recognition and Computation capabilities have evolved the present day's data mining applications and these applications have enriched the various fields of human life including business, education, medical, scientific etc. Hence, this paper discusses the various improvements in the field of data mining from past to the present and explores the future trends.

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## Noise performance and analysis of long distance Optical fibre Communication System by using Different Modulation Techniques

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**Abstract:** Optical fiber refers to as the medium and the technology associated with the transmission of information as light pulses along a glass or plastic wire or fiber. Optical fiber carries much more information than conventional copper wire and other wave guides. Optical fiber has been proven to have the widest bandwidth compared to any other media known, including wireless, copper wire, sonar, and even free-space-optics. Tera hertz bit rate has been demonstrated in the lab by using the standard single-mode telecom fiber. As a comparison, the entire useful radio bandwidth worldwide is only 25Gbps, a mere 0.1 percent of the bandwidth supported by a single strand of fiber. As a result, optical fiber can easily replace a large bundle of copper wires while significantly boosting system bandwidth. In optical fiber technology, single-mode fiber is an optical fiber that is designed for the transmission of a single ray or mode of light as a carrier and is used for long distance signal transmission. For short distances, multi-mode fiber is used. Single mode fiber has a much smaller core than multimode fiber.

## A STUDY ON FEATURE SELECTION AND EXTRACTION

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**Abstract:** This paper describes the feature selection and extraction mining functions. Oracle Data Mining supports a supervised form of feature selection and an unsupervised form of feature extraction..

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## Simulation Based Analysis of DSR, LAR and DREAM Routing Protocol for Mobile Ad hoc Networks

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**Abstract:** Mobile ad hoc network (MANET) is an autonomous system of mobile nodes connected by wireless links. Each node operates not only as an end system, but also as a router to forward packets. The nodes are free to move about and a network. These nodes change position frequently. The main classes of routing protocols are Proactive, Reactive and Hybrid. A Reactive (on-demand) routing strategy is a popular routing category for wireless ad hoc routing. It is a relatively new routing philosophy that provides a scalable solution to relatively large network topologies. The design follows the idea that each node tries to reduce routing overhead by sending routing packets whenever a communication is requested. In this work an attempt has been made to compare the performance of three prominent on- demand reactive routing protocols for MANETs: - Dynamic Source Routing (DSR) protocols, Location Aided Routing protocol (LAR), DSR and AODV is a reactive gate way discovery algorithms where a mobile device of MANET connects by gateway only when it is needed. As per our findings the differences in the protocol mechanics lead to significant performance differentials for both of these protocols. The performance differentials are analyzed using varying simulation time. These simulations are carried out using thens-2 network simulator. The results presented in this work illustrate the importance in carefully evaluating and implementing routing protocols in an ad hoc environment.

## HADOOP: A Big Data Philosophy

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**Abstract:** Apache Hadoop is an open-source software framework for storage and large scale processing of data-sets on clusters of commodity hardware. Hadoop is an Apache top-level project being built and used by a global community of contributors and users.[2] It is licensed under the Apache License 2.0.

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## Cross Platform Mobile Gis System For Data Collection Based On Gps And Emerging Gis Technologies

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**Abstract:** This paper presents a new method of dynamically collecting data that is based on the integration of GPS and new emerging GIS technology on a handheld device in cross browser and cross platform. It describes the process of developing a relatively inexpensive data collecting prototype with a low level of interface that enables ordinary users with an average IT knowledge to easily set up survey runs in order to collect, store and analyze spatial and non-spatial data.

## An Introduction to Vehicular Ad hoc Networks and its security

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**Abstract:** In this paper the performance and usability of wireless Vehicular Ad hoc Networks (VANET) are studied. For investigation we use the network simulator ns-2 with a car traffic movement file of the larger region of the canton of Zurich, simulating the current WLAN hardware with the Ad hoc

## A study on Electronic surveillance

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**Abstract:** Surveillance is the monitoring of the behavior, activities, or other changing information, usually of people for the purpose of influencing, managing, directing, or protecting. Surveillance is therefore an ambiguous practice, sometimes creating positive effects, at other times negative. It is sometimes done in a surreptitious manner. It most usually involves observation of individuals or groups by government organizations. The purpose of this paper is to explore Electronic surveillance. In the last 20 years, there has been a virtual revolution in the technology relevant to electronic Surveillance. Advances in electronics, semiconductors, computers, imaging, data bases, and related technologies have greatly increased the technical options for surveillance activities. Closed circuit television, electronic beepers and sensors, and advanced pen registers are being used to monitor many aspects of individual behavior. Additionally, new electronic technologies in use by individuals, such As cordless phones, electronic mail, and pagers, can be easily monitored for investigative, competitive, or personal reasons. This topic is also an important informant to my work as an artist in the field of new media as it seeks to examine the art and technology of surveillance and its existence in today's society as a system that we are able to employ for our own benefits and security. Current R&D will produce devices with increased surveillance capabilities, e.g., computer speech recognition and speaker identification, fiber optics, and expert systems many electronic devices are currently available for monitoring individual or group behavior. New surveillance tools are technically more difficult to detect, of higher reliability and sensitivity, speedier in processing time, less costly, more flexible and adaptable, and easier to conceal because of miniaturization and remote control.

## Intrusion Detection Based On Artificial Intelligence Techniques

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**Abstract:** Information technology has become a main component to support critical infrastructure services in various sectors of our society. In effort to share information and streamline operations, organizations are creating complex networked systems and opening their networks to customers, suppliers, and other business partners. Whereas most users of these networks are legitimate users, an open network exposes the network to illegitimate access and use. Increased network complexity, greater access, and a growing emphasis on the internet have made network security a major concern for organizations. The number of computer security breaches has risen significantly in the last three years. While traditional approaches to network security have focused on prevention, network intrusion detection has become increasingly important in recent years to enable firms to reduce undetected intrusion.

Intrusion Detection System is one of the most important security systems to detect intrusions in a variety of networks in a distributed environment. Here, we are doing a comparative study on Intrusion Detection System based on Artificial Intelligence techniques. The main techniques which are discussed here are Decision Trees, and Self-Organizing Maps (SOM). We are describing these techniques and determining how these techniques aid in detecting intrusions in a networking environment and which is more suitable for intrusion detection.

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## Diabetes Mellitus Forecast Using Artificial Intelligence Techniques

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**Abstract:** Nowadays data mining and artificial intelligence techniques are used to predict several diseases of health care industry. Diabetes is one of the major global public health problems. Diabetes Mellitus is a disease in which the body does not produce or properly use the insulin hormone. There are so many computerized methods for the diagnosis of Diabetes Mellitus but the main drawback of these methods is that the patient has to undergo several medical tests to provide the input values to the computerized diagnostic system which proves to be very costly and time consuming. With the rapid advancement in the field of Artificial Intelligence, there are so many techniques and algorithms that can be effectively used for the prediction of various diseases.

In this paper, we are forecasting Diabetes Mellitus using Artificial Intelligence. The main technique used here is Artificial Neural Networks. The Dataset is taken from PIMA Indian diabetes database which is donated by Vincent Sigillito, is a collection of medical diagnostic reports of 768 examples from a population living near Phoenix, Arizona, USA. It provides solutions to the medical staff in determining whether someone is the diabetes sufferer or not which is much easier rather than currently doing a blood test. The back-propagation algorithm is used here for learning and testing. To analyze the data, neural network toolbox which is available in MATLAB software is used.

## Time and Cost Effective Task Scheduling In Grid Environment

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**Abstract:** This paper titled “**Time and Cost Effective Task Scheduling in Grid Environment**” presents the time and cost effective scheduling technique followed by the scheduler determines the Grid system throughput and utilization of the resources in to the grid. Today’s parallel and distributed systems are changing in the organization and the concept of Grid computing, a set of dynamic and heterogeneous resources connected via Internet and shared by many and deferent users, is nowadays becoming a reality.

The Grid system is responsible for the execution of jobs submitted to it. The advanced Grid system will include a task scheduler which automatically finds the most appropriate machines on which a given job is to run. This resource selection is very important in reducing the total execution time and cost of executing the tasks which depends on the task scheduling algorithm.

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## An Introduction to Internet Traffic Modelling and Simulation

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**Abstract:** The objective of this paper is to build statistical models for the distributions of network measurements of major Internet applications. The models are built on the application level, so that they can be reliably referenced in different physical network environments without losing the original communication pattern. Once the ommunication pattern of the normal Internet traffic (for a LAN) is understood, we can then use the models to achieve a realistic simulation, and detect the network anomalies.

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## Live Tracking System with Company Resource Management

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**Abstract:** Now a days mail courier have thrashed in postal services. The Post Office have move with an urgent haste for tracking of mail couriers. Even in an growing environment, the postal service covers gap within the areas of the social economy, serving its people and businesses. Before replacing in more vigorous form, "This program is a foremost step for replacement of current systems with a single device based on Smartphone technology using GPS & GPRS". This system aims to provide low cost avenue of monitoring resources of Courier Company. These resources are like manpower, time and money. Application also provides an adverse enhancement liken where customer request can be facilitated through proposed system in one click without wasting time in going to courier office and request for material. The key point lies with administrator to allocate tasks to the employees so as to handle his resources in a stipulated way. Our application reduces the human errors. Customer gets satiafied commitment of delivery within time. This application gives good remarks for the courier boy to prepare his daily services reports and send it to the administrator through application [3].

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## Sort Range Optical Wireless Communication

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**Abstract:** It is commonly accepted that the next generation of wireless communication systems, usually referred to as 4G systems, will not be based on a single access technique but it will encompass a number of different complementary access technologies. The ultimate goal is to provide ubiquitous connectivity, integrating seamlessly operations in most common scenarios, ranging from fixed and low-mobility indoor environments in one extreme to high-mobility cellular systems in the other extreme. Surprisingly, perhaps the largest installed base of short-range wireless communications links are optical, rather than RF, however. Indeed, 'point and shoot' links corresponding to the Infra-Red Data Association (IRDA) standard are installed in 100 million devices a year, mainly digital cameras and telephones. In this paper we argue that optical wireless communications (OW) has a part to play in the wider 4G vision.

## Protection of Power System Using Sequential Tripping

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**Abstract:** This paper describes a Sequential Tripping Strategy used in an electrical power system to combat situations in which protection relays have maloperated or information is missing. This is an innovative back-up protection scheme designed to prevent the occurrence of widespread blackouts. It evaluates the certainty that transmission lines are likely to be affected by the fault and uses a Sequential Tripping Strategy to isolate the fault if a firm decision is not available due to maloperated relays and/or missing information. The mode of analysis and the Sequential Tripping Strategy ensures that the fault can be cleared at minimum risk to the network.

In applications like power stations and continuous process control plants, a protection system is used to trip faulty systems to prevent damages and ensure the overall safety of the personnel and machinery. But this often results in multiple or cascade tripping of a number of subunits. Looking at all the tripped units doesn't reveal the cause of failure. It is therefore very important to determine the sequence of events that have occurred in order to exactly trace out the cause of failure and revive the system with minimal loss of time.

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## Identification of Colors in Photographic Images Using Color Quantization

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**Abstract:** A simplification of the color histogram indexing algorithm is proposed and analyzed. Instead of taking a histogram consisting of hundreds of colors, each input image is first quantized to only a few colors and the feature vector is generated by taking a histogram of this smaller space. This increases the efficiency of the system by orders of magnitude. Quantization, involved in image processing, is a loss compression technique achieved by compressing a range of values to a single quantum value. When the number of discrete symbols in a given stream is reduced, the stream becomes more compressible. For example, reducing the number of colors required to represent a digital image makes it possible to reduce its file size. This is important for displaying images on devices that supports a limited number of colors and for efficiently compressing certain kinds of images.



## Design of Intelligent Handoff Controller based on Fuzzy Logics

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**Abstract:** Handoff is an essential part of any Mobile Communication Network. Efficient handoff algorithms provide cost-effective way for enhancing the capacity and QOS of cellular system. Fuzzy handoff algorithm has been developed based on Received Signal Strength (RSS), Network Load, Distance between Mobile station (MS) and Base Trans-receiver Station (BTS) and velocity as input parameters. Decision to handoff or not is based on Multiple Attribute Decision Making. Comparison is made between analog and fuzzy based technique.

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## Resonant Frequency of Microstrip Antenna Using Artificial Neural Network

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**Abstract:** There are some key parameters in RFID reader antenna which are related closely with the antenna structure, such as resonant frequency, return loss and bandwidth in the antenna design process. Structure and properties of the antenna is a complex nonlinear system with complex state which is difficult to make mode by the mathematic method. In this case, neural network is used to express the nonlinear system in this article. Giving a large number of simulation data for the samples, adaptive artificial neural network is used to train network by simulation experiment which is used to verify the fitting degree of neural networks and simulation results. The experiment result shows that artificial neural network can improve the level of computer-aided design of micro strip antenna and achieve the antenna design quickly.

## Design and simulation of dual band slotted microstrip rectangular patch Antenna

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**Abstract:** Today in the communication world microstrip antennas plays a vital role due to its smaller dimensions. Today's generation require many properties of an antenna to lie under acceptable limit. Here dual band antenna is being presented. The multiband small microstrip antenna can be easily fitted in a device which can be used for various applications. Here first antenna is designed, slotted and simulations are carried out by using IE3D software [7]. Return loss, VSWR, Reflection coefficient are the various properties observed after carrying out simulations. Here Neltec NX 9240 epoxy [4] substrate material with dielectric constant 2.4 is used.

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## Circular Polarization Division Multiplexing with DQPSK for Faster coherent Fiber Optic Communication

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**Abstract:** The on-going growing demand for greater capacity in optical communication systems, calls for an increase in transmission speed from 10 Gbps to 40 Gbps and beyond, while maintaining signal quality. In this paper, maximizing the fiber spectral efficiency and enhancing bit rate of trans-receiver by using circular polarization along with linear polarization and DQPSK modulation techniques has been proposed. PDM is used in this system for multiplexing linearly polarized and circularly polarized signals. In addition to polarization DQPSK for enhancing bit rate without affecting the spectral width of trans-receiver. Initially linear polarization is used for enhancing the bit rate. Now along with circular polarization the bit rate and efficiency becomes double.

## Matlab/Simulink Based Modeling & Simulation of Photovoltaic Array

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**Abstract:** The growth of world energy demand and the environmental concerns lead to an increase of the renewable energy production over the last decade. Energy sources such as solar, wind or hydro became more and more popular mainly because they produce no emissions and are inexhaustible. Solar energy using photovoltaic (PV) offers several advantages such as clean, no noise and free. The modeling and simulation of photovoltaic (PV) has made a great transition and form an important part of power generation in this present age. There are various methods to do PV cell modeling. This paper presents the Design and simulation of photovoltaic module and array. The Simulation is done in the MATLAB. It includes module BP SX 150S for a solar photovoltaic. This module provides a maximum power of 150 W. The current-voltage (I-V) & power-voltage (P-V) characteristics are obtained for various values of solar irradiance keeping the cell temperature constant and for varying temperature and constant irradiance.

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## Harmony Search and Firefly Optimization Algorithms Performance Analysis

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**Abstract:** Nature inspired algorithms are some of the efficient algorithms for solving optimization problems. Firefly and Harmony search algorithms are recent biologically inspired algorithm which have been used successfully in optimization problems. This paper aims to bring forward the comparative analysis between the harmony search algorithm and firefly algorithm. Initially, the general idea of firefly algorithm and harmony algorithm is discussed. Then, we have tested both the algorithms over non linear benchmark function. Finally, the results obtained from both the algorithms i.e. the respective convergence characteristic is compared and the result is discussed as per the scenarios.

ICARI-EE-14-02-104

## A Review on Development of Initiative Smart Grid Technology in India and Its Future Perspectives

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**Abstract:** Indian power sector is growing at an enormous Space. Building and operating such a power system is a challenging problem. The power network which carries the MWs across large distances is analogous to a “muscle system” of human body. Likewise, the entire range of associated monitoring and control network is analogous to a “nervous system”. While strengthening the muscles is important in order to fully realize the potential, they also have to be complemented by an intelligent nervous system. India is truculent to meet the electric power demands of a fast expanding economy. Restructuring of the power industry has only increased several challenges for the power system engineers. The proposed vision of introducing viable Smart Grid (SG) at various levels in the Indian power systems has recommended that an advanced automation mechanism needs to be adapted. Smart Grids are introduced to make the grid operation smarter and intelligent. Smart grid operations, upon appropriate deployment can open up new avenues and opportunities with significant financial implications. Smart Grids can continue towards enhancement of power market. The current status of the power market as well as initiations of Smart Grids in India is studied to scrutinize the potential power market enhancement with the advent of Smart Grids. This paper presents various Smart Grid initiatives and implications in the context of power market evolution in India.

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ICARI-EE-14-02-105

## A Study on Contactless Energy Transfer

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**Abstract:** One of the latest developments to draw the interest of all engineers is “Contactless Energy Transfer” for powering & controlling motors. It is the transmission of electrical energy from a Power Source to an Electrical Load without using conductors. The “Wireless Power Transmission” differs from that of wireless signal transmission such as radio and mobile telecommunication. The most common form of wireless power transmission is carried out using direct induction followed by resonant magnetic induction. Other methods under consideration include electromagnetic radiation in the form of microwaves or lasers.

## Building Automation Control System for Smart Grid

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**Abstract:** An advanced control method of Building Automation Control System (BACS), as part of home automation, to interface with smart grid system. An optimization technique, Dynamic Programming, is employed to solve the scheduling of building appliances. The cost savings achieved by interrupting the cycle of building appliances has been explored within the optimization suite. The BACS automation controller is using price signals made available by smart meters to shift and interrupt building appliances in order to maximize the benefits for the residential consumers. Described optimization can be used in home automation for cost savings while allowing users different levels of control on the smart appliances. A case study carried out with Volt/Var optimization techniques, Binary Integer Programming and Dynamic Programming shows substantial cost savings under real time pricing.

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## A Review on Fabrication and Characterization of Composite Material and its Buckling Analysis through FEM

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**Abstract:** Manufacturing of composite is one of the prominent and economical routes for development and processing of metal matrix composite materials. Composite is a multiphase material that exhibits a significant proportion of the properties of both constituting phase such that a better combination of properties is realized. The composite industry has begun to recognize that the commercial application of composites promise to offer much larger business opportunities than the aerospace sector due to the sheer size of transportation industry. A vast majority of the scientist reported that production of composites using mechanical properties as tensile strength, hardness, impact strength more uniform distribution of reinforced particle, metal matrix composite poses some attractive properties when compared with organic matrices. These include strength retention at higher temperature, higher transverse strength, better thermal conductivity, higher erosion resistance. Buckling behavior of such materials are the keen area of research due to the instability of various materials subjected under variable loads and dynamic conditions. This article is a survey of literature on composite materials regarding their fabrication and characterization and its buckling behavior analysis.

## Designing Smarter & Safer Homes

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**Abstract:** Home automation is the residential extension of building automation. It deals with automation of the house, housework or household activities. Home automation includes centralized control of lighting, HVAC (heating, ventilation and air conditioning), appliances, security locks of gates and doors and other systems to provide improved convenience, comfort, energy efficiency and security. In this paper we elaborate on the available features, technologies and products and suggest improvements and customization for specific use.

A smart home in today's world would be very helpful, particularly for the working family. Smart home technology helps to keep an eye on their home and have better control from the workplace. Security of the perimeter may be monitored from remote locations by live video-streams on smart phones. Electrical and kitchen appliances can be controlled, therefore eliminating the need for being physically present at home for carrying out a specific task e.g. switching on the lights, AC, geyser or electric cooker. Home automation may also be used for monitoring & taking care of the kids, elderly, sick or even pets. In case of emergencies, individuals may be informed and appropriate actions can be instantly taken. We explore much such functionality that may be provided, the benefits and the risks associated with these services. We also elaborate on specific customization required for our country due to scarcity of resources like electricity, mobile & online connectivity, climatic conditions other socio-economic reasons.

## Next Generation Tamperproof Currency Design & Verification

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**Abstract:** A currency refers to money in any form when in actual use or circulation, as a medium of exchange, especially circulating paper money. This use is synonymous with banknotes or sometimes with banknotes plus coins, meaning the physical tokens used for money by a government. In India, a large number of transactions take place by manual exchange of monetary currency notes because of convenience and anonymity. Other popular ways of carrying out financial transactions are by cheque/draft payments or by electronic means. Due to suitable infrastructure and facilities, many western countries have graduated to the use of debit/credit cards and online payments as their preferred mode.

Despite best efforts by the government, paper currency is subject to duplication and counterfeiting. We first study the existing features for protection and deficiencies that are exploited for counterfeiting. Design of next generation tamperproof currency requires attention in two directions: use of technology to resist counterfeiting and providing mechanisms for its easy verification. We focus on the following aspects to make the currency more tamperproof:

- a) The material (particularly for 500 & 1000 rupee notes) may be improved by using a mixture of paper, cloth, plastic & other durable material with chemical processing. We suggest fibre fingerprinting of the material to resist attempts of duplication. We also suggest different materials and translucency levels in different areas of the currency.
- b) The number of critical features in today's currency seems to be inadequate and feasible to duplicate by professionals. By analyzing attractive features available in currency from other countries, we suggest inclusion of some new critical points & exclusion of those that have become irrelevant due to advancement in technology.
- c) We also suggest additional watermarking, embedding of a small micro-chip containing vital information in encrypted form, use of holograms & embedded magnetic stripes and QR codes and elaborate on their advantages and limitations.
- d) The design should enable easy verification of the currency in banks, ATMs, shops and even by a person on the street. Bigger banks already have counting machines with currency checking features. However, more versatile and low-cost scanners should be manufactured and made available in markets and shops. We also suggest improvement of design of ATMs so that any standard currency note may be instantly checked for its originality & integrity.
- e) Finally, we suggest verification using a mobile app on smart-phone as a portable and handy option for currency verification. Development of such an app for Android platform and checking its accuracy for different smart phone models is planned for the future.

ICARI-CV-14-02-105

## Solid Waste Management – A Case Study of Moradabad

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**Abstract:** Many people feel that solid waste management is simply putting waste into a vehicle and unloading it at a dump. But if we consider it true then why do so many towns suffer from uncollected refuse, blocking street and drains, harbouring flies and rats and degrading urban environments? Successful solid waste management is rarely achieved without thought, efforts and much learning from mistakes. Preparation and management of a good solid waste management system needs inputs from a range of disciplines, and careful consideration of local conditions.

Keeping in mind all above, the present paper is an attempt to combine several aspects of environmental, biological, chemical and civil engineering to resolve the problem related to solid waste management for the Moradabad district. It is felt that there is need to focus more on recycling and resource recovery as a common practice, need to focus on environmental impacts (e.g. surface and groundwater) of solid waste around dump sites etc a plan was prepared for its proper management. At present A2Z Waste Management Private Limited is involving for the solid waste management work in Moradabad. Data related to waste generation, composition of municipal solid waste etc is provided by Nagar Nigam, Moradabad, Municipal Corporation and A2Z Moradabad.

In Moradabad, there are about 100 notified slum settlements constituting about 21% of the total population i.e. 1, 80,000. The steady incremental in the city population results in the increase of domestic waste generation. This project consists of the hierarchy of solid waste management starting from sources, types and composition of solid waste, waste generation, handling, storage, collection, reduction, combustion, up to landfill and recycling for waste management.

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ICARI-CV-14-02-106

## Recent Scientific tests on Ancient Building Materials of Mansar-Ramtek (M.S.)

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**Abstract:** The Indian civilization, among worlds, oldest and richest, has a strong tradition of Science and Technology. This paper presents results of various engineering tests conducted on some building materials collected from Ramtek (M.S.). The tests on Bricks were conducted as per IS 1070:1992 & IS 3495(Part 1 to 4): 1992. The test results are interpreted in the context of technical specifications of Indian Standard Institution.

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ICARI-CV-14-02-107

## Analysis and Design of Rigid Pavement on Collapsible and Expansive Soils

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**Abstract:** Earth quake expansive and collapsible soil susceptible to expansion and shrinkage with chance of different moisture content are a constant source of trouble in the design and construction of foundations such soils popularly known as earth quake block cotton soil occur extensively in Asia like Thailand India Japan Hong Kong Singapore America like California Alaska uk like London Germany like Berlin and Bonn Italy like Rome Africa like blue Nile and white Nile and great rift valley region and part of world building constructed on such soils adopting the type of foundation commonly employed for other type of soils strata are observed to crack extensively within a short period of third construction in spite of every reasonable precaution. Systematic laboratory and field investigation to solve this critical soils problem have been carried out in India during the past 24 years and the results have led to the introduction of under reamed pile foundations and raft foundation. This modern technique paper give a review of the development of this method and the design and construction technique employed.

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ICARI-FT-14-02-102

## The Generic and Pejorative Aspects of Human Resource Management

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**Abstract:** This paper reviews literature on Human Resource Management and consolidates the work done on its various aspects. The generic and pejorative sides of Human Resource Management have been discussed. Various case studies and their results have been reviewed to critically analyse the various entities that are the building blocks of Human Resource Management. Strategic Human Resource Management as a breakthrough in Human Resource Management has been highlighted while debating its nuances. Abundance of Human Resource Practices drawn from the literature have been examined to debate their universal nature.

ICARI-EN-14-02-102

## Limnological Studies Related to Physico-Chemical Characteristics of Water in Anasagar Lake, Ajmer (Rajasthan)

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**Abstract:** The study deals with the seasonal limnological investigation related to physico-chemical characteristics of water of the Anasagar Lake in Ajmer (Rajasthan). The limnological parameters were tested following standard methods at three sampling sites/stations in the lake. The physico-chemical parameters (temperature, turbidity, pH, DO, BOD, COD, free CO<sub>2</sub>, total alkalinity, conductivity, TSS, TDS, Chloride, Ammonia, Nitrate, Phosphate, etc.) showed distinct temporal or seasonal variation in the lake. Higher nutrient content (nitrate, phosphate) was present in the lake. This finding also signifies eutrophication/higher trophic level. Water transparency, dissolved oxygen, BOD, total alkalinity, conductivity, CaCO<sub>3</sub> hardness, TSS, nitrate and phosphate was correlated with various physico-chemical parameters in the lake. The physico-chemical characteristics of water of the lake revealed the poor water quality in Anasagar Lake.

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ICARI-EN-14-02-103

## Sustainable Construction of Grade Separators at Mukarba Chowk and Elevated Road Corridor at Barapulla, Delhi

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**Abstract:** For the last several billion years, nature has nurtured the planet evolving complex Eco-systems that conserve and recycle energy and materials. Climate change is the most visible result – storms, droughts, floods and the like are rising in frequency and severity and the consensus is that we are to be blamed. Civil constructions in urban areas are essential for overall development and benefits of the community, but, it is more important that every such activity be environment friendly as the Environment too has a right to remain protected from any kind of damages. We are, however, the agents of our own eventual doom. We are gradually choking and poisoning ourselves.

This paper covers the attempt in sustainable designing and construction of series of flyovers, Underpasses, River Bridges and other infrastructure projects taken up in the new millennium in New Delhi, the capital city of India. The successful efforts in achieving sustainability are discussed specifically in case of Mukarba Chowk Grade Separator and Barapulla Elevated Road projects.

To assess the amount of the degradation and attempt for sustainable construction, it is essential to understand the environmental characteristics of the area in which structure is taking birth. Once a sincere assessment is done, then it is the core part of ethics of any Engineering to mitigate the degradation and achieve sustainability.

ICARI-EN-14-02-104

## Performance Evaluation of Common Effluent Treatment Plant of Wazirpur, New Delhi

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**Abstract:** The present study has been undertaken to evaluate performance efficiency of a 24 MLD capacity Common Effluent Treatment Plant (CETP) of Wazirpur Industrial Area, New Delhi. The common effluent treatment plant is operating on Conventional physico-chemical treatment method with an average wastewater inflow of 1.5 MLD. Major contributing industries are small scale industries of Pickling, rolling, annealing, electroplating and fabrication. The wastewater is analyzed for the major water quality parameters, such as pH, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Dissolved Solids (TDS) and Total Suspended Solids (TSS). The samples were collected from inlet tank, after equalization tank, tube settler, dual media filter and final collection tank. The raw wastewater pH was highly acidic (range 2 to 3) and of high TDS (ranges 4000-5000 mg/l). The BOD, COD and TSS of the treated effluent reduced significantly by 67.7%, 68% and 97% respectively and pH was brought to 7.45 by neutralization with lime, whereas very small reduction was observed in dissolved solids (3%). Standard methods of analysis were used and permissible limits as per Central Pollution control Board were referred.

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ICARI-BT-14-02-102

## Wet And Dry Washing Purification Method for Biodiesel

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**Abstract:** Decreasing petroleum reserves have led to an increased demand for an alternate and renewable source of fuel. Biodiesel, being biodegradable, cleaner burning alternative, has emerged as a successful option and has been formed using trans-esterification processes or using chemical or enzyme catalysis, using readily available sources such as Jatropha, soybean oil, rapeseed oil. But it still is not pure to use commercially. This article focuses on purification of biodiesel via wet washing and dry washing methods so as to reduce the concentration of methanol, glycerol and other impurities.

## Bioinformatics Studies on Medicinal Plants

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**Abstract:** Plant genes offer a huge database for studies on the plant's structure, function, resistance to diseases, medicinal properties. This information is handled and accessed using Bioinformatics. Medicinal plants have variety of products like saponins, alkaloids, flavanoids, tannins, that have long been used to treat diseases. Many studies have been done on these plants to confirm their medicinal properties. The studies considered are mainly focused on docking studies and comparative structure studies. These methods have made the process cost-effective and lesser time consuming. In this article, various plants found in India, have been studied and found to be effective against different ailments, by bioinformatics tools and comparative docking.

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## Analyzing the Role of Prescriptions in Assessing Sales Quota

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**Abstract:** Indian pharmaceutical industry is one of the biggest sectors in the global market and is the third largest producer in the world. There are about 27,000 companies in India which include multinational companies, national companies and other local companies. Sales personnel's are the first spokespersons. Their sales performance is planned and monitored through sales quotas. Sales quotas are based on different factors like sales forecast techniques, Market potentials, Past experience of sales personals, compensation given to the sales personals and Executive Judgments. Prescriptions act as an important factor as they are the main indicators of the market demand. If the prescription flow increases, sales quotas also vary. Now this study focuses on the function of pharmaceutical companies and the role of prescriptions in deciding the sales quotas. Study is based on the survey of 30 sales personnel's. Structured questionnaire was prepared and random sampling was adopted. Results indicate the relevance of prescription in analyzing the sales quotas, but a need to there for keeping adequate record of Prescriptions.

## Level Determination of Self and Organisational Efficacy

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**Abstract:** Self-efficacy is a significant element in Albert Bandura's social cognitive theory. According to Bandura, a strong self-efficacy belief enhances perceived human capability and well being to perform a particular task. It emerges through gradual acquisition of anticipatory judgmental skills, social and physical skills through experience. On the contrary, organisational efficacy (OE) is a generative capacity within an organisation to cope effectively with the needs, hurdles, problems, and opportunities it encounters within the business environment. Organisational efficacy differs from self-efficacy because it is a group-level, as opposed to an individual level. The study includes 782 respondents from different pharmaceutical companies across different hierarchy level of various functional areas. The collected sample of the study varied widely on personal characteristics of the respondents. The result reveals that majority of the respondents possess high level of self and organisational efficacy. But respondents from age group 20-30 years are found to be having more efficacious beliefs.

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## Impact of Organized Retail Companies on Economic Condition of Farmers

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**Abstract:** Purpose of this study is to check the effect of opening of the organized retail stores on the economic conditions in terms of job opportunities, income and purchasing power of farmers of Haryana and Himachal Pradesh. The scope of the study is only those farmers who are linked with Mother Dairy, Reliance Fresh and Walmart. The data has been collected through the help of a questioner filled from farmers and analyzed by applying one way ANOVA. It has been found that farmers have different opinion regarding positive effect of retail companies on farmer's income, job opportunities, purchasing power and timely payments to the farmers on the basis of the procurement area. The income effect has been found more in case of Reliance Fresh, favoritism is more in Walmart, purchasing power has increased of Walmart and Reliance Fresh linked farmers. One of the finding is that as the people are becoming older and older their perception towards retail companies is keep on changing. Further, it is concluded that as the education level of the farmers increases they become more cautious. The marginal and relatively small farmers believe that their income has increase after linked with retail companies. Retail companies do not favor large sized farmers over small farmers. Most of the farmers accept that payments are made in time and job opportunities for rural people may increase. During visit I observed that most of the lab ours and employees of retail companies are of other states.

ICARI-MG-14-02-106

## Environmental Awareness and Behaviour of People in Northern India: A Comparative Study

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**Abstract:** Natural resources have been exploited arbitrarily by human race in the past. As a result the balance of nature has been disturbed. The implications of damage to the environment have proved to be deadly. The governments, companies and customers sooner or later started addressing this issue. The awareness and efforts are on, in protecting the local environment in many countries.

The consumer organisations and consumers are the driving force behind the growing concern for environment. Consumer demand encourages improvements in the environmental performance of many products and companies. However there is other side of coin as many consumers are not much aware about the environment and lack knowledge about environmental issues. However, at the same time, they are eager to learn and grab more information about environment and its conservation. People at large have now started showing sensitivity for environmental issues.

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ICARI-MG-14-02-107

## Indian Economy: An Introduction to its Strengths and Weakness

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**Abstract:** This paper brief the factors of Indian Economy, why it is so strong. After several decades of sluggish growth, the Indian economy is now amongst the fastest growing economy in the world. Economic growth is currently 8-9%, second only to China.

## Role of Objective Analytic Test battery in Personality Assessment

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**Abstract:** Across the globe, questionnaires have gained huge popularity in the area of personality assessment because of its ease of construction and administration, despite its serious limitations such as social desirable responses, judgmental errors and faking etc. The present study is focused on importance of Objective Analytic Test battery (T-Data measures) in personality assessment. T-Data measures are objective in real sense and can be a good alternative in personality assessment as T-Data measures are not dependent on subject's self evaluation but measures direct reactions and without subject's knowledge about what interpretation is put on it. One of the prime characteristics of these tests is that they do not have any face validity and therefore reduces the possibility of faking to a great extent which questionnaire measurement cannot rule out completely. The present study is an attempt to emphasize on the importance of Objective Analytic Test as a valid and error free tool in the personality assessment.

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## Role of Informative Psychology in Teaching Space

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**Abstract:** This paper provides a good knowledge of Educational Psychology; it also gives an overview of importance of Educational Psychology in making healthy relationship between teacher and student.

ICARI-AS-14-02-102

## Thermal tuning of photonic band gap in Ge-based 1D photonic crystal

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**Abstract:** 1D photonic crystal in the form of Ge/Air multilayer structure has been studied and investigated the effect of temperature on photonic band gap. The optical transmission spectra and band gap of 1D photonic crystal is obtained by using transfer matrix method. In this communication, refractive index of Ge and width of Ge-layer are considered as a function of temperature. The variation of bandwidth with temperature has been investigated. The result can provide theoretical guideline for the design of temperature sensor, narrow band optical filter.

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ICARI-AS-14-02-103

## Radiation and Heat Absorption Effects on Unsteady MHD Flow through Porous Medium in The Presence of Chemical Reaction of First Order

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**Abstract:** In this paper the numerical solution of thermal radiation and heat absorption effects on unsteady MHD free convective flow through porous medium over a moving vertical plate in the presence of chemical reaction of first order is studied. The fluid considered here is a gray, absorbing-emitting radiation but a non-scattering porous medium. The temperature as well as concentration is raised linearly with respect to time. The dimensionless governing equations are solved using the finite difference technique. The velocity, temperature and concentration profile are discussed graphically for different parameters like the magnetic field parameter, porosity parameter, radiation parameter, chemical reaction parameter and heat absorption.



ICARI-AS-14-02-104

## Heavy Metals Accumulation in Human Fingernails

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**Abstract:** Metal determination in human tissues is the most common application of biological monitoring for screening, diagnosis and assessment of metal exposures and their risks. Humans and other living organisms are exposed to a variety of chemical pollutants that are released into the environment as a consequence of anthropogenic activities. Environmental pollutants are incorporated into the organism by different routes and can then be stored and distributed in different tissues, which leads to an internal concentration that can induce different alterations, adverse effects and/or diseases. Control measures should be taken to avoid these effects and human biomonitoring is very useful tool that can contribute to this aim. This paper deals with the quantitative determination of Fe, Pb, Ni, and Zn concentrations in fingernails of male subjects from various locations i.e., from industrial, commercial, urban, and rural areas. The levels of these metals were assayed by AAS. Studied metal concentrations in fingernails were in the order Fe > Zn ≥ Ni > Pb. This study proved that human fingernails could be used as a biological indicator for the assessment of heavy metal pollution.

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ICARI-AS-14-02-105

## Selection of Candidate by Political Parties using Fuzzy Logic

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**Abstract:** Party leaders in list systems must select candidates to best accomplish their electoral, organizational, and policy goals. In particular, leaders must balance nominees' policy making skills against other aspects of candidate quality, such as electoral viability. In present scenario this is very tough to decide winning ability of candidate. Party leaders shall be with an opportunity to behave strategically. Party leaders pursue a variety of goals in determining where to rank candidates on the ballot: maximizing electoral competitiveness, rewarding party stalwarts, grooming young talent, and ensuring legislative policy making ability.

There are lots of factors which decide winning of candidate, for example publicity, credibility etc. I have made this paper keeping these all issues in my mind which affect candidature of candidate. There are no hard and fast rules or mathematical equation which can show exact result. So Fuzzy logic is best and suitable tool to used in this work.

## Efficiency Analysis of Banks using DEA: A Review

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**Abstract:** In this paper an attempt has been made to review research conducted on the efficiency measurement and performance of the Indian banking sector. Many researches have been performed over the past decade in the area of measuring efficiency of firms, companies, banks and other decision making units. Studies in the past used conventional ratios such as return on assets to evaluate the efficiency. Most of these studies which look at the efficiency concentrate on cost, profit, income or revenue efficiencies. Later research in the area used various measure of performance which include financial index, a non parametric approach- Data Envelopment Approach (DEA) and parametric approach –Stochastic Production Approach (SPA).

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## Portfolio Optimization: Indifference Curve Approach

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**Abstract:** The study examines the monthly stock prices of 45 SENSEX companies for the period ranging from February 2002 to January 2012. Also the study includes the Indian G-SEC long term bonds with maturities ranging from 15 to 25 years. The set of all efficient portfolios is called the efficient frontier. All risk-averse investors who act to maximize expected utility have an optimal portfolio on this frontier. Based on the risk-aversion factor and the investment time horizon of each individual investor, an attempt is being made to select the optimal portfolio for that particular investor. Given a utility function for an individual investor, the portfolio optimization problem is to find the indifference curve which is tangent to the efficient frontier. The optimal portfolio for the investor lies at the point of tangency between the efficient frontier and the indifference curve. The findings of the study bring out the importance of the investor's time horizon and the risk-aversion factor in portfolio optimization.

## A Study of Reliability analysis in Stochastic Dependency

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**Abstract:** In this paper, I focus my attention on a relatively weaker notion of dependence, namely the positive quadrant dependence between two variables X and Y. I think that this easily verified form of positive dependence is more relevant in the subject area under discussion. Also, as might be expected, the notions of dependence are simpler and their relationships are more readily exposed in the bivariate case than the multivariate ones.

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## To whom shall I tell my grief?

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**Abstract:** Life is what we make it. But sometimes question arises is it really so! Human life that is called a mixture of ups and downs, which shows different shades, different emotions where some are born with silver spoon but some are destitute to have a single straw of happiness who seems to be born to suffer only. For whom the definition of life is unsolved grief for lifetime. The way to bear this unendurable pain vary from person to person where some want to make other miserable too, some become silent sufferers who without saying or complaining go on to bear this. This research paper is based on Anton Chekov's short story Lament in which the writer has very beautifully and effectively narrated the character of Iona Potapov whose life is a symbol of misery of a common man who has never tasted the happiness. The detached and inhuman behavior of the world towards his grief depicts a satirical approach to the human society where only a mare is present for him to share his pains. The depth of his misery comes into existence with the help of different elements and characters. The present paper focuses on those elements which help in bringing out the depth of misery.