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**3rd International Conference on Envirotech, Cleantech and Greentech (ECG),
Singapore**

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<p>K.Rajeshwari GICW16041051</p>	<p>Estimation of Durability Of Rice Grains Using Sensors And Mobile Technology</p> <p>K.Rajeshwari Department Of InformationTechnology EaswariEngineering College,Chennai, India raje.krishnamoorthy@gmail.com</p> <p>Kishore Kumar Reddy.N.G Department Of InformationTechnology Easwari Engineering College, Chennai,India kishoregajendran@gmail.com</p> <p>Abstract Ensuring the dryness of Rice Granules is essential for the storage of Rice. The moisture content present in the rice granules deteriorates the quality and toughness that is expected from the the final produce. Existing systems that were put forth to find the moisture content of rice granules are not efficient enough. Their throughput is influenced by a variety of factors such as material density and packing.The official oven method consumes more time .The moisture content present in the rice granules is calculated using the equilibrium relative humidity technique [ERH]. The equilibrium relative humidity, and temperature, of rice granules were measured by using temperature and relative humidity sensors. Sensors are calibrated to improve accurateness and precision. The moisture content was calculated by using an equilibrium moisture content model. The data collected from the sensors are sent to the user which gives intimation about the prevailing conditions in the storage place as a message. According to the message, the prevention methods are listed. The error of the moisture content determined with this method was within 0.5% w.b. at moisture. Keywords: Rice Granules, Equilibrium Relative Humidity, Moisture Content, Storage.</p>
<p>Kishore Kumar Reddy. N.G GICECG1604052</p>	<p>Estimation of Durability Of Rice Grains Using Sensors And Mobile Technology</p> <p>K.Rajeshwari Department Of InformationTechnology EaswariEngineering College,Chennai, India raje.krishnamoorthy@gmail.com</p> <p>Kishore Kumar Reddy.N.G Department Of InformationTechnology Easwari Engineering College, Chennai,India kishoregajendran@gmail.com</p> <p>Abstract Ensuring the dryness of Rice Granules is essential for the storage of Rice. The moisture content present in the rice granules deteriorates the quality and toughness that is expected from the the final produce. Existing systems that were put forth to find the moisture content of rice granules are not efficient enough.</p>

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<p>Sudhakar Murugesan GICECG1604053</p>	<p>An electronic voting system to safeguard electoral integrity</p> <p>Sudhakar Murugesan Senior Lecturer, Department of Information Technology,Valley View University, Techiman, Ghana, West Africa. TM 183 Sudhakarmtech@gmail.com</p> <p>Edward Danso Ansong Senior Lecturer, Department of Information Technology,Valley View University, Techiman, Ghana, West Africa. TM 183 edkan20002002@yahoo.com</p> <p>Dominic Damoah Senior Lecturer, Department of Information Technology,Valley View University, Techiman, Ghana, West Africa. TM 183 kwddamoah@gmail.com</p> <p>Abstract</p> <p>E-voting has become a major interest to many countries worldwide.The most sensitive part of e-voting is its security issues that have become a national issue to both developed and developing countries in this world. The worst case scenario is catastrophic when election results are without integrity. E-voting systems provide accurate counting, results, timely transmission of results, and electoral processes are secured when it is implemented properly[1]. This paper describes how to protect an electronic voting system against vulnerabilities like SQL Injection, Session Hijacking, and Cross-Site Scripting. An electronic voting system was developed to test and implement how an electronic voting system can be more secured.</p> <p>Keywords— Session hijacking; SQL injection; Cross-Site Scripting ;Your Right; encryption algorithm; counter measures; anonymous</p>
	<p>Green Transportation</p> <p>V.Sairam Department of Aeronautical Engineering, GKM College of Engineering and Technology, Chennai, India</p> <p>ABSTRACT</p> <p>The main objective of this paper is to create a transportation which does not need</p>

<p>V.Sairam GICECG1604054</p>	<p>any external fuel source to run the vehicle. This vehicle generates its own energy in several ways. Three sources of current are used to drive this vehicle. The primary source works on the principle of induction, which produces current from a newly designed cage generator setup. The secondary power source uses the solar energy. The tertiary source of current includes gear motion transmission from wheels and a converged air rotor setup. The rectified DC output voltage is used to drive the vehicle.</p>
<p>Paula Victoria Opulencia GICECG1604055</p>	<p>Analytic Hierarchy Process (AHP) in a CMMI-based Maturity Model for the Assessment of Green Computing in Philippine Higher Education Institutions (HEIs)</p> <p>Paula Victoria Opulencia Saint Louis University, Philippines</p> <p>Abstract</p> <p>Higher Education Institutions in the Philippines can make significant contributions to the reduction of electronic waste and reduce carbon emissions by being continually aware of what green technology or green computing is all about. Green computing is the study or practice of environmentally sustainable computing activities, policies, or adoption of green technologies. In a higher education setting, green computing practices can be adopted and the level of maturity can be measured against a set process improvement best practices as defined in the Capability Maturity Model Integration or CMMI. A Maturity Model based on CMMI can be a very useful tool in the identification of new opportunities and strategies in the field of Green Computing for higher education. Design Science Research was used in development of the maturity model. The Analytic Hierarchy Process (AHP) was used to determine the relative importance of the categories or components of the maturity model. A questionnaire based on the maturity model rubric was used to perform a green computing maturity assessment of one higher education institution in the Philippines.</p>
<p>Lamfu Fabrice Yengong GICECG1604056</p>	<p>Development of a simple biogas digester as a source of renewable energy and sustainable livelihood</p> <p>Lamfu Fabrice Yengong Affiliation: Department of Environmental Science, Faculty of Science, University of Buea, Cameroon lamfu2035yengong@gmail.com</p> <p>Abstract</p> <p>The Majority of Cameroonian living in the rural areas depend on agriculture for their sustainable livelihood. Many have no access to electricity and they use firewood as their major source of energy for cooking. This situation is not sustainable and also has a negative impact on the environment. The biogas digester is not only a cost effective solution to address these concerns but also presents less negative impact to the environment.</p> <p>It is with is in mind that we have developed a biogas digester that is a simple, yet powerful sanitation technology option that is capable of: (i) processing human and animal feces into safe and free fertilizer; (ii) reducing cases of groundwater contamination by processing feces instead of having it discharged untreated; (iii) creating biogas for use in cooking and household lighting; (iv) empowering women</p>

	<p>and families by reducing their time spent on gathering fuel wood and cooking; (v) reducing indoor air pollution brought about by burning fuel wood; and (vi) eliminating carbon dioxide (CO₂) and methane (CH₄) emissions during fermentation of openly-discharged sewage, thereby helping to reduce the threat of climate change. We therefore present this simple technology that has the potential of transforming lives especially in rural areas.</p>
 <p>Nirmal Kumar Srivastava GICECG1604057</p>	<p>Electrochemical Treatment of Chromium(VI) by Iron and Aluminium Electrodes and Optimization using Response Surface Methodology</p> <p>Nirmal Kumar Srivastava Department of Chemical Engineering, National Institute of Technology, Jalandhar, Punjab srivastavank@gmail.com</p> <p>Abstract Chromium(VI) is a top priority toxic pollutant as defined by the Environment Protection Agency. Electrochemical treatment is a process that removes heavy metals, suspended solids, emulsified organics and many other contaminants from water using electricity. The present work investigates the Chromium removal from wastewater in a batch reactor using iron and aluminium electrodes and gives emphasis to study the effect of different parameters like pH, electrolysis time, Chromium concentration, current, amount and type of electrolytes i.e. NaCl, MgCl₂ and KCl etc. on the removal efficiency. Optimization has been done using Box–Behnken method of Response Surface Methodology. The selection and development of proper models to analyze the results were carried out by using statistical software, Design-Expert 6. The ANOVA (analysis of variance) has been carried out to analyze the results and it shows that the model F-value is 470.34, implying that the model is highly significant. Thermo gravimetric Analysis (TGA), X Ray Diffraction (XRD), Differential Thermal Analysis (DTA), Scanning Electron microscopy (SEM) were carried out. Iron electrode with NaCl electrolyte gives maximum efficiency at pH=3, t=30 min, C=50 ppm and current =1A, Iron electrode gives removal efficiency above 98%, Steel wool 96% and Aluminium electrode 91.2%. Keywords: Hexavalent Chromium, Electrocoagulation, Box–Behnken method, ANOVA, Design-Expert 6</p>
 <p>Abu Afree Andalib YRSECG1604051</p>	<p>An analysis for achieving ecological sustainability by developing green ship-breaking industry concept resulting in urban development and pollution control.</p> <p>Abu afree andalib Department of Naval Architecture & Marine Engineering Military Institute of Science & Technology Mirpur Cantonment, Mirpur, Dhaka-1216, ayon4588@yahoo.com</p> <p>Abstract Achieving ecological sustainability by reducing environmental pollution is a great matter of concern for the researchers. Ecological sustainability is a direct function of environment pollution. Trying to find a solution or developing a system that</p>

	<p>reduces environmental pollution is not an option now, it is compulsory for our future existence. Industry plays a huge role compensating the issues for environmental safety. In this era even now some countries imply age old industrialization method which is not suitable. There may be some issues for not implying modern techniques. But due to industrialization urbanization may occur but pollution still plays a role. At this time the game changer is ecological sustainability. This research paper discusses about sustainable development and provides a concept for green industry as industrialization is one of the prime reason for pollution. The situation considered here is a heavy industry more specifically ship breaking industry which is now a great threat in some country for human as well as marine wildlife. Bangladesh is taken as an example hereafter. This methodology adopted to study and analyze the problem is that breaking down the problems, finding a solution for each and then combining that solution to find an ultimate solution. This paper also discuss about effects of urbanization toward pollution problem which ultimately lead to ecological unsustainability. The model for a conceptual shipyard was adopted with the help of AutoCAD and sketch up software.</p> <p>The paper finally provides recommendation about long term process as well as short term process to solve the pollution issue for a specific industry considering a country's economic and financial aspect at the same time keeping a parallel course with urbanization.</p>
 <p>Mayur A. Makhesana YRA1571051</p>	<p>Investigations on the effects on surface quality and forces in turning with the application of solid lubricants: an approach to clean and sustainable manufacturing</p> <p>Mayur A. Makhesana Mechanical Engineering Department, Institute of Technology, Nirma University, Ahmedabad-382481 mayur.makhesana@nirmauni.ac.in</p> <p>K.M.Patel Mechanical Engineering Department, Institute of Technology, Nirma University, Ahmedabad-382481</p> <p>Abstract</p> <p>Machining is a widely used material removal process. The metal cutting industries aims to achieve maximum quality and minimum cost. High amount of heat is generated during machining as a result of plastic deformation and friction between tool and workpiece surface. Surface quality and dimensional accuracy of workpiece is greatly affected by the heat generated. In recent times newer techniques are developed to improve the process performance. On the other side the environmental effects of these techniques becomes more significant issue. To overcome the effects of heat generated in machining cutting fluid may be applied to cutting zone. The application of cutting fluid creates environmental pollution and affects the worker's health. Besides, it also increases total manufacturing cost. To address these issues with the use of cutting fluid, present work investigates the influence of the use solid lubricant on surface quality and cutting forces. Graphite and molybdenum disulphide is used as solid lubricant with different concentrations in SAE 40 base oil to assess its effect in turning. The</p>

	<p>process performance with solid lubricants is compared with dry and wet machining. The result revealed the improvement in process performance in case of solid lubricant assisted machining. Keywords: Machining, solid lubricants, cutting force, surface roughness</p>
<p>I.W. Tseng GIC16011052</p>	<p>Green process for bonding material: Mechanical and bonding properties of cyanide-free gold-plated silver wire</p> <p>I. W. Tseng Department of Materials Science and Engineering, National Cheng Kung University, Tainan 701, Taiwan n58011251@mail.ncku.edu.tw</p> <p>F. Y. Hung Department of Materials Science and Engineering, National Cheng Kung University, Tainan 701, Taiwan</p> <p>Abstract The environmental-friendly method, featuring the non-cyanide plating process was established for gold-plated silver wire, and it offers an oxidation-resistant layer and added benefits of mechanical properties compared with conventional silver wires. This new fine wires can meet the industry standards of the advanced bonding technique. The proposed gold-plated silver wire was studied to ensure compatibility with mechanical properties and bonding characterization. In this paper, a gold-plated silver wire was found to have a stable microstructure and superior mechanical properties. Strength test displayed that gold-plated silver wire was stronger than silver wire. The gold-plated silver layer has outstanding a bonded interface with the Ag wire. Intermetallic compounds $AuAl_2$ and Ag_2Al grew from FAB and bonding pads after aging at 175 degrees C for 1000 h. These results supply insights about the reliability issue of gold-plated silver wire in bonding processes. Keywords: Gold-plated silver wire; Mechanical properties; Bonding properties</p>
 <p>Paramjeet Saroj YRA1571053</p>	<p>Lipid production from algal culture under different growth conditions and its quality analysis</p> <p>Paramjeet S. National Institute of Technology , warangal, Telangana param@nitw.ac.in</p> <p>Manasa P. National Institute of Technology , warangal, Telangana</p>

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Abstract

Microalgae cells have the potential to rapidly accumulate lipids that contain fatty acids important for high value fatty acids . There is currently no standard extraction method for the determination of the fatty acid content of microalgae. This has caused a few problems in microalgal biofuel research due to the bias derived from different extraction methods. Therefore, this study aims to evaluate three different methods for lipid extraction. Significant differences were observed among all the three methods in regards to extract yield and fatty acid composition. The Modified Bligh & Dyer extraction technique stood out best for effective extraction of microalgal lipids for long chain saturated fatty acids. Different strains consumed different nitrate sources at different concentrations. As a result of which the nitrogen stress induction is not uniform for all the strains. *Chlorella vulgaris* yielded better biomass when NaNO_3 was used as nitrogen source compared to other strains and nitrogen sources i.e. KNO_3 and Urea in BG11 media. *Chlorella vulgaris* also produced highest lipid content while *Scenedesmus obliquus* being least productive. *Chlorella vulgaris* showed the best combination with NaNO_3 as a nitrogen sources with BG11 broth media for biomass and lipid productivity. The study also indicated that optimal biomass yield is obtained at pH 7. However, the maximum lipid output obtained at pH 8 .This clearly indicates that higher pH leading to stress in the culture and inducing lipid production.
Keywords : Microalgae oil, Fatty acid, Extract yield, Lipid profile



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Electrochemical Synthesis of Few Layered Graphene and its Electrochemical Performance

Nazish Parveen

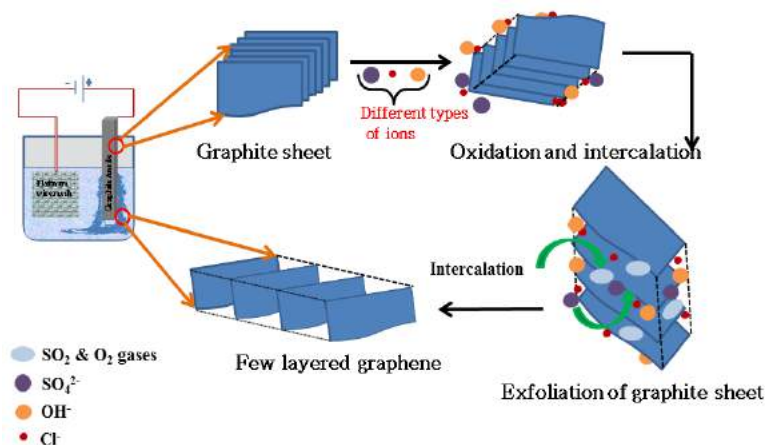
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Abstract

The mass production of high-quality graphene sheets is essential for their practical applications on a large scale. Here we use less corrosive, cost effective and simple approach method for the production of graphene. The electrochemical exfoliation of graphite sheets in to graphene using an aqueous solution of electrolyte. Instead of using strong acids, we have used aqueous solution as an electrolyte where the combination of electrolyte helps to expand the graphite lattice and also accelerated the exfoliation of the graphite sheet. This methodology produces high quality graphene with few layered structures called few layered graphene (FLGN). The as prepared FLGN was characterized using a range of techniques such as including Raman spectroscopy and atomic force microscopy, which showed that the as-prepared graphene has 4-6 layers. The electrochemical properties of FLGN were examined by cyclic voltammetry, impedance spectroscopy and charge/discharge

studies. The as-prepared FLGN exhibited a high specific capacity and good cyclic stability, which makes this methodology promising for the large scale production of FLGN for practical applications.¹



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Metal Free Earth Abundant Elemental Red Phosphorus: A New Class Of Visible Light Photocatalyst And Photoelectrode Material

Sajid Ali Ansari

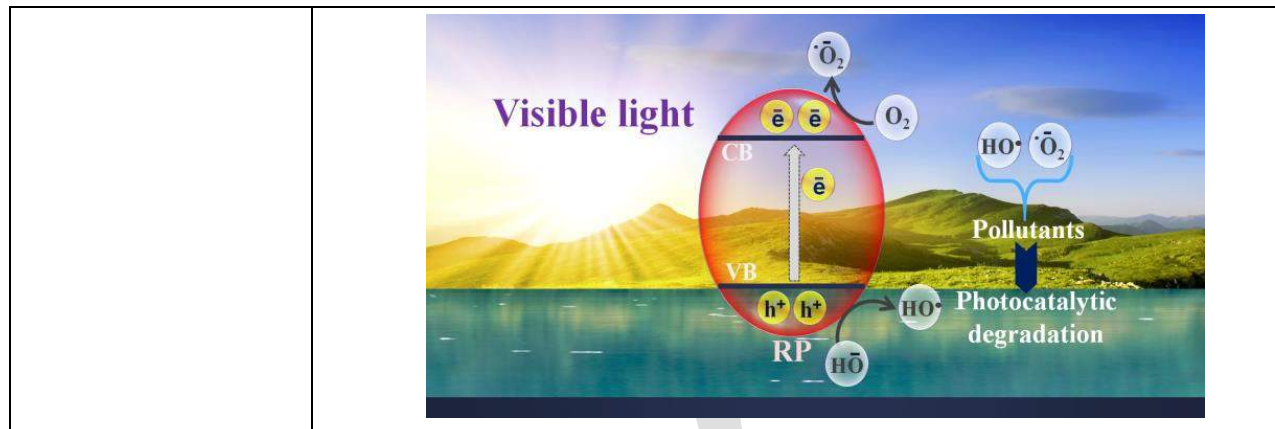
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Abstract

Developing high-performance photocatalyst and photoelectrode with enhanced visible light harvesting properties are essential for practical visible light photocatalytic applications. Noble metal-free, highly visible light-active, elemental red phosphorus (RP) was prepared by a facile mechanical ball milling method, which is a reproducible, low cost and controllable synthesis process. The synthesis used inexpensive and abundant raw materials because most RP hybrids are based on expensive noble-metal. The novel milled RP showed significantly enhanced photocatalytic and photoelectrochemical performance with a lower charge transfer resistance than commercial RP under wide visible photoirradiation, making it a feasible alternative for photocatalytic applications.



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Role of Gender Approach for Firm Innovation: Engineering Company

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Abstract

Highly criticized role of gender in firm innovation, especially in engineering firms will be discussed with multilevel lens. Existence of so many types of gender and their status in firm transformation is analyzed in this paper. It will focus on factors hindering gender for firm upheaval. Aspects like formal and informal education, geostrategic location of firm, inter-firm network ties, social influence, financial influence and role of government will be highlighted. This paper intends to explore all possible ways these intermediary affect firm innovation. Questionnaire as instrument will be used to gather data and different statistical methods will be applied to build argument. This research will add local culture and aroma regarding developing countries. For instance, geostrategic location of South Asian companies and social influence are overlapping factors, such overlapping aspects and their interdependence will also be discussed. For future implication many more arenas of this field like psychological factors and newly explored genders can be discussed.

Key words: Gender, geostrategic, multilevel lens, entrepreneurship.



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Numerical Investigation of Heat Transfer under Impinging Annular Jets

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 <p>Partha Goswami GICICRST1604055</p>	<p>Analysis of Wall Shear Parameters of Physiological Pulsatile Flow through Mild and Severe Arterial Stenosis and Correlation to Atherosclerosis</p> <p>Partha Goswami Mechanical Engineering Department, Jadavpur University, Kolkata, India gospartha@gmail.com</p> <p>Dipak Kumar Mandal Mechanical Engineering Department, College of Engineering & Management, Kolaghat, Midnapur(E), India dipkuma@yahoo.com</p> <p>Nirmal Kumar Manna Mechanical Engineering Department, Jadavpur University, Kolkata, India nkmanna@mech.jdvu.ac.in</p> <p>Somnath Chakrabarty Mechanical Engineering Department, Indian Institute of Engineering, Science and Technology, Shibpur, Howrah, India somnathbec@rediffmail.com</p> <p>Abstract</p> <p>Numerical simulations of physiological pulsatile flow through mild and severe arterial stenosis are carried out to analyze wall shear stress parameters. The governing equations are solved by finite volume method. The study shows that the distribution patterns of time-averaged wall shear stress (TAWSS), oscillatory shear index (OSI) and relative residence time (RRT) are same for both mild</p>

	<p>stenosis and severe stenosis. The magnitude of peak TAWSS and low TAWSS and extent of negative TAWSS of severe stenosis is higher than those of mild stenosis. The OSI value of severe stenosis is higher at distal to throat of stenosis in comparison to mild stenosis. The size of recirculation zone of severe stenosis is larger than that of mild stenosis. The abnormally high peak value of RRT of severe stenosis is concentrated and located at far away from stenosis when it is compared with mild stenosis.</p> <p>Keywords: Atherosclerosis, Oscillatory shear index, Pulsatile, Relative residence time, Wall shear stress</p>
<p>Chin-Yun Chen GICICRST1604056</p>	<p>Improvements in the Efficiency of Automatic Differentiation of Arbitrary Higher Orders</p> <p>Chin-Yun Chen Dept. Appl. Math., National Chiayi University, Chiayi 600, TAIWAN *cychen09@gmail.com</p> <p>Abstract</p> <p>Higher derivatives often appear in the discussions of different numerical methods and have found a wide range of applications in science and engineering. For their numerical computations, automatic differentiation (AD) was known to be a practical tool, which has been developed since 1960s and is also named as algorithmic differentiation or Taylor arithmetic. Besides, it totally differs from symbolic differentiation as well as numerical differentiation using finite differences. In the past 50 years, many efforts have been devoted to the performance enhancement of algorithmic differentiation. However, the concerns were majorly focused on the implementation techniques. In this talk, improvements in the efficiency of the computational schemes of Taylor arithmetic are to be presented for the first time.</p> <p>Keyword: Higher Derivatives, Automatic Differentiation, Taylor arithmetic, Efficient Computation</p>
<p>Grienggrai Rajchakit GICICRST1604057</p>	<p>Feedback control of Lu's Systems</p> <p>Grienggrai Rajchakit Department of Mathematics, Faculty of Science, Maejo University, Chiang Mai, Thailand kreangkri@mju.ac.th</p> <p>Abstract</p> <p>The general method for proving the existence of homoclinic trajectories in dissipative systems is developed. The applications of this method to Lorenz-like systems: Lorenz, Shimizu–Morioka, Lu and Chen systems are demonstrated. A criterion for the existence of a homoclinic trajectory within a given family of differential equations (Fishing principle) is presented. New numerical algorithm for the approximation of a homoclinic point in parameters space is constructed. The comparison with Kaplan–Yorke and Shilnikov results is made. In this paper, we study Lu's system. First, we control the chaotic behavior of Lu's system to its equilibrium points using linear feedback control and adaptive control method. Finally, we study chaos synchronization of Lu's system by using active control methods.</p> <p>Keywords: Lu's system; Feedback control; Adaptive control; Synchronization.</p>



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In Design of a Local Weather Station for Agriculture IoT Applications

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Abstract

This paper describes the design of a local weather station to be installed in a farm land in order to monitor localized weather and environment for use in agriculture and other applications. The system includes various weather sensors, a microcontroller, a wireless module, a wireless internet, and a cloud data base. The data are sent to the host data base in the cloud every 10 minutes or at a time interval determined by the users. The system is also equipped with a local wireless sensor network to have a more detail environment data in a range of 1000m. This low cost system can be used by any interested people for any applications required local environmental data since there is a big difference between the state-level weather station and the local conditions. The station provides local weather and other parameters necessary for the farmers making decision on the farming process.

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Mechanical Behaviour Of Surface Modified Rice Husk/E-Glass Polypropylene Hybrid Composites Using Sodium Hydroxide (Naoh)

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Abstract

This paper presents the development of hybrid composites mechanical properties. In the experiments carried out, Polypropylene (PP), rice husk (RH) and short E-glass (SG) fibers are prepared through the process of melt-mixing technique at 175^o C for 8 minutes and 50rpm rotor speed using an internal mixer (Haake

Rheomixer machine). The hybrid composites made are prepared in various ratios of fiber weight fractions varying up to 60%. The specimens are analyzed by different techniques, such as tensile test, impact test, hardness test and scanning electron microscopy (SEM). The study is also focused on the effect of fiber (RH) treatment using 2% concentration Sodium Hydroxide (NaOH) to improve the interaction and adhesion between the nonpolar matrix and the polar lignocellulosic fibers. In general, the results are indicated that the properties of RH composite can be considerably improved by incorporation of glass fiber. The presence of NaOH to rice husk for 15%, indicates higher tensile and impact modulus, while the hardness strength is, however, reduced. The morphology results support the tensile properties which indicated the interaction between the PP and fibers with addition of NaOH. These results recommend that rice husk and E-glass fibers are a viable alternative to hybrid-based reinforcing fibers as long as the right processing conditions are applied and they are used in the applications.

Keywords: PP; RH; E-Glass; hybrid composite



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Analysis of Wall Shear Parameters of Physiological Pulsatile Flow through Mild and Severe Arterial Stenosis and Correlation to Atherosclerosis

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Abstract

Numerical simulations of physiological pulsatile flow through mild and severe arterial stenosis are carried out to analyze wall shear stress parameters. The governing equations are solved by finite volume method. The study shows that the distribution patterns of time-averaged wall shear stress (TAWSS), oscillatory shear index (OSI) and relative residence time (RRT) are same for both mild stenosis and severe stenosis. The magnitude of peak TAWSS and low TAWSS and extent of negative TAWSS of severe stenosis is higher than those of mild stenosis. The OSI value of severe stenosis is higher at distal to throat of stenosis in comparison to mild stenosis. The size of recirculation zone of severe stenosis is larger than that of mild stenosis. The abnormally high peak value of RRT of severe stenosis is concentrated and located at far away from stenosis when it is compared with mild stenosis.

	<p>Keywords: Atherosclerosis, Oscillatory shear index, Pulsatile, Relative residence time, Wall shear stress</p>
 <p>CH. Shilpa Chakra GICICRST1604064</p>	<p>Chemical Reduction Synthesis of Pure Ag Nano Particles and their Antimicrobial Activity</p> <p>CH. Shilpa Chakra Centre for Nano Science and Technology, Institute of Science and Technology, Jawaharlal Nehru Technological University Hyderabad, Kukatpally, Hyderabad-85, Telangana, India shilpachakra.nano@jntuh.ac.in</p> <p>K. Venkateswara Rao Centre for Nano Science and Technology, Institute of Science and Technology, Jawaharlal Nehru Technological University Hyderabad, Kukatpally, Hyderabad-85, Telangana, India</p> <p>Abstract</p> <p>A novel chemical process was adopted to synthesize silver nanoparticles by reducing AgNO₃. The chemical-reduction of silver was complete when the mixture (AgNO₃+NaBH₄) changed color from black to green. The effect of the addition of a surfactant (Tween 80) was studied. X-ray crystal analysis showed that the silver nanoparticles exhibit face centered lattice, crystalline cubic structures with hkl orientations. The characteristic surface Plasmon resonance of the Silver nanoparticles observed by UV-Vis Spectroscopy showed a maximum adsorption at 456 nm. The TEM images showed that the particles exhibit cylindrical tube-like structures. The presence of the elemental signature of Silver was confirmed by SEM-EDXA analysis. The mean particle size investigated by DLS was found to be 20-30nm. The downward shift of the absorption bands between 1300 and 2500 cm⁻¹ in the FTIR analysis was observed, indicating the formation of silver nanoparticles. The antimicrobial activity of the silver nanoparticles against S.aureus, E.coli, B.subtilis and C.albicans was demonstrated by the diminished bacterial growth with the development of well-defined inhibition zones. Keywords: Ag NPs, antimicrobial activity, Chemical reduction synthesis, TWEEN 80.</p>
 <p>Satyanarayana Vollala GICICRST1604065</p>	<p>Bit Forwarding 3-bits Technique for Efficient Modular Exponentiation</p> <p>Satyanarayana Vollala Department of Computer Science and Engineering National Institute of Technology, Tiruchirappalli, Tamil Nadu, India satya4nitt@gmail.com</p> <p>B. Shameedha Begum, Department of Computer Science and Engineering National Institute of Technology, Tiruchirappalli, Tamil Nadu, India shameedha@nitt.edu</p> <p>Amit D. Joshi, Department of Computer Science and Engineering National Institute of Technology, Tiruchirappalli, Tamil Nadu, India amitjoshi233@gmail.com</p>

	<p style="text-align: center;">N. Ramasubramanian Department of Computer Science and Engineering National Institute of Technology, Tiruchirappalli, Tamil Nadu, India nrs@nitt.edu</p> <p style="text-align: center;">Abstract</p> <p>It is widely recognized that the Modular exponentiation is the crucial, but expensive operation in several public-key cryptostyems, that makes use of repeated modular multiplications. So, the performance of public-key cryptography is highly influenced by the competent implementation of modular exponentiation. In order to speed up the entire process, it is essential to develop the modular exponential algorithms, which reduces the frequency of modular multiplications, and the time required to implement each single modular multiplication. In this paper, we present the Bit Forwarding 3-bits (BFW3) technique to reduce the count of modular multiplications for hardware implementation of modular exponentiation. Montgomery multiplication method is customized according to the needs of BFW3 and named Adaptable Montgomery Multiplication (AMM). It has been computed that, it is possible to reduce 18.20% of modular multiplications by BFW3 algorithm for 1024-bit exponent in comparison with prevailing techniques. This reduction resulted in increased throughput of 18.11% in comparison with MME42_C2 at the cost of 1.09% extra area. It also reducing the power consumption by 8.53%, thereby saving energy up to 10.10%. Keywords: Public-Key Cryptography, Modular Exponentiation, Modular multiplication, Montgomery,multiplication</p>
 <p>Md. Nasir Uddin GICICRST1604066</p>	<p style="text-align: center;">Comparative Study of Integrated Transceiver for Real Time Monitoring in Rescue Operation</p> <p style="text-align: center;">Md. Nasir Uddin Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia engnasirbd@yahoo.com</p> <p style="text-align: center;">M. M. Rashid, Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia</p> <p style="text-align: center;">N A Nithe 2Department of Electrical & Electronics Engineering Dhaka Polytechnic Institute engnasirbd@gmail.com</p> <p style="text-align: center;">Abstract</p> <p>An augmented reality system provides enhanced situational information to personnel located within an environment. A tracking system obtains viewpoint information corresponding to a real-time view of said environment. A processing system receives information from one or more sensors. Information includes sensor location information and status information about the environment and personnel therein. The processing system generates graphics using the sensor location information and the viewpoint information. Graphics include visual representations of said status information. A display displays the generated</p>

	<p>graphics on a display at a supervisor station that is outside of said environment such that graphics are superimposed on the real-time view. Keywords-Integrated Transceiver, Real Time Monitoring, Rescue Operation, Firefighter, Bluetooth, Wi-Fi, RF, Smart sensor platform, Motorola TETRA, SoC, GPS, Wireless.</p>
 <p>Md. Nasir Uddin GICICRST1604066</p>	<p>Cooling Load Calculation method of a Room in the Academic Building</p> <p>Md. Nasir Uddin Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia engnasirbd@yahoo.com</p> <p>M. M. Rashid, Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia</p> <p>N A Nithe 2Department of Electrical & Electronics Engineering Dhaka Polytechnic Institute engnasirbd@gmail.com</p> <p>Abstract</p> <p>The variables affecting cooling load calculations are numerous, often difficult to define precisely, and always intricately interrelated. Many cooling load components vary in magnitude over a wide range during a 24-h period. Since these cyclic changes in load components are often not in phase with each other, each must be analyzed to establish the resultant maximum cooling load for a building or zone. A zoned system (a system of conditioning equipment serving several independent areas, each with its own temperature control) need recognize no greater total cooling load capacity than the largest hourly summary of simultaneous zone loads throughout a design day; however, it must handle the peak cooling load for each zone at its individual peak hour. At certain times of the day during the heating or intermediate seasons, some zones may require heating while others require cooling. The concept of determining the cooling load for a given building must be kept in perspective. A proper cooling load calculation gives values adequate for proper performance. Variation in the heat transmission coefficients of typical building materials and composite assemblies, the differing motivations and skills of those who physically construct the building, and the manner in which the building is actually operated are some of the variables that make a numerically precise calculation impossible. While the designer uses reasonable procedures to account for these factors, the calculation can never be more than a good estimate of the actual cooling load. Components of cooling load are internal loads, latent loads, solar loads, thermal transmission loads, infiltration and ventilation loads etc. the estimation of cooling load for a space involves calculating a surface by surface conductive, convective, and radiation heat balance for each room surface and a convective heat balance for the room air.</p> <p>Keywords-Cooling load, components of cooling load, cooling load temperature difference (CLTD).</p>



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Reduce Generators Noise with Better Performance Of A Diesel Generator Set Using Modified Absorption Silencer

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Abstract

Noise pollution is considered to be one of the major environment pollutants which affect human beings both physically and psychologically, as such, a noise-free environment is in great demand worldwide. Diesel engine generators are highly appreciated as power sources of electric equipment in factories, houses and business centers. Loud sounds from diesel generators are a major cause of noise pollution. This paper analyzes the noise source of diesel generators and mitigates this pollution by a modified absorbance silencer or muffler. For automotive engines, the principle source of noise is its intake, radiator, combustion, etc. In our society, all of the industries, the residential sector and business plants use generators. In this research, an absorbance silencer is modified for reduced noise of the generator set. It is constructed from a combination of baffle or perforated duct with sheet metal. This paper aims to study the sound characteristics of generator sets and also aims to reduce the sound by means of a well-modified muffle silencer. This paper focuses on design and tests silencers, particularly absorption silencers for engine exhausts.

Keywords: Diesel Engine; Generator; Absorption Silencer; Noise.



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P-Q Circle Based Parameter Measurement for Permanent Magnet Synchronous Motor

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	<p style="text-align: center;">engnasirbd@gmail.com</p> <p style="text-align: center;">Abstract</p> <p>This research paper introduces parameter measurement for permanent magnet synchronous motors based on the P-Q circle diagram. Three electrical parameters of permanent magnet synchronous motors, i.e., the equivalent iron loss resistance, armature inductance, and electrical motive force (emf) coefficient are concurrently measured. The major merits of this procedure are that it can be applied under consistent excitation and it releases with the generating test for the emf coefficient. The suggested procedure is applied to a 160W permanent magnet synchronous motor, and then the measurement results are analyzed.</p> <p>Keywords—Iron loss, Parameter measurement, Permanent magnet synchronous motor, P-Q circle diagram.</p>
 <p style="text-align: center;">Md. Nasir Uddin GICICRST1604066</p>	<p style="text-align: center;">Three Phase UPFC Regulator with Reduced Bus Capacitance for Solar PV Application System</p> <p style="text-align: center;">Md. Nasir Uddin Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia engnasirbd@yahoo.com</p> <p style="text-align: center;">M. M. Rashid, Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia</p> <p style="text-align: center;">N A Nithe 2Department of Electrical & Electronics Engineering Dhaka Polytechnic Institute engnasirbd@gmail.com</p> <p style="text-align: center;">Abstract</p> <p>This paper, propose a A Three-Phase Reduced DC Bus Capacitance Unified Power Flow Controller (UPFC) for Low Voltage (LV) distribution Networks with High Photovoltaic (PV) penetrations. The device is shown capable of voltage regulating and correcting phase unbalance voltages that can be produced by high levels of distributed photovoltaic (PV) generation. The device is also capable of Power factor improvement (PFI) and correction, regulating the zero, positive and negative sequence voltage in LV distribution Networks and neutral or zero sequence current compensation. Instantaneous reactive power theory shows The power of DC Bus capacitor will fluctuate at twice mains frequency during unbalanced operation. The Real and Instantaneous power balance of Unified Power Flow Controller (UPFC) can be maintained by allowing the shunt input converter to draw a small negative and positive sequence current. The Instantaneous Power balance with negative sequence current allows a hundred-fold reduction in the value of DC bus capacitance which allows long life polypropylene or ceramic capacitors to replace of electrolytic capacitor in this application.</p> <p>Key Words--Instantaneous power theory, power quality, UPFC, voltage regulation, high PV, Solar.</p>



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Design of Mini Solar Home System

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Abstract

Solar panels-the vital element of this SSHS makes use of exhausted energy. Compared to all other energy solar energy is abundant and free that can be used to charge batteries used for any module or electrical kits which are obvious for daily usage. The Smart Charge Controller will be designed such, so that the solar battery does not get over charged thereby ensuring no reduction of durability of the battery. This kind of system requires sensors to sense whether the battery is fully charged or not. After fully charged, detection safety can be achieved by designing a logic system in the charger, which will automatically disconnect or cut power to the battery when it is fully charged. When the solar batteries come into account, they get charged in a very short time period considering of the solar/sun/light hours per day, which is 5 hours in Bangladesh; whereas Diesel Battery Charging Stations (DBCS) take 1-2 days.

Key words-Feature of Solar Panel, PV PANEL, Charge Controller, Battery,

Global Energy: Need, Present Status, Future Trend and Key Issues



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 <p>Md. Nasir Uddin</p>	<p>A Mechanism Concept and Design of Reconfigurable Robot for Rescue Operation</p> <p>Md. Nasir Uddin Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia engnasirbd@yahoo.com</p> <p>M. M. Rashid, Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia</p>

<p>GICICRST1604066</p>	<p style="text-align: center;">N A Nithe 2Department of Electrical & Electronics Engineering Dhaka Polytechnic Institute engnasirbd@gmail.com</p> <p style="text-align: center;">Abstract</p> <p>There seem to be a lot of robots that have been built up until today. Basically, the creation of robot is supposed to be a helper for a human. Robot will replace human whenever the task is really difficult or dangerous to be done by human. Recently, the robots that have been created were made reconfigurable. The purpose is to make the robot to function in more type of surroundings rather than only one surrounding. With this ability, the robot can be more useful to human, and less number of robot is required to complete a certain task. This report emphasizes on the reconfigurable robot project, where in this report, the robot that has been created is using the walking motion. It presents a description with pictures and construction drawings of a four-leg reconfigurable robot.</p> <p>Keywords—Robot, Mechanism, Reconfigurable, Rescue, Controller.</p>
 <p>Md. Nasir Uddin GICICRST1604066</p>	<p style="text-align: center;">Maximum Power Point Charge Controller for DC-DC Power Conversion in Solar PV System</p> <p style="text-align: center;">Md. Nasir Uddin Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia engnasirbd@yahoo.com</p> <p style="text-align: center;">M. M. Rashid Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia</p> <p style="text-align: center;">N A Nithe 2Department of Electrical & Electronics Engineering Dhaka Polytechnic Institute engnasirbd@gmail.com</p> <p style="text-align: center;">Abstract</p> <p>A charge controller that includes an input interface that receives input DC electrical signals. A converter section converts the input DC electrical signals to output DC electrical signals. Control means is operably coupled to the converter section. The control means includes means for operating the converter section at an estimated maximum power point of the input DC electrical signals. The estimated maximum power point is derived by a novel control scheme that quickly adapts to changing conditions and thus affords optimum energy harvest from the source and improved energy conversion efficiencies.</p> <p>Key words: Charge Controller, DC, AC, PV, Solar, PWM, MPPT, SHS.</p>



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Application of Remote Sensing Method for Flood Management System

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Abstract

Flood occurred when heavy and continuous rainfall exceeding the absorptive capacity of soil and the flow capacity of rivers, streams, and coastal areas. Land areas that are most subjected to floods are areas situated adjacent to rivers and streams, that are known as floodplain . and therefore considered as “flood-prone”. These areas are hazardous to development activities if the vulnerability of those activities exceeds an acceptable level.The main objectives of this study are; to identify floodplains and other susceptible areas, and to assess the extent of disaster impact in the study area which is located at Kota Tinggi, Johor, Malaysia. This

	<p>area experienced an unprecedented flood during December of 2006 to January of 2007. Questions such as how often and how long the floodplain will be covered by water, and at what time of year flooding can be expected need to be answered. Thus, an understanding of the dynamic nature of floodplains is greatly required. Multi-temporal Radarsat-1 images, Landsat ETM+ image, topographical maps and land use maps were used in this study for the purpose of delineating the flood extent before, during and after the flood event. DEM acquired from topographic map is used to derive flood depth. The final outputs of this study are flood extent and flood depth maps where both of these maps show the impact of the flood to environment, lives and properties. This map is also important and can be applied to develop a comprehensive relief effort immediately after flooding Keywords: Remote Sensing, Flood Mapping</p>
 <p>Md. Nasir Uddin GICICRST1604066</p>	<p style="text-align: center;">Effects of Energy on Economy, Health and Environment</p> <p style="text-align: center;">Md. Nasir Uddin Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala-Lumpur, Malaysia engnasirbd@yahoo.com</p> <p style="text-align: center;">MM Rashid Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala-Lumpur, Malaysia</p> <p style="text-align: center;">MG Mostafa Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala-Lumpur, Malaysia</p> <p style="text-align: center;">Belayet H Department of Electrical & Electronics Engineering, adust, buet, i&e, Dhaka, Bangladesh</p> <p style="text-align: center;">SM Salam Department of Electrical & Electronics Engineering, adust, buet, i&e, Dhaka, Bangladesh</p> <p style="text-align: center;">NA Nithe Department of Electrical & Electronics Engineering, adust, buet, i&e, Dhaka, Bangladesh</p>

	<p style="text-align: center;">MW Rahman</p> <p style="text-align: center;">Department of Mechatronics Engineering, Faculty of Engineering, International Islamic University Malaysia</p> <p style="text-align: center;">Abstract</p> <p>Life is but a continuous process of energy conversion, transformation and use. The quantity of energy, forms and the sources used for conversion from one form to other are closely linked with economy and quality of life. But the energy conversion, transformation and use always produce effects on the surrounding environment. Some of these effects are detrimental to human health and the environment. Environmental pollution, particularly global warming is the talk of the day. Burning of fossil fuels produce smokes (COx, NOx, SOx and undesirable particulates) or flue gas, ash and other wastes. The wastes, flue gas, particulates and radiation produced in the energy system, cause health hazards. The SOx and the NOx are responsible for acid rain. The energy mix and the consumption rate should be planned and executed in commensurate with sustainable development. The energy chain accordingly is required to be managed in a way so that the health hazards remain within acceptable limits and that the ecological balance is not unduly disturbed to the extent that our posterity is put to too much risk. Comprehensive environmental assessment of all large energy related industries are essential before the start of the project to limit the emissions within acceptable limits. The findings of the assessment report have to be reassessed during and routinely after the commissioning of the industry. Appropriate law to this end has to be enacted and effectively enforced. The paper tries to focus on energy related economy, health and environmental issues and discuss possible remedies.</p>
 <p>Md. Nasir Uddin GICICRST1604066</p>	<p style="text-align: center;">New Energy Sources: Technological Status and Economic Potentialities</p> <p style="text-align: center;">Md.Nasir Uddin</p> <p style="text-align: center;">Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala-Lumpur, Malaysia engnasirbd@yahoo.com</p> <p style="text-align: center;">MM Rashid</p> <p style="text-align: center;">Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala-Lumpur, Malaysia</p> <p style="text-align: center;">MG Mostafa</p> <p style="text-align: center;">Department of Mechatronics Engineering, International Islamic University Malaysia, Kuala-Lumpur, Malaysia</p>

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Abstract

There are different types of energy sources: traditional, commercial, primary, renewable and the new energy sources. The new energy sources, from the perspective of this paper are those that have been innovated in the recent past and are still being innovated by the scientists and technologists to meet the energy challenges. The availability of the fossil fuels or the commercial sources: coal, oil and gas is finite. Human beings have already used a considerable portion of the reserves. The reserves are maturing. Besides, these sources cause environmental pollutions: particulates, acid rains, toxic pollutants, particularly greenhouse gases. The greenhouse gases are warming up the globe with consequent climatic changes. Global warming and climatic change is presently one of the major challenges before human race. New energy sources are important to meet the ever growing need of energy for smooth transition from the present day predominantly finite sources to pseudo unlimited energy sources like fusion or solar energy. In order to achieve the goal of sustainable development, national as well as international commitment and coordinated efforts are essential to harness the new: nuclear, solar, wind, tidal, geothermal, biomass, hydrogen and other new renewable sources optimally. The paper tried to focus on the technical status and economic potentialities of a number of the new energy techniques or sources that appear to suit sustainable development.



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A New Technique for Developing Effective Models of Different Types of Non Linear Loads

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Abstract

This paper presents a new technique for acquisition of Real Time waveforms and developing effective models of the different types of loads from the acquired waveforms. To develop an effective load model, it is necessary to acquire current waveforms of the different loads. Since, load current usually affects the supply voltage; distorted current waveforms would also affect the voltage waveform. To make the load model more practical, voltage waveforms are also captured along with current waveforms. In this work, acquisition of voltage and current. Each time 5 cycles voltage current are acquired and stored in memory. One cycle data is extracted from the acquired waveform to be used as a template. A setup has been developed to acquire current waveforms of the different loads. These waveforms are processed and stored as templates for the specified load. These templates are later used in different combinations to determine the overall current waveform of a network. The over all wave form is analyzed for extracting the power quality parameters.

Keywords- Load, Real time, waveform.

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A Reconfigurable Cache Design for Embedded Dynamic Data Cache



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<p>B. Shameedha Begum GICICRST1604068</p>	<p>Last level Cache Partitioning Techniques in Chip Multi Processors-A Study and Analysis</p> <p>Jobin Jose National Institute of Technology, Tiruchirappalli, Tamil Nadu, India jobin16981@gmail.com</p> <p>B. Shameedha Begum National Institute of Technology, Tiruchirappalli, Tamil Nadu, India shameedha@nitt.edu</p> <p>N. Ramasubramanian National Institute of Technology, Tiruchirappalli, Tamil Nadu, India nrs@nitt.edu</p> <p>Abstract</p> <p>Chip Multi Processors (CMPs), a new generation of multicore architecture emerged as the base of System on Chip (SoC) paradigm. Multiple processing cores are packed into a single chip here. Each core is capable of executing simple and complex applications parallel. Memory is being considered as a scarce resource for the application. The multi-level memory hierarchy that involves various levels of</p>

	<p>caches are being accommodated into the chip in shared/private mode for faster access of data. Of these, the Last Level Cache (LLC) is being shared amongst various processing cores. Multiple applications are accessing the same L2 cache and thus increases the conflicts in cache entries and also acts a source of contention. These applications may produce the destructive interference between cores and at the same time occurs cache misses. This will cause a serious effect on the performance and efficiency in terms of energy of the system. In order to mitigate these problems, the shared LLC is being partitioned amongst the applications. Depending on the cache organization, different schemes are used for partitioning that includes an initial placement and replacement policies that helps to develop a good system which will improve the utilization of cache space. This paper presents an analysis on various cache partitioning schemes used for the LLC in terms of replacement policy, simulating tools and cache design and analyze in term of performance.</p> <p>Keywords: Chip Multi Processors; Last level cache; Cache partitioning; replacement policy; cache misses.</p>
 <p>Ashish Shrivastava GICICRST1604069</p>	<p>Stress Analysis of Single Point Fixings</p> <p>Ashish Shrivastava, Department of Mechanical Engineering, India ashish.shrivastava@jecrcu.edu.in</p> <p>Chirag Shah Department of Mechanical Engineering, India chirags1710@gmail.com</p> <p>Peeyush Singh Rathore, Department of Mechanical Engineering, India peeyushsinghrathore29@gmail.com</p> <p>Vaibhav Jain Department of Automobile Engineering, JECRC University Jaipur, India</p> <p>Abstract</p> <p>The paper presents a methodology for assessing the structural integrity of Single Point Fixing (SPF's) used on a pilot control stick. The main aim is to provide a thorough process by which these SPF's and the adjoining structure can be assessed for any Active Inceptor System. In this, all the relevant processes are identified including all the possible failure mechanisms.</p> <p>Keywords - Single Point Fixing, Stress, Active Inceptor System</p>
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 <p>Mani Ram Sharma YRAW16041051</p>	<p>Rites and Rituals of Rautes in Nepal</p> <p>Mani Ram Sharma Tribhuvan University, Nepal smaniram125@gmail.com</p> <p>Abstract Nepal is indeed a multi – religious, multi- ethnic and multi- lingual country. Most of the communities are nuisance, backward and subsidiary in the country by dint of unequal distribution of natural resources. At least 20 billion people have been living their low level life style (Boodle 1988). Kobil, caste and indigenous communities are kept under this category. The life of these people is committed in hunting and nomadic activities. As we know that the development process of society has various speed and shapes which resembles the unity in diversity. The process of emerging powerful countries, system of imperialistic practice, population growth and its effect in natural resources, scientific inventions and miracles in communication are the challenges for the nomadic people (Rautes) in the country. The debates have been started, who are Rautes? What do they need? Why are the people messaging wrong issues about them? Why are Rautes famous among other groups? Late Prithvi Narayan Shah stated Nepal is the public garden of four castes and thirty six sub- castes'. Yes! There are many social groups that have been source of revenue from the very beginning. Raute caste is one of them, historically found in mid and far- western regions Terai of Nepal, Known as wandering caste in Asia.</p>
 <p>Razanamahandry Lovasoa Christine</p>	<p>Biodegradation of Free Cyanide by Bacterial Species Isolated from Cyanide-Contaminated Artisanal Gold Mining Catchment Area in Burkina Faso</p> <p>Razanamahandry Lovasoa Christine, International Institute for Water and Environmental Engineering (2iE), Department of Water and Sanitary Engineering, Laboratory of Water, Decontamination, Ecosystem and Health (LEDES) c.razanamahandry@2ie-edu.org tantely1989@gmail.com</p>

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 <p>Jing-Wen Cao GICECG1604059</p>	<p>The Long-term Variation of Organic Characteristics in Donggang River Using Excitation Emission Fluorescent matrix (EEFM) Integrated with Parallel Factor Analysis (PARAFAC)</p> <p>Jing-Wen Cao Department of Environmental Resource Management, Assistant, Tajen University, Pingtung 907, Taiwan, ROC machihisoka@hotmail.com</p> <p>Chun-Yen Chiu Department of Environmental Resource Management, Associate Professor, Tajen University, Pingtung 907, Taiwan, ROC cychiu@mail.tajen.edu.tw</p> <p>Guan-Ling Chen Department of Environmental Science and Occupational Safety & Hygiene, Topic student, Tajen, Pingtung 907, Taiwan, ROC dog94822@yahoo.com.tw jimmyloveginny0@gmail.com</p> <p>Zhong-Sheng Xiao Department of Environmental Science and Occupational Safety & Hygiene, Topic</p>

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ABSTRACT

In this study, Excitation Emission Fluorescent matrix (EEFM) integrated with Parallel factor analysis (PARAFAC) was applied to investigate the variation of organic property in Donggang River located in Southern Taiwan between Oct. 2010 and Oct. 2015. It reveals that both values of BOD₅ and COD had a closer proximity at twice samplings; however, the four main components in both samplings showed a different location of excitation and emission wavelengths. On Oct., 2010, EX/EM (percentage of area) of four components were respectively 320/410 nm (46 %), 370/460 nm (27 %), 290/350 nm (14 %) and 280/450 nm (13 %) mainly belonging to humic-like substance. Regarding to the result on Oct, 2015, 320/420 nm (29 %), 228,278/358 nm (29 %), 240/420 (29 %) nm and 228/310 nm (14 %) were found attributed in amino organic substance with low excitation wavelength. On Oct.2015, the intensities of four main components in Cinsheda Bridge higher than those in other locations may be attributed with of heavily polluted source like piggery wastewater. For the partition of N-organic and C-organic, there had a significant change on both samplings.

Keywords: Excitation Emission Fluorescent matrix (EEFM); Parallel factor analysis (PARAFAC); Humic Acid-like



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Optimization of Biomonitoring Methodology for Monitoring Urban Habitat Quality Using Saturated Isothermal Remanent Magnetization

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Abstract

Various techniques exist for biomonitoring of urban vegetation. However, many techniques need further development. The dorsiventral leaf asymmetry (the difference between the upper and lower leaf side), and the resulting differences in hyperspectral leaf reflectance, is hardly considered in any (remote sensing) biomonitoring approach. Therefore, the overall objective of this research proposal is to develop, test and validate a plant-based passive biomonitoring methodology based on hyperspectral observations and considering leaf asymmetry. In this project we will make use of a dual approach, i.e.: (1) trees spatially distributed over the entire urban area for mapping purposes, and (2) large solitary trees growing in various contrasting urban environments in terms of air pollution used for scaling up exercises from leaf to canopy. Overall objective include mapping urban air quality based on (hyperspectral) fluorescence analyses and validate the map against maps based on biomagnetic leaf monitoring (SIRM) and monitoring of chlorophyll and nitrogen content.

Key words: Saturation Isothermal Remanent magnetization, biomonitoring, hyperspectral leaf reflectance

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Exploration of Human Behavior of Water-Saving Under Climate Change Using Expanded Theory of Planned Behavior Model

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Abstract

In response to the water shortage issue caused by climate change, an extending planned behavior model of environmental concern is applied to explain the household behavior related to water conservation in southern Taiwan. Based on

the data from the 1678 valid samples using random sampling, an extending planned behavior model to which the variable of environmental concern is added besides the original variables in the theory of planned behavior (TPB) model. It was also verified to properly explain the household behavior related to water conservation for climate change mitigation. Furthermore, the exploratory factor analysis was successfully extracted into the three factors in environmental concern and the four factors in water conservation behavior. The results indicate that the extended TPB model including environmental concern can increase the explanatory power of the original one. In addition to the attitudes, perceived behavioral control and subjective norm, people's environmental concerns may reduce the impact on global warming and climate change. As a result, people's intentions to engage in water savings and carbon reduction behaviors can be expected to mitigate climate change problems.

Keywords

Mitigate climate change, Structural equation model, Sustainable water resources, Cross validity, Discriminant validity



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Comparative Analysis of Solar Resources over Four Cities in Nigeria for Viability of Power Application

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Abstract

In view of the challenges confronting the location of sources of electrical energy in Nigeria, this study analysed comparative solar energy available over four cities in different climatic zones of the country. The daily solar radiation data used for the study were collected from Nigeria Meteorological Agency, Abuja and International Institute for Tropical Agriculture, Ibadan. From this data, the mean daily value of the available solar energy and the technically derivable solar energy for each month were computed and subjected to time series analysis. The result showed that all the locations have appreciable amount of solar energy which increases from the coast with increase in latitude towards the sahel savannah climatic zone. Also the result shows a seasonal variation with highest values in the dry season and least in the wet season. However the energy is non localised, unlike the fossil fuels and hydro power stations. Hence solar energy is recommended to be included in the national energy mix of the country.

Key Words: Solar radiation, solar energy, climatic zone, fossil fuels, hydroelectric



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Stress Analysis of Single Point Fixings

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Flexible and Effective Piezoelectric Nanogenerators Based on BaTiO₃ Nanofibers and Polydimethylsiloxane

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Piezoelectric nanogenerators, harvesting energy from mechanical stimuli in our living environments, hold great promise to power sustainable self-sufficient micro/nano-systems and mobile/portable electronics. BaTiO₃ as a lead-free material with high piezoelectric coefficient and dielectric constant has been widely examined to realize nanogenerators, capacitors, sensors, etc. In this study, polydimethylsiloxane (PDMS)-based flexible composites including BaTiO₃ nanofibers with different alignment modes were manufactured and their piezoelectric performance was examined. For the purpose, BaTiO₃ nanofibers were prepared by an electrospinning technique utilizing a sol-gel precursor and following calcination process, and they were then aligned vertically or horizontally or randomly in PDMS matrix-based nanogenerators. Flexible nanogenerators with two different alignments of BaTiO₃ nanofibers in the PDMS matrix were manufactured as depicted in Figure 1. First, a PDMS mixture with curing agent (10:1 weight ratio) diluted using n-hexane was poured to uniaxially aligned calcined BaTiO₃ nanofibers. Second, after penetration and curing of PDMS at 60 °C for 2 hrs, the BaTiO₃ nanofiber/PDMS composite (BaTiO₃ content of 31 wt% or 7.6 vol%, BaTiO₃ density of 6.02 g/cm³) was cut into pieces along the aligned nanofiber direction or transverse direction to obtain horizontally-aligned BaTiO₃ nanofiber-based nanogenerators (BTNF-H) or vertically-aligned BaTiO₃ nanofiber-based nanogenerators (BTNF-V), respectively. For comparison, randomly-aligned BaTiO₃ nanofiber-based nanogenerator (BTNF-R) was also fabricated as the same BaTiO₃ content of 31 wt% as above. BaTiO₃ nanofiber sheets were dispersed in ethyl acetate by applying ultrasonication for 1 hr using a bath-type ultrasonicator (50~60 Hz). After adding predetermined amounts of PDMS into the ethyl acetate solution including randomly dispersed short BaTiO₃ nanofibers, another ultrasonication was applied for 1 hr. Subsequently, the curing agent was added into the solution, which was casted into glass Petri dishes and cured at room temperature for 24 hrs and at 60 °C for 2 hrs. The schematic drawing of BTNF-R was also represented in Figure 1. Three different BaTiO₃/PDMS nanogenerators were finally poled under an electric field of 5 kV/mm at 120 °C for 12 hrs.

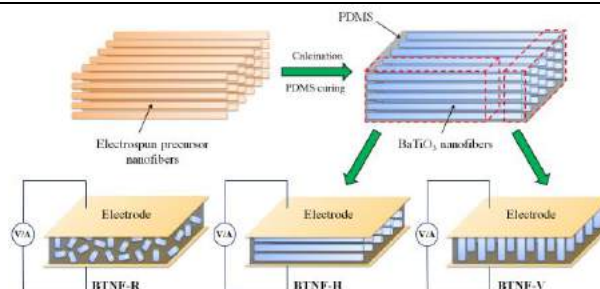


Figure 1. Schematic fabrication procedure of the nanogenerators based on BaTiO₃ nanofibers in three kinds of alignment modes with piezoelectric test circuits.

The piezoelectric properties of BaTiO₃/PDMS nanogenerators were examined by applying a periodic mechanical compression with a pressure of 0.002 MPa. When the pressure is applied to the BaTiO₃/PDMS nanogenerators, a piezoelectric potential difference is produced between two electrodes, which leads to a free electron flow occurring around the external circuit and is detected as an output signal. When the pressure is released, the piezoelectric potential vanishes and an opposite potential is formed. The free electrons in the external circuit flow back and forth, resulting in an alternating output. Figure 2(a)-(b) demonstrates the output voltage and current of the nanogenerators with three different alignments of BaTiO₃ nanofibers. The average output voltage reaches to ~0.56, ~1.48, and ~2.67 V for BTNF-R, BTNF-H, and BTNF-V, respectively. In particular, BTNF-V achieves a maximum average output voltage of ~2.67 V, which can be explained in two possible aspects. One is the efficient poling for BTNF-V. If no poling is applied, the output voltage of BTNF-V is only ~0.08 V. The other one is that more electric charges are accumulated on the electrodes from the vertically-aligned BaTiO₃ nanofibers due to the ceramic density and that the nanofibers connected vertically between electrodes are more compliant to mechanical stress. The average output current values of BTNF-R, BTNF-H, and BTNF-V are ~57.78, ~103.33, and ~261.40 nA, respectively, as can be seen in Figure 2(b), which exhibits the same variation pattern to the output voltage. It should be also mentioned that the output power generated from BTNF-V is high enough to light directly a commercial blue LED, as can be seen in a photographic image inserted in Figure 2(a).

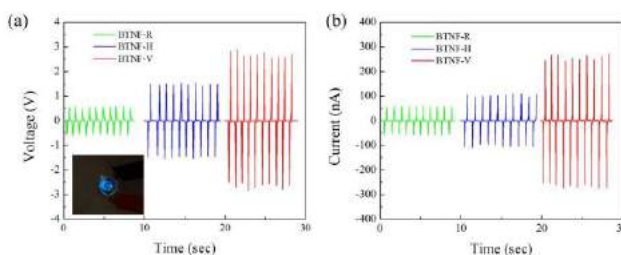



Figure 2. (a) Output voltage and (b) current of the piezoelectric BaTiO₃/PDMS nanogenerators.

The output power (P) of the nanogenerators subjected to the mechanical compression can be estimated from the following equation:

	$P = \frac{1}{T} \int \frac{U^2(t)}{R} dt \quad (1)$ <p>where $U^2(t)$ is the square of the real-time voltage on the external load, R is the impedance of the external load ($10 \text{ M}\Omega$), T is the period of pressing and releasing. From the equation, the average output powers of BTNF-R, BTNF-H, and BTNF-V are calculated to be ~ 0.0086, ~ 0.0905, and $\sim 0.1840 \text{ mW}$, respectively. As expected, BTNF-V can generate a highest output power value of $0.1841 \text{ }\mu\text{W}$.</p>
 <p>Vaibhav Jain GICICRST1604073</p>	<p>Optimization of Cycle Time in Hyundai Motors India Ltd.</p> <p>Ashish Shrivastava Department of Mechanical Engineering, JECRC University Jaipur, India ashish.shrivastava@jecrcu.edu.in</p> <p>Vaibhav Jain Department of Automobile Engineering, JECRC University Jaipur, India jainvaibhav312@gmail.com</p> <p>Tanmay Agrawal Department of Mechanical Engineering, JECRC University Jaipur, India tanmay.agrawal1994@gmail.com</p> <p>Siddhant Kunwar Department of Mechanical Engineering, JECRC University Jaipur, India wsid3141017@gmail.com</p> <p>Abstract</p> <p>This paper sheds light on the application of quality control tools to reduce Cycle time (including Weld time and Squeeze time). Successive use of these tools identifies and addresses the weakness and leads to improved processes. These tools address the problems in logical and sequential manners which are easy to observe and interpret result. The main gist of this paper is to achieve the target cycle time of body build line. Cycle time includes process time, during which a unit is acted upon to bring it closer to an output. Every production line always has a target cycle time. With the collected data it was found that cycle time was higher than the target cycle time, so it needed to be optimized. There are lots of factors which are to be eliminated in order to achieve the target cycle time. The root cause of the factors affecting the target cycle time was observed using quality improvement tools known as the Ishikawa diagram or the 'Fish Bone Diagram'.</p> <p>Keywords - Cycle time, Weld time, squeeze time.</p>
	<p>Estimation of Ground Rod Depth for Effective Performance During Installation in Different Soil Types in Ibadan, South – West Nigeria.</p>



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ABSTRACT

Poor or high resistance connection to the ground is one of the leading cause of earthing system failure. The resistivity of the soil and the depth to which an earthing electrode is driven directly affects the design and performance of a grounding system and it's a major factor that determines the Earth resistance of the grounding electrode. To achieve a reasonably low resistance connection to the ground, it is pertinent to carried out geophysical investigation to determine the variation of resistivity of layers below the surface and the earth resistance of the grounding rod prior to earthing system installation for optimization of rod driving depth. The survey areas cover Botany and Agricultural Departments University of Ibadan with coordinates N 7° 26' 58.4" E 3° 53' 47.9" and N 7° 26' 54.6", E 3° 53' 44.1" respectively and Nigeria Corporation Clay Mining Site, Omi Adio with coordinate N 7° 25' 48.1" E 3° 44' 47.2". A total of nine (9) Schlumberger Vertical Electrical Sounding (VES) (three VES for each location) was carried out using Geo pulse Tigre Resistivity meter. Earth resistance for grounding electrode was calculated for each geological layer of all the VES points within the survey sites, taking into account the resistivity and the depth of each lithological unit. The calculated results was compared with the standard (10 Ω) of a single rod to determine the depth of an earthing rod. Soil moisture content and particle size was carried out. The VES results showed that the second lithological layers of VES 1, 2, and 3 of Botany and Agricultural department of University of Ibadan had resistivity and depth ranged from 14.5 to 25.1 Ω m and 2.9 to 4.5 m; 19.8 to 53.1 Ω m and 5.6 to 9.8m respectively while the resistivity and depth of the second lithological layer for VES 1 and 2 of Omi Adio were 8.6 Ω m, 7.7 Ω m and 4.5 m, 6.9 m respectively and that of the third lithological layer was 11.5 Ω m. Moisture contents results of Omi Adio, Agricultural and Botany Department ranged from 0.125 g/ g to 0.35 g/g, 0.020 g/g to 0.0869 g/g and 0.0465 g/g to 0.117 g/g respectively. The particle size analyses results revealed that the topsoil of Omi Adio, Botany and Agricultural Departments as Clay, Sandy loam and Sand respectively. The recommended depth of Omi Adio, Botany and Agricultural Departments ranged from 2.3 to 6.9m, 2.9 to 4.5m and 5.6 to 9.8m respectively

Keywords: Earth resistance, earthing systems, geophysical investigation, vertical electrical sounding.

Determination of Maximum Horizontal Distance (XMHD) Travelled by Landfill Leachate from Lapite

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	<p style="text-align: center;">fakunlemutiu2107@gmail.com</p> <p style="text-align: center;">ABSTRACT</p> <p>Residential buildings are usually located in the vicinity of dumpsites in Nigerian cities. Residents of such buildings often depend on groundwater for their domestic use. Leachate Migration (LM) from dumpsites could lead to contamination of groundwater in the vicinity. An important parameter for assessing LM is Maximum Horizontal Distance (X_{MHD}) travelled by leachate. Information on this important parameter in the vicinity of dumpsites in Ibadan is limited. This study was designed to determine X_{MHD}. Lapite a government designated dumpsite was selected for this study. Twenty - nine Schlumberger Vertical Electrical Soundings (VES) with maximum current electrode spacing of 130.0 m were conducted at 10.0 m intervals away from the four sides of this dumpsite. One VES point conducted outside the vicinity of the dumpsite served as a control. The VES data were processed by conventional curve matching and computer iteration methods. Lowest resistivity values (Y) of VES points in the vicinity of dumpsite and those of the control points (Y_c) were extracted. The Y were plotted against the corresponding horizontal distances (X) of the VES points to yield a mathematical model for LM. The model is used to determine X_{MHD} when $Y=Y_c$. Curves of Y against X fitted best to $Y = Me^{NX}$ (correlation coefficients ranged from 0.825 to 0.995), M and N are constants that ranged from 15.523 to 38.699 Ωm and 0.0062 to 0.0236 m^{-1} respectively. The Maximum horizontal distance (X_{MHD}) travelled by the landfill leachate on side A, B, C, and D ranged from 78.95 m to 179.86 m. For a well to be dug in the vicinity of the dumpsite, a distance of 190.0 m is therefore recommended</p> <p>Keywords: Leachate migration, Vertical electrical sounding, Horizontal distance of leachate.</p>
	<p style="text-align: center;">Channell Flow and Flood Estimate</p> <p style="text-align: center;">J.A Adegoke Department of Physics, University of Ibadan, Ibadan</p> <p style="text-align: center;">M.A Fakunle Department of Mathematical and Physical Sciences Osun State University, Osogbo</p> <p style="text-align: center;">O.F Akindele Department of Physics, University of Ibadan, Ibadan</p> <p style="text-align: center;">ABSTRACT</p> <p>The movement of water on the land surface, within channels and through the soil is dependent on some hydrological factors. This is evident in experimental data garnered and the theoretical analysis available. For surface flow, the velocity of flow increases with the bottom slope of the channel as well as the flow depth but decreases as the roughness increases. For given flow depth, the velocity decreases as the channel height increases. Excess soil water can be removed by sub – surface drainage. A kinematic – wave approach was applied to model overland flow through which flood prediction could be made.</p>
	<p style="text-align: center;">MovAid- A Novel Device For Advanced Rehabilitation Monitoring</p>



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Abstract

The present article introduces a new device “MovAid” which helps to measure and monitor rehabilitation. It has two main components- “MovAid device” and the “MovAid Smart Phone Application”. The device connects wirelessly to the MovAid smart phone application via Bluetooth. It has electronic sensors to measure three important parameters of the patient- Angle of Joint Bent, Lift from the ground and Orientation of the limb. A mono-axis flex sensor to measure the degree of joint bent and a 3-axis accelerometer and gyroscope to measure the orientation of the limb and lift from the ground have been used. MovAid system bridges the gap between caretakers and patients, empowering both in ways never thought of before, by providing detailed and accurate data on every move.

Keywords- Rehabilitation; Rehabilitation - Wearable systems; Neuromuscular systems - EMG models



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Job Satisfaction among Employees of Commercial Banks in Nepal

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Abstract

The study aims at assessing overall job satisfaction, identifying most significant factors of determining job satisfaction and examining relationships between demographic variables and job satisfaction in the context of Nepalese commercial banks. This study was conducted by following descriptive survey research design which consist four Nepalese commercial banks selected on the basis of convenient sampling While studying Business Environment in Nepal on fourth semester. This study is entirely based on primary source of data collected through modified Minnesota Survey Questionnaire administered to 210 officer and non-officer employees associated to sample banks. The study reveals that majority of employees are satisfied and very few employees are dissatisfied regarding their job. Out of various factors job security, pay, promotion potentials, relationship with co-

	workers and supervisors are top most influencing factors to job satisfaction from high to low magnitude respectively. Males are satisfied than females at minimal level but the study evidence fails to say significant differences. Similarly the study concludes that the levels of job satisfaction differ significantly among various age of employees and shows gradual increment of levels of job satisfaction up to 50 years of age and then after begins decrement. The study also employees with various years of job experience have significant differences in job satisfaction.
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