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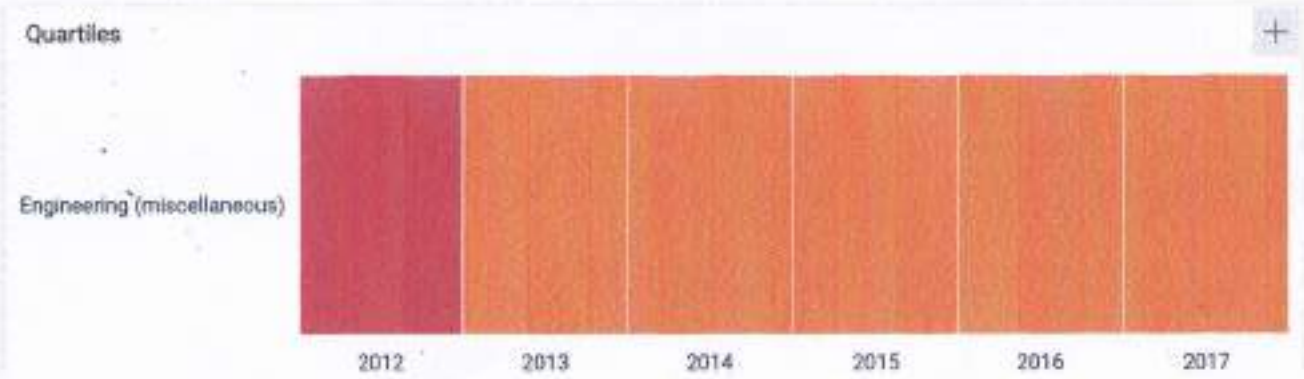

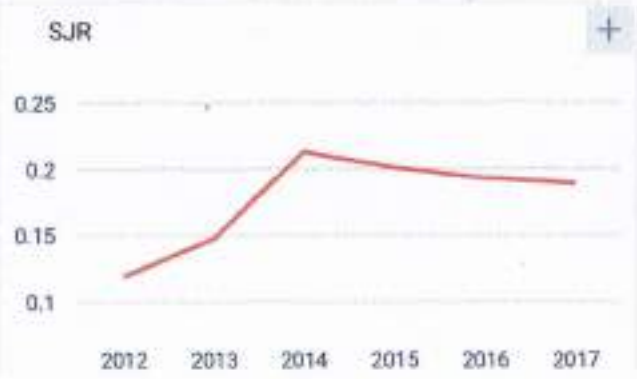

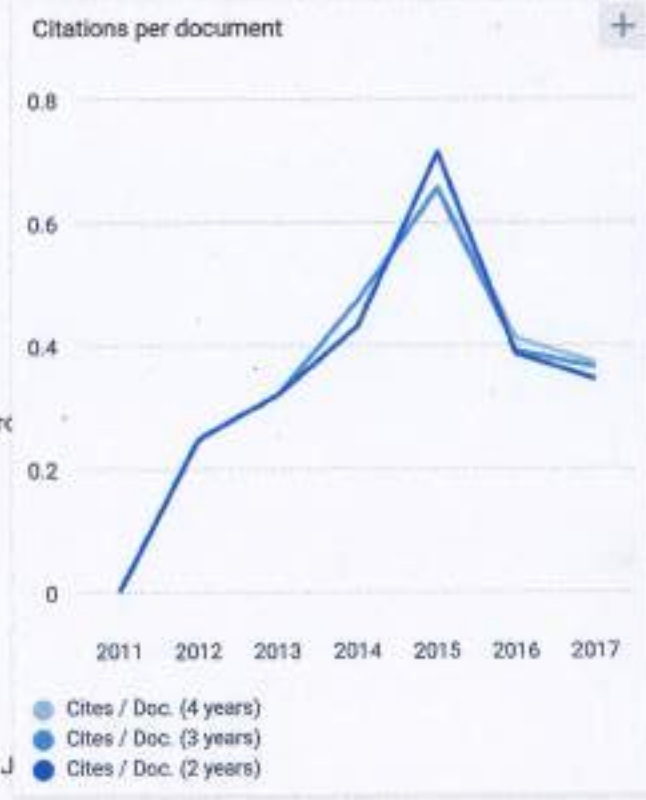

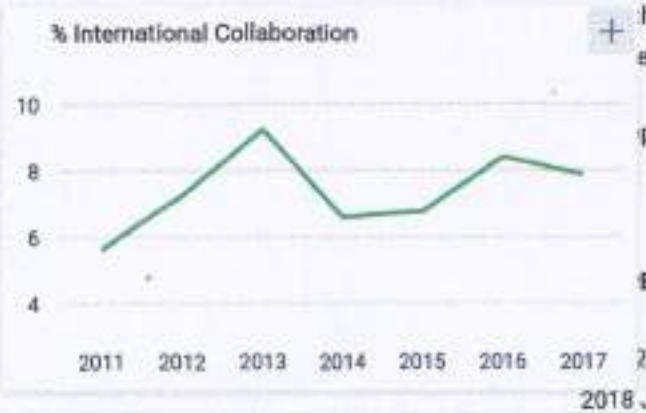

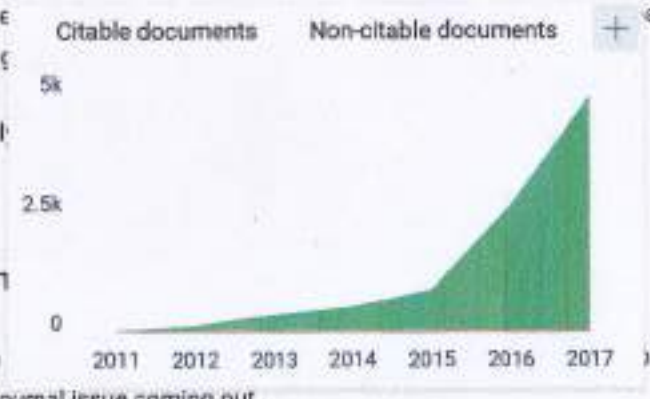

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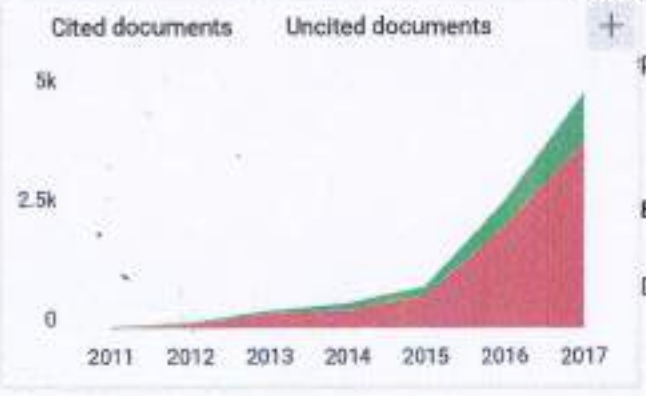

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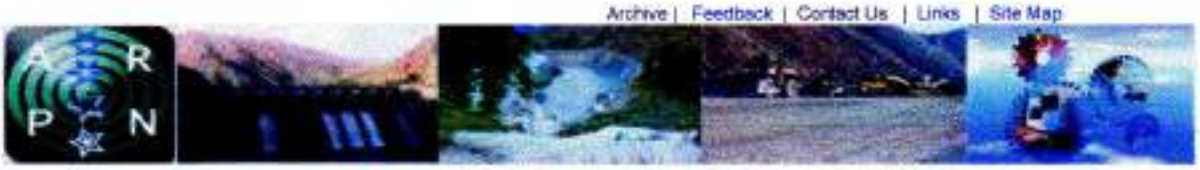

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Title: Experimental investigation on integrated wickless heat pipe for solar water heating

Author (s): Ahmed Jabbar Hasan and Mohammed Hasan Abood

Abstract: An integrated shape wickless heat pipe (WHP) inserted in flat plate solar collector (FPSC) is built and tested experimentally by a solar simulation using halogen projectors. The WHP made of copper with multi evaporator tubs and single horizontal condenser tube. It was tested for various evaporator diameter with distilled water as working fluid of fill ratios (40, 60, and 80) % and (450, 650, and 850) W/m2 input heat flux to the solar collector at (30, 50, 70, and 90)° inclined angles. Results show that evaporator temperature and heat transfer coefficients are increase with input heat flux while thermal resistance decreases. Fill ratio have the direct effect on WHP performance and collector efficiency.

Full Text

Title: A study of diurnal soil temperature and moisture content changes in concrete pipe containers with lime tree planting after watering: A field experiment

Author (s): Usavadee Tunthwaranuruk, Worasitti Sriboon and Wirote Krapuoo

Abstract: This field experiment aimed to study soil temperature and moisture content changes at soil surface and at 5 different soil layers for lime trees with diurnal watering. The experiment was conducted in a certain lime orchard in Sriracha district of Chonburi using lime trees aged 1and 2 years planted separately in concrete pipe containers 80 cm in diameter and 40 cm in height. The study revealed that the diurnal average soil temperature at the surface level of both containers varied according to solar radiation. The average soil temperature in the whole container with the 1-year-old tree was found to be 0.81 % and 1.18 % higher than that in the container with the 2 -year-old lime tree, with and without diurnal watering, respectively. The average soil moisture content in the whole container with the 1-year-old lime tree was found to be 2.64% and 2.26% higher than that in the container with the 2-year-old lime tree with and without diurnal watering, respectively. After watering, the moisture content at soil surface in both containers increased significantly while that in deeper layers increased slightly, and gradually decreased in all soil layers. The ambient environment was found to have no impact on soil moisture content variation. This showed that diurnal watering not only added water volume into the soil, but it also helped in monitoring suitable soil temperature for lime tree growing for longer periods than when there was no watering. The findings can be used as basic data for following soil temperature and moisture content variation with diurnal watering to monitor appropriate temperature range for optimum growth of lime trees in concrete pipe containers.

Full Text

Title: An approach for implementation and optimization of algorithms for Drowsiness Detection

Author (s): T. O. Ejidokun, T. K. Yesufu and E. Buraimoh

Abstract: This study proposed a framework for a typical Drowsiness Detection System (DDS) with a view of achieving a dynamic optimization of computer vision tasks for significant improved performance. The study used a parallel solution approach to split computational task in to a number of different functions which is handled by processors. Furthermore, algorithmic functions where prioritized in order to enable sequential processing of data and also specify the appropriate order to which task are executed. Parameter and criterions of evaluation were established so as to provide a comprehensive qualitative assessment of implemented techniques.

Full Text

Title: Assessment of characteristics of various self-compacting concrete and normal concrete at green and hardened state

Author (s): Yuvaraj L. Bhirud and Keshav K. Sangle

Abstract: Self compacting concrete consolidates under its own weight and do not requires any external efforts. As mix composition of self compacting concrete is different than normal vibrated concrete, the characteristics at fresh and hardened state are different. Three mixes of powder type self compacting concrete with variable binder, one mix of viscosity modifying agent type self compacting concrete and one normal vibrated concrete mixes with identical water to binder ratio are studied and compared. At green state, the powder type self compacting concrete with higher binder content found to be more stable. Compressive strength increasing with increases in binder content. Tensile strength enhances with increase in compressive strength while ratio of tensile strength to compressive strength ratio found to be decreasing with increase in compressive

strength.

Full Text

Title: Exergy and energy analysis of photovoltaic thermal (PVT) with and without fins collector

Author (s): Muhammad Zohri, Saprizal Hadisaputra and Ahmad Fudholi

Abstract: Photovoltaic-thermal (PVT) is hybrid or a combination of photovoltaic panels (PV) and solar thermal collectors that can produce electricity and thermal energy simultaneously. In this study, the PVT based on air collector system with and without fins collector has been conducted with theoretical analysis. The mass flow rate varied in ranges of 0.01-0.05 kg/s, and the radiation intensity of 600 W/m2 and 800 W/m2. To develop predictive model, a mathematical model was constructed for PVT system with and without collectors. Energy balance equation has been solved by using the matrix inversion method. The PVT system with fins collector is higher efficiency then without fins collector. The increasing of PVT system efficiency with fins collector is 7% and efficiency exergy is 1%.

Full Text

Title: Development of portable linear positioning table for drilling machine

Author (s): Norfantza Binti Ab Wahab, Abdul Fattah Bin Abd Rahim, Abd Khahar Bin Nordin, Basri Bin Bidin and Mohd. Azimin Bin Ibrahim

Abstract: Drilling operation is an operation which produces holes by bringing a rotating cutter into contact with the workpiece. Drilling operation is commonly done in drill press, however some of the time; it is done on mills or lathes. Holding parts to be drilled is one of major problems faced by the students. If the material has many holes to be drilled, then the procedure adopted is by marking out with a center punch, setting on the machine (Drill Press Machine), and holding the workpiece. This is time consuming and dangerous as the students need to hold the material they throughout the drilling process. This project presents an innovative linear sliding table to ease the operator during drilling process. In addition, the clamping system will also be provided for better rigidity and less movement of the workpiece during the drilling process. Some toggle clamps are fixed on the table to hold the position of the part securely from moving throughout the machining cycle. Furthermore, this project focuses on the execution of the drilling process in one single clamping. A simple and economic design is proposed.

Full Text

Title: Non-Newtonian effects of load carrying capacity and frictional force using Rabinowitsch Fluid on the performance of inclined multi-stepped composite bearing

Author (s): Nisha and Sundarammal Kesavan

Abstract: The theoretical investigation on different type of non-Newtonian fluid called as Rabinowitsch Fluid on the steady characteristics of inclined multi stepped composite bearings has been analyzed. Here the modified Reynolds's closed form expressions are obtained using MATLAB Iterative method. The performance characteristics of different bearings such as plane inclined Slider, composite tapered land; stepped bearing and composite tapered concave bearings are established using the expressions. According to the results, the influences of Rabinowitsch fluid on the bearing characteristics provide an influence in the pressure and therefore which will lead to increase in load carrying capacity.

Full Text

Title: Experimental investigation on Charpy impact response of kenaf bast fibre reinforced metal laminate system

Author (s): D. Sivakumar, S. Kathiravan, L. F. Ng, M. B. Ali, M. Z. Selamat, Sivaraos and B. Omar

Abstract: Natural fibre triggers the researcher's interest due to its advantage over synthetic fibres as it is inexpensive and eco-friendly. The objectives of this study is to investigate the effect of fibre length, loading and chemical treatment of kenaf bast fibre reinforced polypropylene metal laminate under Charpy impact loading. The kenaf bast fibre loading of 50wt%, 60wt% and 70wt%, fibre length of 3 cm, 6 cm and 9 cm and chemical treatment of 0% and 5% NaOH are considered. Aluminium, 5052-O is employed as the skin for the composites in this research. The composite and FML were fabricated using hot compression moulding method. Specimens were extracted from the prepared FML panels using water jet cutter and tested in accordance to ASTM E-23 using INSTRON CEAST 9050 pendulum impact tester. The results show that the alkaline treated kenaf fibre with fibre loading 70wt% and length 9 cm absorbed the highest impact energy at 157.04 kJ/m2 compared to other fibre metal laminate compositions.

Full Text

Title: Long –term load forecasting of power systems using Artificial Neural Network and ANFIS

Author (s): Naji Ammar, Marizan Sulaiman and Ahmad Fateh Mohamad Nor

Abstract: Load forecasting is very important for planning and operation in power system energy management. It reinforces the energy efficiency and reliability of power systems. Problems of power systems are tough to solve because power systems are huge complex graphically, widely distributed and influenced by many unexpected events. It has taken into consideration the various demographic factors like weather, climate, and variation of load demands. In this paper, Artificial Neural Network (ANN) and Adaptive Neuro-Fuzzy Inference System (ANFIS) models were used to analyse data collection obtained from the Metrological Department of Malaysia. The data sets cover a seven-year period (2009- 2016) on monthly basis. The ANN and ANFIS were used for long-term load forecasting. The performance evaluations of both models that were executed by showing that the results for ANFIS produced much more accurate results compared to ANN model. It also studied the effects of weather variables such as temperature, humidity, wind speed, rainfall, actual load and previous load on load forecasting. The simulation was carried out in the environment of MATLAB software.

Full Text

Title: Pitch and yaw angle control design in solar panel system using PSO-Fuzzy method

Author (s): Imam Abadi and Karina Aryanti Permatasari

Abstract: Recently, Indonesia has seen an increase in its overall energy consumption. While the current supply is still meeting the demand, one may wonder how to address the rapid growth of the the needs of the country overall. Alternative sources of energy that have been developed in the world such as solar energy are a great opportunity for Indonesia and its important population. Of course, the development of such utilities need a good technological and engineering approach. One way to utilize alternative sources is by making solar panel system with controlling two degrees freedom for pitch and yaw angle. To build a solar panel system, DC motors parameters, LDR data retrieval sensor, and panel data collection are required. Solar tracking system is designed by 3 controllers which are PID controller, Fuzzy Logic and PSO-Fuzzy. This research is using MATLAB/SIMULINK as a simulator by applying different total membership functions, which are 3 and 5 for Fuzzy logic control and PSO-Fuzzy. From the research performed, it could be deduced that the solar panel system has been designed and simulated using PSO-Fuzzy control mode with the input error angle and delta error of elevation angle is from -180° to 180°and azimuth angle is from -360° to 360°. Moreover, the output of fuzzy in the form of PWM DC Motor is from -255 to 255. Build upon all the PID Controller, Fuzzy Logic Controller, and PSO-Fuzzy based on the performance index that responding; basically the designed system is able to work well. The optimum result gained from PSO-Fuzzy by looking at its performance index for pitch angle are 15°, 30°, 45°with maximum overshoot (Mp) = 0%, 0%, 0%; settling time (ts) = 21.95 seconds, 21.95 Seconds, 23.86 seconds; Error Steady State (ESS) = 0.001%, 0.001%,0.0007%. and for the yaw angle 30°, 60°, 90°, and the maximum overshoot (Mp) = 0%, 0%, 0%; settling time (ts) = 38.18 seconds, 41.52 seconds, 43.47 seconds; Error Steady State (ESS) = 0.009%, 0.005%,0.003%.

Full Text

Title: Experimental study the influence of temperature and time holding partitioning variation on quenching partitioning steel JIS S45C process above the marten site temperature start

Author (s): Wahyu Wijanarko and Muhammad Hafidh

Abstract: Heat treatment is one of the ways to fix the mechanical properties of a material. The principle of heat treatment on steel is the austenite phase's transformation into another form. Quenching process and partitioning are heat treatment processes to increase the amount of retained austenite in room temperature to obtain steel as a result from strong, hard yet tough heat treatment. In this experimental study, there will be quenching process and partitioning on steel JIS S45C. The heat treatment process for quenching and partitioning are conducted on steel JIS S45C with heating process until austenitization temperature which is 900°C with 4 hours of holding time. The process continued with immersing the specimen into a salt bath at quenching temperature which is 230°C for 10 seconds. After quenching, the specimen immersed into the salt bath at partitioning temperature varied which are 350°C, 375°C, 400°C and 425°C with immersion time also varied for 10 seconds, 100 seconds and 1000 seconds. The cooling media at partitioning temperature is water. After heat treatment; the specimen will be tested to discover the changes that happen to the mechanical properties and micro structure. Those tests are tensile test, metallography test and hardness test. In this experimental study, the result shows that there is an increase in strength, hardness and toughness in the micro structure of steel JIS S45C which is followed by the ductility reduction on the steel.

Full Text

Title: Dark soliton generation using CMOS ring oscillator

Author (s): M. Easwaran and R. Ganapathy

Abstract: Electrical soliton find wide uses in ultra-sharp pulse generation, nonlinear communication schemes in electronics, sharp pulse formation and edge sharpening for high speed metrology in addition to high frequency generation through Nonlinear Transmission Line (NLTL). In this paper a novel method of electrical soliton pulse generation using CMOS ring oscillator is explored. The key elements of the ring Oscillators are CMOS inverters, in which feedback is provided by a voltage divider biasing circuit. Further, by varying the feedback voltage, soliton frequency and shape analysis is done.

Full Text

Title: Adsorption of PB on thiol modified magnetic mesoporous silica

Author (s): Bryan Hubert, Yoko Setiawan, Felycia Edy Soetaredjo and Sandy Budi Hartono

Abstract: We report the synthesis of thiol modified magnetic mesoporous silica for the removal of Pb. Large pore mesoporous silica materials (FDU-12) were first modified with iron oxide by using wet impregnation method. The material were grafted with thiol moieties and named SH-MMS (Thiol modified mesoporous silica). SH-MMS had the highest adsorption capacity compared to unmodified MS. The adsorption capacity was 286, 8 mg/g. The optimum pH was at 6, and saturation temperature was 2 hours. The adsorption kinetic of Pb on SH-MMS was best described by Pseudo Second Order. The isotherm adsorpsi can be described using Langmuir equation.

Full Text

Title: Spectroscopic study of (TiO2)1-x(CuO)x plasma generated by Nd: YAG laser

Author (s): Sabah N. Mazhir

Abstract: Laser-induced (TiO2)1-x(CuO)x plasma, which is produced by laser. A pulse of Nd: YAG laser is supplied for duration 10 ns produce plasma from a planar (TiO2)1-x(CuO)x sample placed in a vacuum having a pressure of 10-3mbar. The temperature of the plasma electrons is calculate by the Boltzmann plot methodology from of Ti and Cu emission lines of singly ionized, and the density of the plasma electron is calculated with the use of Stark broadened profiles. As well as the electron temperature is calculated within the values of (0.699 - 0.781) eV, and the density of electron is measured in the values of (34.7×1018 - 50.5×1018) cm-3.

Full Text

Title: Improved quality of aluminum casting crafts products through improved electroplating

Author (s): Sri Harmanto, Ampala Khoryanton, Ahmad Supriyadi and M. Abdul Kodir

Abstract: Small and Medium Enterprises (SMEs) in Juwana Pati, Central Java has been contributing greatly to the economy in Indonesia. One of SME products in the form of handicraft from aluminum castings. Product marketing covers major cities in Indonesia and ASEAN, such as Thailand, Malaysia, and Singapore as tourist destinations, both domestic and foreign tourists. However, the quality of handicraft products is still low to cause the product is less preferred by consumers. The

main problem faced in producing this aluminum casting craft is to have a low hardness level of 59 HRB, and less attractive colors. The purpose of this research is to improve the quality of aluminum casting crafts products through the improvement of metal coating process, especially increasing hardness so as to increase the amount of export. The applied method is to analyze the effect of nickel and copper coating current on hardness, and to analyze the effect of coating time on nickel and nickel + copper on hardness. The result can be that the hardness can be increased up to 20% by electroplating process using 5 ampere current for 10 minutes.

Full Text

Title: Design and fabrication of blow down heat recovery system to improve energy efficiency in steam boilers of petroleum refineries

Author (s): Raheek I. Ibrahim, Abdulrahim T. Humod and Najat A. Esse

Abstract: Blow down water is the part of water that is purposely drained during the boiler operation to limit the level of impurities in boiler water to an acceptable level. So it is contains large quantity of heat energy. The aim of the present work is to improve energy efficiency of steam boilers in the south refineries company/Al-Basrah. This aim has been achieved through designed and manufactured of a heat exchanger consists of a shell and coiled tube unit to recover heat from surface blow down water and reducing indirect losses. The blow down water (hot fluid) is supplied to the heat exchanger at atmospheric pressure by passing it through the shell side and the feed water (cold fluid) in the coils tube side. These were done as counter flow. A flow control valve is used to control the flow rate of hot blow down water inside the heat exchanger. The experiments are done at the blow down water and feed water flow rates ranging between (0.06-0.14) m3/h with 0.02 m3/h interval, and between (0.1-0.5) m3/h with 0.1m3/h interval, respectively. The experimental results proved the effectiveness of the heat recovery system in improving the boiler efficiency where a percentage of 83.16% of the energy is lost with blow-down water that can be recovered using heat-recovery unit with an energy saving of 103411.8 MJ/dey. Which will save a mass of fuel equals to 482.46 ton/ year. The heat recovery unit is proved to be a good solution for saving energy and reducing harmful emissions to the environment and it contributes to the maintenance of sewage pipes from damage caused by the heat of discharge water by cooling the water before discharging it into the sewer system.

Full Text

Title: Development of an Arduino-based obstacle avoidance robotic system for an unmanned vehicle

Author (s): Kolapo Sulaimon Ali, Moses Oluwafemi Onibonoje, Akinola S. Oluwole, Michael Adegoke Ogunlade, Anthony C. Mmonyi, Oladimeji Ayamolowo and Samuel Olushola Dada

Abstract: The use of autonomous systems in the world to perform relevant and delicate task is fast growing. However, its application in various fields cannot be over emphasized. This paper presents an obstacle detection and avoidance system for an unmanned Lawnmower. The system consists of two (Infrared and Ultrasonic) sensors, an Arduino microcontroller and a gear DC motor. The ultrasonic and infrared sensors are implemented to detect obstacles on the robot's path by sending signals to an interfaced microcontroller. The micro-controller redirects the robot to move in an alternate direction by actuating the motors in order to avoid the detected obstacle. The performance evaluation of the system indicates an accuracy of 85% and 0.15 probability of failure respectively. In conclusion, an obstacle detection circuit was successfully implemented using infrared and ultrasonic sensors modules which were placed at the front of the robot to throw both light and sound waves at any obstacle and when a reflection is received, a low output is sent to the Arduino microcontroller which interprets the output and makes the robot to stop.

Full Text

Title: A laboratory study of chemical enhanced oil recovery (CEOR) in compartmentalized sandstone reservoir: A case study of a 2-D phase macro-model reservoir

Author (s): Mohammed Falalu Hamza, Zulkifli Merican, Hassan Soleimani, Sorood Zahedi Abghari, Chandra Mohan Sinnathambi and Stephen Karl D.

Abstract: The chemical enhanced oil recovery (CEOR) in the compartmentalized sandstone reservoir (CSR) using a 2-D phase macro-model system was first reported in this work. The work investigated the effect of water flooding (brine 3.5 % w/v) and anionic surfactant (AOS, 2.0 % v/v) as a step forward to recover oil in the CSR. In the study, a total of 4 flooding scenarios was set for both water and AOS chemical flooding using two different sand particle; sand A (< 1 mm) and B (< 2 mm), respectively. The result indicated that pure sand B had the highest oil recovery by water flooding (80 %), followed by A:B (68 %), pure A (58 %), and B:A (49 %). However, after subsequent flooding with AOS chemical when water flooding could not further recover oil, water cut reduction and additional oil recovery (AOR) had been recorded in each case. The AOR in pure sand A was found to be 4 %, with water cut reduction of 20 %, while B was 2.7 % (water cut 13 %), A:B was 1.5 % (water cut 1 %) and B:A was 0.83 % (water cut 1 %). To account for these incremental amounts due to AOS, water/oil interfacial (IFT) studies were conducted. The result shows that, AOS had significantly reduced the IFT to 11.6 ± 3.097 mN/m. This study has demonstrated that water and subsequent chemical flooding in CSR has more effect in the homogeneous system (sand A and B) compared to the heterogeneous system (A:B and B:A). Nevertheless, approximately, more than 50 % of oil in place had been displaced in all flooding scenarios. Therefore, this finding is a step forward towards understanding the EOR in the CSR systems which would be useful in the body of scientific literature to benefit researchers from both academia and oil industry.

Full Text

Title: Development of portable magnetic clamping for lathe machine

Author (s): Norfariza Binti Ab Wahab, Afferry Bin Mohd. Saleh, Abd Khahar Bin Nordin, Nor Fauzi Bin Tamin and Mohd. Azimin Bin Ibrahim

Abstract: Chuck is a device used to clamp any material that operates with the turning of the machine and it is connected to the headstock spindle of the lathe. However, the limitation is that the thickness of the workpiece must not be less than the area of clamping on the chuck. In this a new magnetic clamping for attaching and detaching the workpiece on the chuck and is able to clamp small and thin workpieces is developed. The chuck is made by using mild steel and has a few intercepts with brass. Magnetic mechanism is placed in the chuck. Several cutting processes were done with the convectional chuck and the magnetic clamping on a different thickness of workpiece. Next, all the workpieces were tested with several parameters on specimen and perform surface roughness testing to compare and finalize the effectiveness of the magnetic clamping. From the obtained result, the use of the magnetic clamping produces much better result of surface roughness on thin workpiece. Thus, using magnetic clamping as the clamping method for thin workpiece is much effective in turning machine.

Full Text

Title: Performance evaluation of spatial filters using full-reference image quality metrics

Author (s): Balwinder Singh and Leena Jain

Abstract: The de-noising of digital images is crucial preprocessing step before moving toward image segmentation, representation and object recognition. It is important to find out efficacy of filter for different noise models because filtering operation is application oriented task and performance varies according to type of noise present in images. A comparative study has made to elucidate the behavior of different spatial filtering techniques under different noise models. In this paper different types of noises like Gaussian noise, Speckle noise, Salt & Pepper noise are applied on grayscale standard image of Lenna and using spatial filtering techniques the values of full reference based image quality metrics are found and compared in tabular and graphical form. The outcome of comparative study shows that Lee, Kuan and Anisotropic Diffusion Filter worked well for Speckle noise, the Salt and Pepper noise has significantly reduced using Median and AWMF, and the Mean filter and Wiener filter works immensely efficient for reducing Gaussian noise.

Full Text

Title: Optimal laser treatment parameters of AA 6061-O Aluminum alloy

Author (s): Waleed Al-Ashtari and Zahraa Abdulsattar

Abstract: Laser surface melting (LSM) is a material treatment process based on using the laser beam as a heat source in order to modify the mechanical properties of the material surface. In this article, the optimal parameters of LSM process for AA 6061-O Aluminum is investigated using design of experiment approach. Experiments show that the most effective parameters on LSM process which give maximal hardening to the Aluminum are laser power and pulse duration. Different power magnitudes (4, 4.5 and 5) kW have been applied with different for pulse durations (3, 4 and 5) ms in order to identify the optimal parameters of the LSM. Minitab software was used to determine the optimal parameters of LSM process which they are found to be 4.5 kW laser power with 3ms pulse duration.

Full Text

Title: Performance evaluation of fluid flow in a straight pipe of heat exchanger

Author (s): Nurul Amira Binti Zainal, Iskandar Bin Waini, Ezzatul Farhain Binti Azmi and Muhammad Shahril Bin Ahmad

Abstract: Heat exchanger is an important device in all thermal systems. It is widely used equipment in numerous industries such as process control, petroleum refining, chemical industry, heat recovery systems and much more. Energy and material saving considerations as well as environmental challenges in the industry nowadays have stimulated the demand for high efficiency of the heat exchanger. To improve the efficiency of the heat exchanger, heat transfer performance enhancement in the heat exchanger must be considered. This study is carried out to investigate and examine the fluid flow in a straight pipe heat exchanger with thermal designing and analysed by using Solid Works software. Three different materials of the heat exchanger are used which are copper, stainless steel and brass to identify the best material of a straight pipe heat exchanger. The heat exchanger is set to be oil-water heat exchanger model. The fluid flow properties in the pipe of heat exchanger are simulated with computerized simulation to recognize the best material of heat exchanger. There are two parameters that take into consideration in this study which are temperature and pressure distributions. Through the simulation results, copper shows the most efficient heat transfer compared to stainless steel and brass. This implies that, copper is the most efficient heat conducting and it can be concluded that the effects of different material and fluid flow in the pipe and in the cylinder of a straight pipe heat exchanger do enhance the performance of the heat exchanger. The analysis of the findings of this study is presented in this paper.

Full Text

Title: Frictional effect in Pacemaker lead cable due to coupled contact mode

Author (s): G. Raja and B. K. Gnanavel

Abstract: A Pacemaker is a device which conducts electrical impulses from pulse generator to heart muscle when the heart beat is abnormal. This electrical impulse are conducted to heart muscle by means of lead cables which numbers one to three to treat the heart problem. The lead cables are considered as multi-layered cable assembly with 1+6+12 helical wires and a straight cylindrical core. These assemblies can be made by three modes of contact in a simple straight strand. The first mode is a core-wire contact where the wires in the layer are in contact with the core only. In the second mode, the wires in the layer are in contact among themselves and not with the core. In the third mode, there is a coupled contact among the core and all the wires. There is no literature handled the lead cable assembly with either the core-wire contact or the wire-wire contact or the coupled contact. An attempt is made in this paper, to model the lead cable strand with a coupled core-wire and wire-wire contact and deduce its equations of equilibrium. The numerical analyses of cable strand force, twisting moment, strand stiffness, contact force, and contact stress are carried out based on the theory of thin rods.

Full Text

Title: Severity of downtime influence factors impacting naval ship operational availability - a five-stage Delphi consensus procedure with snowballing technique

Author (s): Al-Shafiq Bin Abdul Wahid, Mohd. Zamani, Sunarsih, Mohd. Najib Bin Abdul Ghani Yolhamid, Mohamad Abu Ubaidah Amir Abu Zarim, Aisha Binti Abdullah and Nur Hanamlit Ahmad Azlan

Abstract: Operational availability of naval ships, which reflects the number of days they are available for operational tasking in a year, is a complex problem. The number of days the ships are able to spend in an area of operations reveals the sustainability of the naval force in showing of presence and deterrent capability. There have been numerous literatures on calculating downtime through Mean Time between Failure (MTBF) and Mean Time to Repair (MTTR) to obtain availability value; however there have been limited literatures pinpointing to the root cause of the various downtime, called Downtime Influence Factors (DIF) for naval vessels. The limited literatures on DIFs of naval vessels are further restricted in the study of a single factor such as obsolescence or spares availability, or two or three factors at most, whilst in reality the DIFs encompasses a wide range of human and equipment related factors that most researchers have not attempted to study. The situation is further complicated by issues of equipment and component redundancies as well as possible interdependencies between each DIFs. The current research uses a five-stage sequential modified Delphi approach including risk analysis and snowballing technique to identify, validate and rank the severity of all DIFs from two sets of experts in naval ship maintenance contracts. The study revealed 15 severe DIFs involving human and equipment related factors impacting naval ship availability. The result complemented and validated the findings of previous study by the authors involving 30 experts. The results enable the navies and supporting industries to focus on pinpointed areas of concern to

enable them to increase the operational availabilities of their ships in the fleet.

Full Text

Title: Optimizing the vertical handoff decision making algorithm

Author (s): S. Nandakumar, T. Velmurugan, V. Noor Mohammed and P. Sasikumar

Abstract: This article focuses on improving the vertical handover scheme in the heterogeneous networks. There are three main steps involved in this process which are: Handover necessity estimation, Handover target selection and Handover triggering condition estimation. The first step helps us in finding out whether a handover is necessary to the other access point, the second one helps in finding out the best suited candidates for the handover process. Third step helps us in triggering the handover process at the correct moment. 4G networks are expected to improve the communication process by improving speed and services offered by provider. This method is designed so as to reduce the handover failure and the unnecessary handovers. Along with this it is also supposed to enhance user satisfaction by involving user in decision making.

Full Text

Title: Numerical and experimental analyses of the flow around a rotating circular cylinder at subcritical regime of Reynolds number using k-ε and k-ω-SST turbulent models

Author (s): A. H. Mgaidi, A. S. Mohd. Rafie, K. A. Ahmad, R. Zahari, M. F. Abdul Hamid and O. F. Marzuki

Abstract: An experimental investigation was conducted of a rotating circular cylinder immersed in a free-stream flow. The study was motivated by some apparent discrepancies between experimental and numerical studies of the fluid flow, and the general lack of experimental data, particularly in the subcritical Reynolds number regime. Of interest was the direction and origin of the lift force generated on the cylinder, which has been the subject of contradictory results in the literature, and for which measurements have rarely been reported. The circular cylinder was tested at 3 different free stream speeds 11, 13, and 15 m /s. The dimensionless speed ratio and Reynolds number (Re) also ranged from λ = 0.6 - 1.1, and 1.50E05 - 2.14E05, respectively. Verification of the experimental was achieved through using of computational fluid dynamics (CFD) code ANSYS FLUENT15 to simulate a two-dimensional flow of a viscous incompressible fluid past a rotating cylinder subject to a circular motion. Indeed, grid independency test (GIT) as well as the effect of domain size, have been conducted and a suitable agreement was found based on comparison of the CFD and experimental fluid dynamics (EFD) results, where a good agreement with experimental data in global quantities is predicted through generating of a fine mesh enhanced with choosing of y+ value less than 1. In the next step, the attention has been focused on comparing between the simulation results of k-ε, and k-ω-SST viscous models, to determine the most compatible model in using CFD code with the EFD results in certain mentioned condition. Generally, simulation results of each of mentioned two equations turbulent models show similar patterns as compared to EFD. A comparison of the results showed that, the margin of error in lift force coefficient was arranged from 39 - 60 % and 10 - 14% for k-ε, and k-ω-SST, respectively, which surprises the shear stress transport turbulent model as more compatible viscous model. The correspondence is seen to be excellent for analyzing the characteristic of fluid flow around the rotating objects in subcritical regime of Re.

Full Text

Title: Effective texture feature model for classification of mammogram images

Author (s): K. Rajendra Prasad and M. Suleman Basha

Abstract: Breast cancer detection is an emerging need in mammography and it helps for radiologist for examining the stages of breast cancer detection. Mammogram classification is attempted in this paper using well-known support vector classification method. Mammogram classification follows three key steps, which are feature image enhancement, texture feature extraction, and classification. This paper presents the experimental results of mammogram classification for demonstrating the efficiency of SVM with underlying mechanisms of texture methods and it suggest the best combination of SVM and texture method to radiologist for better medical diagnosis of breast cancer detection.

Full Text

Title: Multi-criteria decision making for small/medium nuclear desalination site selection: Egypt case study

Author (s): Ghada A. Al Bazedi, Mohamed H. Sorour, Shadia R. Tewfik, Abdelghani M. G. Abulnour and Maysada M. H. El-Sayed

Abstract: Construction of nuclear desalination plants requires the assessment of several siting criteria taking into consideration technical and environmental aspects. This paper identifies criteria for siting small/medium nuclear-powered desalination plants. A selection ranking matrix was formulated where the proposed siting areas were assigned scores pertinent to each weighed selection criterion. The proposed areas were then statistically evaluated based on their weighed scores using Wilcoxon signed-rank method for a conceptual case study in Egypt (as a typical developing country) to identify priority areas for implementing small/medium nuclear-powered desalination plants.

Full Text

Title: A compact UWB micro strip patch antenna using coplanar wave guide feeding for bio medical applications

Author (s): K. Raj Kamal and Govardhani Immadi

Abstract: A compact antenna for ultra wide range applications is proposed using coplanar wave guide feeding. The dimensions of the proposed model are 25 x 25 x 1.6 mm3. The enhanced frequency range of 2.8-13.59 GHz is obtained as per return loss criterion by introducing the staircase model. The voltage wave standing ratio is less than 2 over the entire bandwidth. The resonant frequencies obtained are 3.2 GHz, 5.8 GHz, 9.7 GHz, and 12.6 GHz. In addition to the ultra wide band range of 3.1-10.6 GHz as per FCC regulations, the antenna is also operatable in X-band range and the partial range of Ku band from 12-13.59 GHz. The proffered antenna is suitable for applications of UWB like medical imaging, RADAR imaging, tracking, measurements and communications.

Full Text

Title: Construction of regular quasi cyclic-low density parity check codes from cyclic codes

Author (s): Bouchaib Aylaj, Mostafa Belkasmi, Said Nouh and Hamid Zouaki

Abstract: Low Density Parity Check Codes (LDPC) is a class of linear error-correcting codes which have shown ability to approach or even to reach the capacity of the transmission channel. This class of code approaches asymptotically the fundamental limit of information theory more than the Turbo Convolutional codes. It's ideal for long distance transmission satellite, mobile communications and it's also used in storage systems. In this paper, a new method for constructing quasi-cyclic low density parity-check (QC-LDPC) codes derived from cyclic codes is presented. The proposed method reduces the incidence vectors, by eliminating the conjugates lines in parity-check matrix of the derived cyclic code to construct circulant shifting sub-matrices. In the end, this method produces a large class of regular LDPC codes of quasi-cyclic structure having very low density, high coding rates and Tanner graphs which have no short cycles with girth of at least 6. Performance with computer simulations are also shown in this work for some constructed codes.

Full Text

Title: Self-deployment in wireless sensor networks using Ant Colony Optimization method

Author (s): Anudeep Reddy, Shankar T., Lavniya N., Mageshwaran R. and Venkataraman Muthiah-Nakarajan

Abstract: Viable organization of the sensor nodes in Wireless sensor system is the most important purpose of worry as the performance and lifetime of any system relies on upon it. With the propelled research, the sensor nodes could automatically deploy all alone (Self-organization) using some of the existing techniques. Greedy Perimeter Stateless Routing (GPSR) is one of the location based routing technique which helps the small, cheap and resource constrained nodes to render the routing function without the need of complex calculations and gigantic amount of memory space during the procedure of self-deployment and thereby creating amazing transmission of the required data. In any case, now and again it neglects to discover a route from the source to a destination or in other words discover a route that is longer than the shortest path. In this paper, we propose a self- deployment plan utilizing the Ant Colony Optimization (ACO) that assurance data conveyance and discover a route very close to the ideal route regardless of the possibility that the system contains nodes with different transmission ranges and enhance the lifetime of sensor nodes. The execution of the proposed strategy is assessed utilizing delay, throughput, energy and delivery ratio of the information packets. The self-deployment scheme utilizing ACO demonstrates an improvement in energy and throughput by 3.74% and 4.45% respectively than the GPSR method.

Full Text

Title: Influence of melting unit type on the properties of middle-carbon cast steel

Author (s): Deev V. B., Prusov E. S., Vdovin K. N., Bazlova T. A. and Temlyantsev M. V.

Abstract: Influence of the employed type of the melting unit on the quality of the cast middle-carbon steel has been considered in the article. It has been found out that the electric arc heating of the melt in a direct current furnace allows obtaining a higher level of mechanical and technological properties by contrast with the induction furnace melting. Analysis of the electromagnetic forces acting on melts during electric arc melting has shown that the vibrational pressure produced herewith effectively acts on the melt volume elements and homogenizes it in composition. The results of the work can find application in the production of castings from middle-carbon steels under conditions of the machine-building production.

Full Text

Title: Performance evaluation of reversible Vedic multiplier

Author (s): Gowthami P. and R. V. S. Satyanarayana

Abstract: Multipliers are one of the building blocks of several computational units. The speed of the computational units is determined by the speed of the multipliers. To increase the speed of computational units, faster multipliers should be utilized. The Vedic multiplier is one such solution, which is capable of performing the quicker multiplications. In Vedic mathematics Urdhva Tiryakbhayam sutra discards the non essential steps in multiplication process which in turn increases the speed of a multiplier. In this work, the performance of the Urdhva Tiryakbhayam Vedic multiplier is improved by reducing the Number of gates, Garbage outputs, Quantum cost and TRLIC.

Full Text

Title: Carotenoids preservation during sterilization of palm fruit using microwave irradiation

Author (s): Maya Sarah

Abstract: Carotenoids are one among valuable nutrients in oil palm fruit. The facts carotenoids are vulnerable to heat were indicated by lower carotenoids concentration in palm oil after sterilization process. Sterilization of oil palm ususlly conducted at temperature above 150oC at which carotenoids degraded from 4000 ppm to 700 ppm. To retain carotenoids, sterilization of oil palm fruit should be conducted at low temperature. Microwave irradiation offers flexibility in arranging heat level and irradiation time for sterilization process as compared to thermal sterilization. This study aims to evaluate combination of time and temperature for microwave sterilization and develop safety margin that deactivate lipase and at the same time retain carotenoids. To determine safety margin for carotenoids content, an analysis on relationship between D-value and temperature was conducted for lipase inactivation process and carotenoids degradation. The D-values of lipase were determined from lipase inactivation at various power levels, sample's size of oil palm fruit and irradiation time. Microwave oven that connected with thermocouple, data logger and computer was used to determine D-value. The safety margin for this process was developed from D-value curve of both lipase and carotenoids. Areas under intersection between two curves represent combination of time and temperature for irradiation process. This time and temperature combination at the intersection points offering maximum and minimum level of carotenoids content in palm oil product. It was concluded that sterilization of oil palm fruits by microwave irradiation may occur at low temperature (below 60oC) and require longer irradiation time (more than 20 min). This microwave sterilization process can deactivate lipase and also retain carotenoids in palm oil.

Full Text

Title: Cipher secret Image using Hybrid Visual Cryptography

Author (s): Reem Ibrahim Hasan and Huda Adil Abdulghafoor

Abstract: Attackers always try to break ciphers whether this cipher is image or text in order to reach the required data due to this fact new methods of ciphering are always presenting. This paper discusses a new method employed a chaos system to shuffle image pixels and blocks according to Arnold Cat Map (ACM). The proposed method employed Visual cryptography (VC) as well in order to cover the encrypted image. These concepts are considered as the best techniques used to implement an efficient way to secure images via the internet. This paper includes several statistical attacking and qualification measurements to evaluate the proposed system and its performance. The result of the proposed system obtained with a minimum computational time, storage space and qualified recovered image.

Full Text

Title: Fetal movements recording system using accelerometer sensor

Author (s): Nor Diana Zakaria, Paulson Eberechukwu Numan and Malarvili Balakrishnan

Abstract: One of the compelling challenges in modern obstetrics is the monitoring fetal wellbeing. Physicians are gradually becoming cognizant of the relationship between fetal activity movement, welfare, and future developmental progress. Previous works have developed few accelerometer-based systems to tackle issues related with ultrasound measurement, provision of remote support and self-managed monitoring of fetal movement during pregnancy. Though, many research questions on the optimal setup in terms of body-worn accelerometers as well as signal processing and machine learning techniques used to detect fetal movement are still open. In this work, a new fetal movement system recorder has been proposed. The proposed system has six accelerometer sensors and ARDUINO microcontroller. The device which is interfaced with MATLAB signal process tool has been designed to record, display and store relevant sets of fetal movements. The sensors are to be placed on the maternal abdomen to record and process physical signals originating from the fetal. Comparison of data recorded from fetal movements with ultrasound and maternal perception technique gave the following results. An accuracy of 59.78%, 85.87% and 97.83% was achieved using the maternal perception technique, fetal movements recording system, and ultrasound respectively. The findings shows that the proposed fetal movements recording system has a better accuracy rate than maternal perception technique, and can be compared with ultrasound.

Full Text

Title: Surface crack growth in a solid cylinder under combined cyclic bending-torsion loading

Author (s): D. Chandra, J. Purbolaksono and Y. Nukman

Abstract: Here, we present fatigue crack growth (FCG) of a surface crack in a solid cylinder under combined cyclic torsion-bending load. The effective stress intensity factors were found to be fluctuated during the crack growth. When the loading ratio of the maximum shearing stress over the maximum bending stress was being unity, for a given crack length, the crack aspect ratios between 0.5 and 1 resulted in insignificant differences on the estimated fatigue lives. The effect of the crack depth on the fatigue life was found to be insignificant when the crack position was away from the maximum bending stress location.

Full Text

Title: Markov chain model and PSO technique for dynamic heuristic resource scheduling for system level optimization of cloud resources

Author (s): Shrabanee Swagatika, Amiya Kumar Rath and Prasant Kumar Pattnaik

Abstract: Cloud computing options a versatile computing infrastructure for large scale processing needs effective load equalization and migration of the cloud resources for rising the energy potency and resource utilization. The instructed resource allocation technique considers numerous parameters like migration time, waiting time, QoS, resource utilization etc. for effective and economical virtualized resource management and allocation. This paper aims at dispatching the computation load to any or all process nodes within the cloud computing atmosphere by considering the physical employment on every node therefore on stop bias during arranging computation resources and therefore improve the general computing performance in a heterogeneous cloud atmosphere.

Full Text

Title: Enhancement techniques of IEEE 802.11 wireless local area network distributed coordination function: A review

Author (s): Wan Hafiza Wan Hassan, Horace King, Shabbir Ahmed and Mike Faulkner

Abstract: A wireless local area network (WLAN) connects at least two devices and usually operates in unlicensed radio frequency spectrum bands. After being introduced nearly two decades ago, the demands for WLAN deployments has continuously increased due to their low cost and ease of installation. Each user must gain access to the wireless channel in a controlled manner, using the medium access control (MAC). It is based on the well-known binary exponential backoff (BEB) algorithm, which only allow a node to transmit if the channel is unoccupied for a period of time consisting of a fixed and random component. The latter is recognized as backoff time which is uniformly chosen from the backoff window (known as contention window, (CW)) within the interval (0, CW). The window size begins with CWmin and will be doubled whenever there is a packet collision and automatically foreseen a retransmission. The absence of acknowledgment frame (ACK) from the receiver indicates a corrupted packet (collision). As the number of competing node increases, the backoff time lengthens resulted in throughput degradation. It has been extensively agreed in the literature that the BEB algorithm is the key factor to WLAN performance degradation. Therefore, this work presents a comprehensive review on the techniques to improve the legacy BEB algorithm.

Full Text

Title: Constructing minimal Adjacent Dominating Sets in semigraphs for clustering in wireless networks

Author (s): S. Saravanan, R. Poovazhaki and N. R. Shanker

Abstract: Researchers propose Connected Dominating Set (CDS) of graphs in which each node in the cluster wireless network cover via dominating neighbors, define many dominating sets such as strongly connected dominating sets and weakly connected dominating sets etc. In this paper, we extend the dominative capacity of nodes such that each node dominates not only itself and all its adjacent neighbors completely called Adjacent Dominating Set (ADS) in semigraphs. Furthermore, an ADS

construction algorithm to find minimal ADS in wireless networks is proposed for cluster head selection. The efficiency and performance of the ADS construction algorithm confirm through theoretical analysis and simulations. This paper addresses the behavior of the protocols in different network model in ADS based cluster network. Simulation result shows that DSR and DSDV perform better in graph and semigraph structure, whereas AODV is more adaptable in the randomly chosen network.

Full Text

Title: Pressure transient behavior of a horizontal steam injection well in a naturally fractured reservoir

Author (s): Tan Tiek Yi and Azeb D. Habte

Abstract: Naturally fractured reservoirs constitute majority of the reservoirs documented on earth. Tectonic activities on earth have produced widespread natural fractures which properties should be accounted for during simulation. The intrinsic properties of naturally fractured reservoirs make accurate simulation of the reservoir challenging and still have been a topic of discussion. Studying the pressure and pressure derivatives of the reservoir has been proven in literature to be an accurate method for reservoir characterization and reservoir evaluation. The pressure transient behavior of vertical and horizontal production wells have been well researched and presented in literature but little information exist on the pressure transient behavior of a horizontal steam injection well in a naturally fractured reservoir. Therefore, this project focuses on the pressure transient behavior of a horizontal steam injection well in a naturally fractured reservoir to accurately characterize the reservoir. Simulation studies are conducted using Computer Modelling Group (CMG) software, STARS, a thermal recovery simulator. A base model of a horizontal steam injection well in a dual porosity reservoir is constructed and the pressure transient behavior is studied through parameter variation. Results show that we can observe a radial flow regime, followed by a downward dip due to the gas injection, another downward dip due to the dual porosity storativity and finally pseudoradial flow due to the pressure transient reaching the boundary. The negative or close to negative pressure derivative observed in the first downward is due to the high compressibility nature of steam. The presence of steam injection and the dual porosity may mask other flow regimes in the model and further test designs could be constructed in the future to further study the pressure transient behavior of a horizontal steam injection well in a naturally fractured reservoir.

Full Text

Title: Investigation on biomass briquette from Cerberamanghas waste twigs as renewable energy source

Author (s): Willyanto Anggono, Fandi D. Suprianto, Sutrisno, Gabriel J. Gotama, Jovian Evander and Andreas W. Kasrun

Abstract: Indonesia is a tropical nation and has numerous assortments of plants. However, it has not been utilized perfectly as assets. One of the plants that are frequently seen in the group is Cerberamanghas. Cerberamanghas is known as one of the trees that have strong roots in this way it is generally utilized for greening in Surabaya. Although useful to be a shading tree and to decrease air contamination in urban regions, squander from the twigs of this plant turns into a significant issue for the cleanliness of the city. The waste from the falling twigs can possibly be utilized as a strong candidate as briquettes when handled fittingly. This study intends to research the capability of waste Cerberamanghas twigs to be utilized as biomass briquettes and also to assess the properties of the briquettes. The proximate and ultimate analysis examination were conducted to obtain the property of the briquettes. Furthermore, the impact of tapioca to the calorific value of the biomass briquettes was also obtained. Calorific values of five blends with different tapioca mixtures of 10%, 20%, 30%, 40%, and 50% were assessed utilizing an oxygen bomb calorimeter. The outcomes demonstrated that the biomass briquettes made of waste Cerberamanghas twigs can be made by utilizing tapioca as a binder. The more prominent the rate of the mass of tapioca in the briquettes, the lower calorific value produced. Biomass briquettes made of waste Cerberamanghas twigs can be made into a wellspring of manageable energy with the ideal mixtures of 90% Cerberamanghas waste twigs and 10% tapioca.

Full Text

Title: Design and implementation of embedded vision based tracking system for multiple objects using FPGA-SoC

Author (s): Saif N. Ismail, Muataz H. Salih and Wahab Y.

Abstract: An implemented vision based tracking system has become an important application of embedded in the field of vision and streets surveillance systems in the field of public security. That is why many of researchers have been suggested different embedded vision tracking approaches. This project addressing a significant issue namely multiple objects tracking. One of significant problems that are faced the researchers is multiple objects tracking which is addressed in this project. Therefore, this project is designing and implementing an embedded vision based for multiple object (color) tracking system using FPGA-SoC. The proposed method has adopted a passive tracking vision system based on platform DE1-SoC and D5M camera. As a result of our project is can be tracking distance of multiple objects (colors) was reached up to 30 meter for sized 15×15 cm object shape.

Full Text

Title: Diminished complexity genetic algorithm aided and radial basis function assisted multi user detection for synchronous CDMA

Author (s): Yeswanth Chowdary Malladi, Phaneendhra Madala, Ravikumar Chinthaginjala and Kalapraveen Bagadi

Abstract: Radial Basis Function (RBF) Network aided Multi User Detection (MUD) plans are fit for identifying the got signal of all clients, regardless of the possibility that the channel yield states are straightly non-distinct. In any case, their many-sided quality may end up noticeably intemperate which renders their genuine execution irrealistic, with the exception of when the quantity of clients is low. In this commitment a novel lessened multifaceted nature Radial Basis Function Network aided Multi User Detection (RBFNMUD) is created, which conjures Genetic Algorithms [GAs] for decreasing the quantity of RBFN-MUD focuses. Our PC recreations demonstrated that GAs is able to do extensively diminishing the intricacy forced at the cost of a slight execution corruption.

Full Text

Title: A review of Reversible Data Hiding technique based on steganography

Author (s): K. Upendra Raju and N. Amutha Prabha

Abstract: This paper describes the concept of Reversible Data Hiding (RDH) method is based on steganography. Recently more attention is paid to RDH in encrypted image. Generally when a secured /confidential data is transmitted over an insecure channel, loss in data occurs. To secure the data, encrypt the wrap data and embed is secret data into cover media. Since RDH manages the outstanding secured property, the original picture can be recovered without any loss. In this survey paper, different RDH methods are analyzed. All the existing methods in RDH have some limitations. In Vacating Room after Encryption method, during data extraction or image restoration, some errors occurs and in vacating Room previous to Encryption is easy for the data hider to reversibly embed the data in the encrypted image but highly complex in retrieval of the image. Cryptography is also used to maintain the security. Many researchers find difficulty in attaining the cover image and therefore different methods implemented for this is elaborated in the survey based on the field of steganography, Reversible Data Hiding.

Full Text

Title: Stream flow analysis for small hydropower system based on run-of-river schemes

Author (s): M. Razi, M. A. Yusuff, K. A. Zakaria and A. Putra

Abstract: Studies in renewable recently had captured the attention of the researcher due to benefits to environmental and green application. In Malaysia, renewable energy based on hydro especially in small hydropower system based on run-of-river schemes are less implemented even though there are abundant numbers of potential site that can be exploited. Small hydropower system generates energy from flowing of water therefore, the availability study of the stream flow is necessary to contribute to the success of the project. Probability distribution function comparison between GEV, Gumbel and Weibull will be used in this study to find the best fit probability distribution for the stream flow data that are obtained for the whole year of 2016. Monte Carlo simulation will be act as a tool to validate the distribution applied for the stream flow data obtained. GEV, Gumbel and Weibull distribution function were chose due to its capability to cater the extreme events occurred in the stream flow. From the result, both stream flow and simulation of Monte Carlo leads to same types of distribution that is suitable to be used in describing the events which is GEV distribution function.

Full Text

Title: Tamil character recognition using Android mobile phone

Author (s): K. Jayasakthi Velmurugan and M. A. Dorairangaswamy

Abstract: Tamil Text detection in natural scene picture is an important requirement for many content-based image analysis tasks. I propose an accurate and robust method for detecting Tamil texts in natural scene pictures. A fast and effective pruning algorithm is designed to extract Maximally Stable Extreme Regions (MSERs) as character candidates using the strategy of minimizing regularized variations. Character candidates are merged into text candidates by the single link clustering algorithm, where distance weights and clustering threshold are learned automatically by a novel self-training distance metric learning algorithm. The posterior probabilities of text candidates corresponding to non-text are estimated with a character classifier; text candidates with high non-text probabilities are eliminated and texts are identified with a text classifier. In this application the documents will be scanned as images and once the image is scanned the data from the image is extracted automatically and will be shown in the application as text. Then the text message is given to the translator tool which will convert the Tamil text into English Text message.

Full Text

Title: Design of a microscopy images fusion and classification application

Author (s): Jose Salgado Patron, Diego Sendoya-Losada and Johan Julian Molina Mosquera

Abstract: It was made an application for automatic microscopy image fusion and subsequent classification of the cells found there. This application allows the entry of a sequence of images that you want to merge to obtain a large field of view with the characteristics of each of its component images. Similarly, the Myelogram classification can be made, that was the type of sample acquired in this process and which were obtained four sets of patterns. For application development we used Matlab GUI tool for creating a graphical environment which allowed carrying out the process of merging, sorting, editing and managing results.

Full Text

Title: Effect of skew angle on structural behavior of RC ribbed skew slab

Author (s): M. S. Hora

Abstract: The present research deals with parametric study of RC un-stiffened and ribbed skew slabs (stiffened by rib beams) with skew angles ranging from 20° to 50° in interval of 5°. The analyses are carried out for un-stiffened and ribbed skew slabs having two short edges simply supported and two long edges free. Total 14 cases are analyzed for un-stiffened and ribbed skew slabs by creating models in ANSYS software. The comparison of results is made with respect to displacements, bending moments, twisting moments, von-Mises stress, bending stresses and shear stresses.

Full Text

Title: Dimensional accuracy and surface roughness of part features manufactured by open source 3D printer

Author (s): F. R. Ramli, M. S. M. Faudzie, M. R. Alkahari, M. N. Sudin, M. A. Abdullah, S. Mat and S. N. Khalil

Abstract: This paper investigates the effectiveness and accuracy of open source 3D printer of Mendel Max and Kossel Mini that used the additive manufacturing technique of Fused Filament Fabrication (FFF). A benchmark of the 3D printer test model was designed based on critical features of AM process i.e. hemispheres, cube, cylinders and slots. The benchmark was *produced by both machines using variation FFF parameters of layer height and infill density. In addition, the material of FFF* was varied between PLA and ABS for each test. The dimensional accuracy of the part features were measured by the nominal dimension of the part using Profile Projector DS600. In addition, TR200roughness tester was used to measure the surface roughness. The result shows that for dimensional accuracy results, Mendel Max machine has a lower deviation result compared to Kossel machine. Furthermore, PLA filament gives better result compare to ABS filament in term of surface quality finishing for both machine. The result shows that for both 3D printer machines, the quality and accuracy of the part features are better when the layer thickness is 0.178 and20% infill density.

Full Text

Title: Analysing effective methodologies used for text clustering using weighted algorithms

Author (s): S. Sree Dhanya

Abstract: Clustering of text documents is an important technique for enhancing automated learning. Matching is the technique used in order to relate or match the various set of related documents. Clustering groups a set of documents which are similar and dissimilar for unsupervised learning where the user has learning materials which are from raw data which requires further classification. Established feature extraction strategies intend to change over the representation of the major dimensional data set into a lower-dimensional informational collection by anticipating process through mathematical changes. The concept of feature clustering is to aggregate the features into clusters with a high level of pair wise semantic relations. Each cluster is dealt as a single new feature, and, hence , feature dimensionality can be radically lessened. HAC , K-Means, TF/IDF-weighted vectors and cosine similarities is used for the various vectors of data and is applied to text in a direct way to optimize the vectors.

Full Text

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INVESTIGATION ON BIOMASS BRIQUETTE FROM *Cerbera manghas* WASTE TWIGS AS RENEWABLEENERGY SOURCE

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ABSTRACT

Indonesia is a tropical nation that has numerous assortments of plants. However, these resources have not been utilized perfectly as assets. One of the plants that are frequently seen in Indonesia is *Cerberamanghas*. *Cerberamanghas* is known as one of the trees that have strong roots and it is generally utilized for greening in Surabaya. Although used as shading trees and to decrease air contamination in urban regions, squanders from the twigs of this plant turn into a significant issue for the cleanliness of the city. To tackle this problem, the waste from the falling twigs can be utilized as briquettes when handled well. This study intended to research the capability of *Cerberamanghas* twigs wastes to be utilized as biomass briquettes and also to assess the properties of the briquettes. The proximate and ultimate analysis examinations were conducted to obtain the property of the briquettes. The influence of tapioca percentage in briquette to the calorific value of the biomass briquettes was also obtained in this study. Calorific values of five blends with different tapioca mixtures of 10%, 20%, 30%, 40%, and 50% were assessed by using oxygen bomb calorimeter. The outcomes of the study suggest that the biomass briquettes made of waste *Cerberamanghas* twigs can be made by utilizing tapioca as a binder. The more prominent the rate of the mass of tapioca in the briquettes, the lower calorific value obtained in briquette. Biomass briquettes made of waste *Cerberamanghas* twigs can be made into a source of manageable energy with the ideal mixtures of 90% *Cerberamanghas* waste twigs and 10% tapioca.

Keywords: *Cerberamanghas*, biomass, twig, briquette, sustainable energy.

1. INTRODUCTION

The shifting of energy source from non-renewable to renewable becomes eminent nowadays. While non-renewable fuels do exist in some great number, it will only take some years before it becomes scarce and even longer to recuperate from the energy crisis derived from its exploitation. This energy emergency happens due to the development in fuel utilization rate and populace components. Other than sparing this non-sustainable power sources, the look for new option energy is expected to satisfy the human needs.

Biomass is the most well-known type of sustainable power source and generally utilized as a part of the third world. The cases of biomass fuel are, for example, biodiesel, biogas, horticultural waste and so on. The resources of biomass can be created from farming products and build-ups, ranger service harvests and deposits, ocean weeds and green growth, creature deposits, modern build-ups, metropolitan strong waste and sewage [1]. Biomass is a viable option for solving energy crisis from its advancement for substitute of petroleum energy source. Biomass likewise ends up plainly famous these days. An analysis about bioenergy demonstrates that bioenergy has a potential as a viable energy source and the use of biomass additionally rise now and again [2-6].

Indonesia is one of the nation that has numerous assets of energy, for example, oil, and coal. Indonesia winds up noticeably as a high coal exporter in 2014. Moreover, Indonesia is one of agrarian nation which was displayed from the 70% from 186 million hectares is utilized to farming part [7]. This condition gives a chance to create biomass elective energy utilizing rural waste. Because of the Indonesian government become environmentally viable arrangements, each city in Indonesia ought to plant more trees to limit a worldwide temperature alteration and counter the emanation of vehicle.

Figure-1. City Park with *Cerberamanghas*, Surabaya, Indonesia.

Trees are the primary component in the city stop and they are valuable in enhancing the air quality in thickly populated urban areas, for example, City Park with *Cerberamanghas*, Surabaya, Indonesia as appeared in

Figure-1. Then again, planting countless plants causes a great deal of waste twigs. Government and numerous groups in Surabaya are confronting difficult issue with the strong waste twigs (*Cerberamanghas*) transfer issue and extensive endeavours are being made to decrease the amounts of wastes.

These waste twigs of *Cerberamanghas* can be utilized as a viable energy source through the correct procedure. Beforehand, there was a trial with respect to biodiesel creation from *Cerberamanghas* and it demonstrates that *Cerberamanghas* has potential as energy source [8]. Biomass fuel can be delivered from waste item [9-12,13], for example, almond twigs, sawdust and coco peat, rice husk, sugar stick twigs and rice straw. Briquetting is one method to utilize the from biomass energy created from waste item. Substances found in *Cerberamanghas* twigs are, for example, p-hydroxybenzaldehyde, benzamine, n-hexadecane corrosive monoglyceride, loliolide, β-sitosterol, cerberin, neriifolin, cerleaside A, daucosterol.*Cerberamanghas* twigs contain some synthetic synthesis that might be harmful to living animal, for example, human and creature which guarantee us that *Cerberamanghas* is a non-edible plant [14]. The non-edibility of *Cerbera manghas* will ensure its utilization will not jeopardize the food stock available for human consumption. In utilizing *Cerbera manghas* as renewable fuel source, it is critical to explore the major properties of biomass briquettes made of waste *Cerberamanghas* twigs, such as, proximate and ultimate analyses, calorific value and the impact of tapioca percentage as a cover material for briquette.

2. EXPERIMENTAL METHOD

The waste materials used in this study are the fallen twigs of *Cerberamanghas*, because falling twigs indicate that they are old and begin to dry. Once collected, the twigs must be sun dried for three days. Biomass briquettes were made by crushing dried waste twigs of *Cerberamanghas* as shown in Figure-2, mixing them with tapioca flour as a binder material and compacting the mixture under pressure.

Figure-2. Crushed *Cerberamanghas* twigs.

The measurement of calorific value of the biomass briquette from waste twigs *Cerberamanghas* was conducted using a 1341 Plain Jacket oxygen bomb calorimeter Parr Instrument at various composition of *Pterocarpusindicus* leaves waste. Initially, 100% *Cerberamanghas* twigs and 100% tapioca as binder material have been measured. All experiments in this paper were performed with mixtures of various tapioca as a binder material from 10% (90% composition of *Cerberamanghas* twigs) to 50% (50% composition of *Cerberamanghas* twigs).

3. RESULTS AND DISCUSSIONS

Based on the experimental investigation using an oxygen bomb calorimeter, the calorific value of 100% *Cerberamanghas* twigs (dry basis)was 4790 Kcal/Kg and the calorific value of 100% tapioca as a binder material was 3574.47 Kcal/Kg. The calorific value of biomass briquette from waste twigs *Cerbera manghas* at various composition mixtures are shown in Table 1 and a summary of the results from calorific value of *Cerbera manghas*–tapioca mixtures at various composition are shown Figure-3.

Table-1. Calorific value of dry basis biomass briquette from waste twigs *Cerberamanghas*at various composition.

Biomass briquette composition	**Calorific value** (Kcal/Kg)
90% *Cerbera manghas* waste twigs and 10% tapioca mixtures	4628
80% *Cerbera manghas* waste twigs and20% tapioca mixtures	4393
70% *Cerbera manghas*waste twigs and 30% tapioca mixtures	4167
60% *Cerbera manghas* waste twigs and40% tapioca mixtures	3989
50% *Cerbera manghas* waste twigs and50% tapioca mixtures	3871

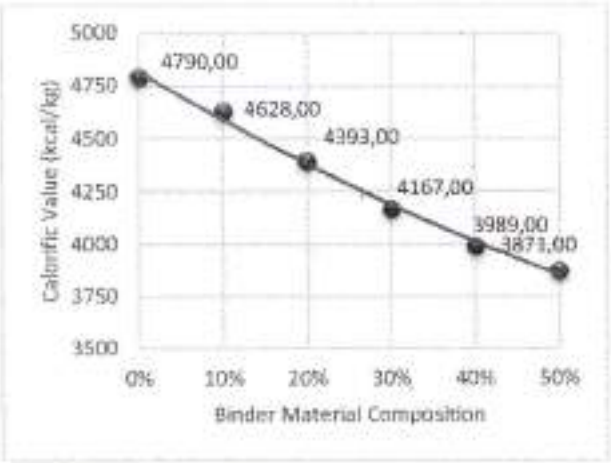

Figure-3. Effect of binder material to the calorific value of biomass briquette from waste twigs *Cerberamanghas* at various composition.

The higher is the percentage of tapioca in briquette, the lower the calorific value of the biomass briquette derived from *Cerberamanghas* twigs. The highest calorific value of the biomass briquette *Cerberamanghas* twigs was the biomass briquette obtained by utilizing 90% *Cerberamanghas* twigs-10% tapioca blends as appeared in Figure-3.The creation of *Cerberamanghas* and tapioca as cover material was done using piston mold as seen in Figure-4. The 90% *Cerberamanghas*-10% tapioca blends appearance is given in Figure-5. The molecule size of *Cerberamanghas* briquette is 60 Mesh. In the wake of squeezing procedure, the briquette must pass through drying process. This analysis utilizes room temperature to dry the briquette.

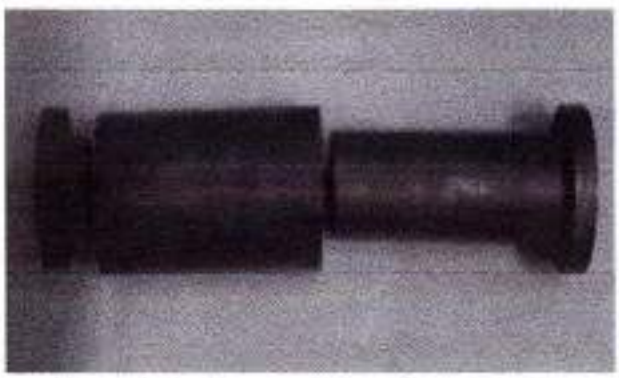

Figure-4. *Cerberamanghas* twigs briquette mold.

Figure-5. *Cerberamanghas* twigs briquette.

The reason 90% *Cerberamanghas* twigs-10% tapioca blends gives the best calorific value is because tapioca as a binder material decreases the calorific value of the biomass briquette. The more prominent measure of tapioca, the lower the calorific value of the biomass briquette from *Cerberamanghas* twigs. This phenomenon provides advantage in term of cost. The best briquette composition, 90% *Cerberamanghas* twigs-10% tapioca blendsrequires small cost to produce. This happened because of the fact that *Cerberamanghas* twig is available without cost and the tapioca as a fastener material needs to be purchased (the cost of tapioca in Indonesia around 0.5 USD/kg in September 2017). Thus, the higher the percentage of tapioca in the biomass briquette from waste twigs *Cerberamanghas* the higher the cost of the briquettes.

Table-2. Proximate analysis dry basis result of *Cerberamanghas* twigs briquettes.

Parameters	Unit	Value	Test method
Volatile Matter	%wt	76.9	ASTM D 3175-11
Ash Content	%wt	4.9	ASTM D 3174-12
Fixed Carbon	%wt	18.2	ASTM D 3172-13
Gross Calorific Value	Kcal/Kg	4628	ASTM D 5865-13

The proximate investigation has been inspected through a research centre test. The test utilizes some ASTM institutionalization. The volatile matter was analysed utilizing ASTM D3175-11. The ash content was analysed utilizing ASTM D3174-12. Fixed carbon count was analysed utilizing ASTM D 3172-13. The gross calorific value was analyzed utilizing ASTM D 3172-13. The proximate analysis dry basis result of *Cerberamanghas* twigs briquettes is shown in Table-2.

Table-3. Ultimate analysis result of *Cerberamanghas* twigs briquettes.

Parameters	Unit	Value	Test method
Carbon	%wt	20.81	ASTM D 5373-14
Hydrogen	%wt	2.67	ASTM D 5373-14
Nitrogen	%wt	0.25	ASTM D 5373-14
Sulphur	%wt	0.04	ASTM D 5373-14e1
Oxygen	%wt	14.75	ASTM D 5373-15

The ultimate analysis used to investigate the Carbon, Hydrogen, Oxygen, Nitrogen and Sulphur concentration on *Cerberamanghas* twigs briquettes. The examination of the ultimate analysis using ASTM D 5373-14, ASTM D 5373-14e1 and ASTM D 5373-15. The result of ultimate analysis of *Cerberamanghas* twigs briquettes is shown in Table-3.

Cerberamanghas twigs briquette has the highest calorific value compared to sawdust briquette, sugarcane briquette, rice straw briquette and coconut coir briquette. The calorific values of sawdust briquette, rice straw briquette, sugarcane briquette and coconut coir briquette are 4161.0898 kcal/kg, 3902.9637 kcal/kg, 3926.8642 kcal/kg and 4146 kcal/kg,respectively [12,15].

4. CONCLUSIONS

Biomass briquette from waste twigs *Cerberamanghas* is a renewable energy source and tapioca is a possible binder material on the biomass briquette derived *Cerberamanghas* waste twigs. This study discovered that the more prominent is the tapioca percentage as a binder material, the lesser the calorific value of the briquette and the higher the cost of producing biomass briquette from waste twigs *Cerberamanghas*. The biomass briquettes from waste twigs *Cerberamanghas* utilizing 90% waste twigs *Cerberamanghas* and 10% tapioca was found as the ideal proportion.

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