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ICECOS

2018 INTERNATIONAL CONFERENCE
ON ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE



CONFERENCE PROGRAMS AND ABSTARCT

**“Future energy brings the quality of human life through
applied techniques and ICT Innovations”**



October 02-04, 2018
Province of Bangka-Belitung
Indonesia

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FOREWORD FROM GENERAL CHAIR ICECOS 2018



Welcome to ICECOS 2018,

It is with a great pleasure that we extend our warm welcome to all the participants of the 2nd International Conference on Electrical Engineering and Computer Science (ICECOS) 2018. This conference held for second times and organized by Universitas Sriwijaya. The first conference in the series was held in Palembang, South Sumatera, Indonesia August 22-23, 2017. It is a good collaboration between Universitas Sriwijaya, Universiti Teknologi Malaysia, JAIST Japan, Albaha University, Saudi Arabia, University of Technology Sydney, Australia and Universiti Teknikal Malaysia Melaka. The conference in Bangka Island has attracted 66 participants from 7 countries.

The 2nd ICECOS particularly encouraged research students and developing academics to present and to discuss new and current work in the field of communication and vehicular technologies, electronics, circuits, and systems, information technologies, pervasive computing and internet of things, and power systems. 83 selected papers were presented from 133 peer reviewed paper by reviewers drawn from the scientific committee, external reviewers and editorial board.

Finally, as the General Chair of the Conference, I would like to express my deep appreciation to all members of the Steering Committee, Technical Program Committee, Organizing Committee and Reviewers who have devoted their time and energy for the success of the event.

In the end, I hope you have enjoyed the conference and the beauty of Bangka Island.

RUNDOWN

THE 2nd INTERNATIONAL CONFERENCE ON ELECTRICAL ENGINEERING AND COMPUTER SCIENCE (ICECOS)

Bangka Island, Province of Bangka-Belitung, Indonesia

Wednesday, 02 October 2018

Soll Marina Bangka Hotel, Sol Marina 1 Room

No.	Session	Person in Charge	Time Allotment	Liaison Officer
1.	Registration	Event Section Committee	07.30 – 09.30	Sarifah Putri Rafflesia
2	Indonesian National Anthem	Event Section Committee		
3	Chair Person's Report Speech	Event Section Committee		
4	Opening Remarks by Rector of Unsri	Event Section Committee		
5	Do'a, souvenirs for sponsor, group photos, coffee break	Event Section Committee		

PLENARY SESSION

No.	Keynote Speaker	Affiliation	Time Allotment	Moderator	Liaison Officer
1.	Prof. Dr. Zen-ichiro Kawasaki	Osaka University	09.30-10.15	Muhammad Abu Bakar Sidik, Ph.D.	Nyayu Latifah Husni, M.T.
2.	Prof. Dr. Eng. Benyamin Kusumoputro	Universitas Indonesia	10.15 -11.00	Dr. Bhakti Yudho Suprpto	
3	Assoc.Prof. Dr. Razali Ngah,	Universiti Teknologi Malaysia	11.00-11.45	Dr. Reza Firsandaya Malik	
Break, Sholat Dzuhur, Lunch			12.00-12.45		

PARALEL SESSION

No	Theme	Room	Time	Moderator	Articles
1	Communications and Vehicular Technology	Batu Bedaun 1	13.00 – 15.24	Evizal Abdul Kadir, Ph.D	8
2	Electronics, Circuits, and Systems	Batu Bedaun 2	13.00 – 19.00	Munawar Agus Riyadi, Ph.D./	18
3	Information Tehcnology # 1	Batu Bedaun 3	13.00 –18.42	Dr. Reza Firsandaya Malik/	17
4	Information Tehcnology # 2	Soll Marina 2	14.12 – 17.30	Sarifah Putri Raflesia, M.T.	10
5	Pervasive Computing and Internet of Thing	Soll Marina 2	13.00 – 14.12	Firdaus.M.Kom.	4
6	Power Systems #1	Soll Marina 1	13.00 – 19.00	Muhammad Abu Bakar Sidik, Ph.D./	18
7	Power Systems #2	Batu Bedaun 1	15.42 – 18.06	Dr. Bhakti Yudho Suprpto	8

GALA DINNER

20.30 – 22.00

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Lightning forecasting, protection and prevention

*(*keynote speaker)*

Zen KAWASAKI (Professor emeritus at Osaka University)

Abstract: This paper will give a review and proposal on lightning technology for the electrical, electronics and computer related engineers and researchers to realize seamless operations. Highly well-organized recent ICT era may not allow the momentary power failure, and this paper will give tips of solutions. For this purpose the lightning physics will be given, and then forecasting technology will be introduced. Then the conventional and non-conventional lightning terminator will be discussed, and finally the prevention by a recent technology will be evaluated from the aspect of statistics.

Keywords: lightning technology, power failure, lightning physics

Antenna and Propagation for 5G Wireless Communications

(*keynote speaker)

*Assoc. Prof. Dr. Razali Ngah (Wireless Communication Centre School of electrical Engineering,
Faculty of Engineering, Universiti Teknologi Malaysia)*

Abstract - During the last few decades, cellular mobile communications have significantly contributed to the economic and social developments of both developed and developing countries. This technology forms an indispensable part of the daily lives of millions of people in the world making it the most successful wireless technology in terms of user subscribers. With each new cellular generation emerging every 10 years dated back around 1980, to date, there are four generation cellular communication systems have been implemented. The evolution of LTE-A (4G) does not end with LTE advanced (release 10) rather continues to evolve into further releases.. Hence 5G is targeted to provide mobile broadband services for anyone and anything. 5G, compared to current 4G, needs to be more massive and scalable to enable a wider range of scenarios and services. In particular, the 5G radio access needs to provide significant performance gains in system capacity and user data rates. The current microwave cellular systems have around 600 MHz spectrums, which very little divided among operators. In order to gain more microwave spectrum, firstly, re-purpose or re-farm spectrum can be done with the repurposing the TV spectrum for rural broadband access. Otherwise, to share the spectrum utilizing such as cognitive radio techniques. The main key feature of mm-Wave is the antenna arrays. When a large antenna was utilized, path loss relative to omni-directional antennas can be eliminated. The net array gain may counter the larger thermal noise bandwidth. Furthermore, the impact of interference can be reduced by adaptive arrays with narrow beams. The key research paths to ensure the success of deploying 5G in future are the feasibility propagation study of 5G potential frequency bands, and the development of practical massive Multiple-Input Multiple-Output (MIMO) antenna systems. Feasibility propagation studies on the identified frequency bands must be conducted to have a full knowledge on the characteristic of each band before the 5G operating spectrum can be decided and finalized. From this feasibility study, the model of 5G wireless channel will be developed. This model will then be applied to gear up the R&D on 5G potential physical layer technologies, i.e. multiple access schemes, modulation schemes and forward-error correction coding. Spatial multiplexing using MIMO antenna systems has showed great potential to increase the system capacity, where the capacity increases linearly with the minimum number of transmit and receive antennas. Hence to achieve an extremely high capacity, the rule of thumb is for 5G to deploy very large number of antennas at both receiver and transmitter. This brings to the recent research interest in adopting massive MIMO antenna systems to achieve the high capacity needed by 5G.

Keywords: 5G, Multiple-Input Multiple-Output Antenna

The AI Based Control System for the Autonomous Trajectory UAV Flight

(*keynote speaker)

Benyamin Kusumoputro (Dept. of Electrical Engineering, Universitas Indonesia, Indonesia)

Abstract - Artificial Intelligence has revolutionary improved the quality of human life, and it is also drive the development of advanced theme from the automatic control to Artificial Intelligence based autonomous technology. Recently, Unmanned Aerial Vehicle has been rapidly studied in this decade, since the applications of this vehicle is very important nowadays, especially when the flying task is necessary to be executed in a dangerous, dull and dirty environment conditions. The use of drones will substitute the human workers and eliminate the risk to the worker's safety and health.

The drone's operation required an adequate flight controller to achieve the required trajectory. The flight controller also maintained its flight attitude for specific pointing to support the camera function or any sensor applied. Currently, the flight controller for UAVs is developed based on PID method that derived using mathematical model, however, the mathematical model relied heavily on the practical assumption and not prepared to overcome the changes of their assumptions. Thus, the AI-based control system has developed to obtain holistic approach in system identification that also could be used to produce a better controller, which accommodate the nonlinearity, cross-coupling and under-actuated characteristic of drone flight dynamics. In this presentation, an Artificial Intelligence based controller system for a UAV is developed using an artificial neural networks learning mechanism, which enable the controller to map the targeted output with its corresponding inputs. In this way, the AI-based flight control system yields the lower overshoot, shorter settling time and better performance compared with PID-based control system.

Keywords: AI-Based Control System, UAV Flight Control, Pipeline Monitoring, Indonesian Energy Self-Sufficiency, Safety

RFI Suppression Based on Time-Frequency Spectrogram for FMCW Radar

Paper ID : 1570443531

Oktanto Dedi Winarko (Labs247); Andrian Andaya Lestari (Labs247, Indonesia)

Abstract - An RFI suppression method based on time-frequency spectrogram for FMCW radar is proposed. It has two main differences with previous methods. First, it employs a time-frequency spectrogram, in place of a more resource-consuming range-Doppler spectrogram. Second, it makes use of a standard FFT, in place of a more resource-consuming STFT. Furthermore, its successful real-time implementation to resolve RFI problems in an FMCW maritime radar due to the presence of a neighboring high-power radar is demonstrated.

Keywords : *Time-frequency spectrogram; Radio frequency interference; Interference suppression; FMCW radar; Radar signal processing*

Image Steganography Using C Combine of Discrete Wavelet Transform and Singular Value Decomposition for More Robustness and Higher Peak Signal Noise Ratio

Paper ID : 1570451524

Adam Nevriyanto and Erwin (Universitas Sriwijaya, Indonesia); Sutarno (University of Sriwijaya, Indonesia); Sri Desy Siswanti (Universitas Sriwijaya, Indonesia)

Abstract - This paper presents an image technique Discrete Wavelet Transform and Singular Value Decomposition for image steganography. We are using a text file and convert into an image as watermark and embed watermarks into the cover image. We evaluate performance and compare this method with other methods like Least Significant Bit, Discrete Cosine Transform, and Discrete Wavelet Transform using Peak Signal Noise Ratio and Mean Squared Error. The result of this experiment showed that combine of Discrete Wavelet Transform and Singular Value Decomposition performance is better than the Least Significant Bit, Discrete Cosine Transform, and Discrete Wavelet Transform. The result of Peak Signal Noise Ratio obtained from Discrete Wavelet Transform and Singular Value Decomposition method is 57.0519 and 56.9520 while the result of Mean Squared Error is 0.1282 and 0.1311. Future work for this research is to add the encryption method on the data to be entered so that if there is an attack then the encryption method can secure the data becomes more secure.

Keywords : *Discrete Wavelet Transform (DWT); Singular Value Decomposition (SVD); image steganography; Peak Signal Noise Ratio (PSNR); Mean Squared Error (MSE)*

Techno-Economic Analysis of Sea Floating PV/Diesel Hybrid Power Plant with Battery Arrangement Scheme for Residential Load at Remote Area in Indonesia (Case Study: Small Kei Island, South East Moluccas)

Paper ID : 1570457385

Achmad Tofani (University of Indonesia, Indonesia)

Abstract - This study analyses the feasibility of the Sea floating PV (SFPV) system utilization in conjunction with diesel generator (DG) to supply the resorts at Small Kei Island, Southeast Moluccas, Indonesia. The SFPV system uses off-grid scheme with a specific scenario that is by dividing the battery into three equal parts which are used interchangeably in order to reduce the fluctuation of the output power generated by DG at once to meet the daily load requirement for 24 hours. The impact is the battery charge cycle changed to twice in three days, thus the battery life will increase to 1.5 times longer. In this study, the economic analysis is done with the loan interest of 10% and the operating time for 25 years. With electricity tariff of 1 USD/kWh obtained the most feasible and profitable combination of capacity of DG and SFPV systems is 130 kW and 20 kW respectively. The combination yields the duration of PBP for 9 years 0 months and 9 days, NPV of 36,545 USD, IRR is 11.65%, and PI ratio is 1.016.

Keywords : *Sea floating PV; Off grid; PBP; NPV; IRR; PI*

Optimal Route Driving for Leader-Follower Using Dynamic Particle Swarm Optimization

Paper ID : 1570457551

*Bambang Tutuko (Sriwijaya University, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia);
Putri Sahayu (Intelligent System Research Group, Universitas Sriwijaya, Indonesia)*

Abstract - The mobile robots rely on trajectory generation problem when they are navigating in several environments, for achieving the best path. One of the solution by using a heuristic method, named Particle Swarm Optimization (PSO). In the previous study, by using such method, the mobile robot can find the best route towards the target without collision, moreover, its simplicity in algorithms, implement easily and has few parameters to regulate. However, the PSO original algorithm can't guarantee to produce an optimal solution. Local optimum still occurs especially in complex and dynamic environments, due to premature convergence. It causes the mobile robot collisions with obstacles and generates the long path to the target. In this paper, dynamic PSO is developed by using dynamic inertia function in setting parameter to accelerate convergence and re-initialization of particles performed to overcome the premature convergence. The comparison with three algorithms, such as OPSO, GPSO, and DPSO have analyzed in this paper. The proposed DPSO algorithm produce the optimum solution faster with the convergence of fewer than 150 iterations in static obstacles and 200 iterations on the moving obstacle, 4% shorter traveled lengths, 13% more smooth, with fast processing and it guaranteed to avoid collisions and stable movement to achieve the target.

Keywords : *Route Optimization; Non-holonomic; Leader-Follower; Particle Swarm Optimization*

A 250 kW Three Phase Induction Motor Design for Electric Bow Thruster

Paper ID : 1570459977

Asep Andi Suryandi (BPPT ; ITB, Indonesia); Cuk Supriyadi Ali Nandar (Agency for the Assessment and Application of Technology, Indonesia); Dewi Rianti Mandasari and Katri Yulianto (BPPT, Indonesia)

Abstract - Induction motors are widely used almost in all applications due to its simple construction and design. The applications are not only in industrial applications but also in maritime applications. This paper presents a design process for a three-phase induction motor with high torque and low speed for electric bow thruster applications. First of all, motor capacity is based on the naval architect. Capacity determination based on ship weight and dimensions. Then, the motor calculation with the mathematical approach is described. Those mathematical approaches are used to find out major geometries of the motors (for eg. stator windings, rotor bar, stator and rotor core dimensions). Finally, the motor performances are analyzed with MATLAB. This paper also shows the impact of air gap distance for motor performances.

Keywords : **Induction motor design; maritime; high torque; low speed; bow thruster; MATLAB; air gap variations**

Electronic Transaction Device Based on Contact Smart Card Using Programmable System-on-Chip

Paper ID : 1570461464

Trio Adiono (Institut Teknologi Bandung, Indonesia); Reynhart Malingkas and Adi Candra Swastika (Bandung Institute of Technology, Indonesia); Syifaul Fuada (Institut Teknologi Bandung, Indonesia)

Abstract - The advancement of technology brings new innovation on how a transaction will be done. In this work, we designed an electronic transaction device using a programmable system-on-chip (SoC). The system development starts by following tasks: 1) designing the hardware part of the device, 2) designing the operating system (OS), and 3) designing the main application as a GUI that uses to check the balance, top up, and make a payment. We also developed the application in the server that serves as a logger. This device used a contact smart to make a transaction.

Keywords : *Electronic transaction device; Smart card; SoC*

Visual Servoing Design and Control for Agriculture Robot; a Review

Paper ID : 1570462050

*Tresna Dewi (Politeknik Negeri Sriwijaya, Indonesia); Pola Risma (Sriwijaya Polytechnic, Indonesia);
Yurni Oktarina (Polytechnic Sriwijaya Palembang-Indonesia, Indonesia); Selamat Muslimin (State
Polytechnic of Sriwijaya, Indonesia)*

Abstract - At the beginning of its application, arm-robot manipulator worked blindly in completing the assigned task, and along with the improvement of camera technology as it is getting cheaper and smaller, the application of visual sensor lead to visual servoing control which utilized target detection as the input to control/move the end-effector of an arm-robot. The application of camera in arm-robot manipulator is divided into eye-in-hand where a camera is mounted to the robot, and eye-to-hand where the camera is fixed elsewhere. Visual control involves kinematics modeling and target position in image plane provided by image processing to ensure the motion accuracy in grasping and harvesting the fruit. This paper discusses the design of visual servoing control of an arm-robot manipulator applied in agriculture.

Keywords : **Agriculture; Eye-in-hand; Eye-to-hand; Image-processing; Visual servoing**

Comparative Analysis of Applications Off-Grid PV System and On-Grid PV System for Households in Indonesia

Paper ID : 1570463060

Aryulius Jasuan, Zainuddin Nawawi (University of Sriwijaya, Indonesia); Zainuddin Nawawi (Tridinant University, Indonesia)

Abstract - In Indonesia, approximately 89.75% of the overall electricity generation using fossil fuels and only 10:25% generation using renewable energy, namely the generation with hydropower, geothermal power and generation with Solar power and wind power. The use of fossil energy such as coal, gas and Petroleum will lead to environmental degradation. To help reduce environmental degradation required an alternative to the use of renewable energy such as solar energy through power generation in bulk. In this paper will discuss solar power generation is technically and economically, how much the generation cost per kWh for each scheme to the generation of solar power off grid pv roof top systems and grid connected photovoltaic (PV) system. Two schemes were made to quantify the generation cost per kWh for off grid and grid connected PV system based on the price of the components for the city in Indonesia. The cost of power generation per-kWh for off grid and grid connected, respectively Rp 4.774 and Rp. 1.279 compare to PLN tariff Rp1.467,28

Keywords : *Solar Power; off grid pv system; on grid pv system*

Game Complexity Factor: A Collaborative Study of LeBlanc Taxonomy and Function Points Method

Paper ID : 1570463293

Renny Sari Dewi and Trias Andari (Universitas Internasional Semen Indonesia, Indonesia)

Abstract - In 2015, President of Indonesia established Bekraf—stands for Badan Ekonomi Kreatif (Creative Economy Association of Indonesia)—through Presidential Regulation (Perpres) number 6. The purpose of establishing Bekraf is to enable creative business actors to collaborate with government in developing this nation's entertainment industries. Nowadays, game is accepted as an alternative form of education. Therefore, the researchers aim to assist the business of digital creative field to estimate computer game development effort. This research is based on Function Points (FP) method, which is better known as cost calculation of software application development project. The result of this study shows the need to modify the definition of computer games' parameters, including input, output, inquiry, internal file logic, and external file logic. Besides that, the complexity factors should be redefined and synchronized with 8 items of LeBlanc Taxonomy. Then, its collaboration is named Game Complexity Factors (GCF), consists of 22 items of complexity factors—8 items from LeBlanc Taxonomy and the rest from technical complexity.

Keywords : *function points; game complexity; complexity factor; game development; game estimation*

Techniques for Analysis of Chaotic Pulse Trains Generated by Lightning: A Review

Paper ID : 1570463323

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Abstract - This paper presents an overview of chaotic pulse trains (CPTs) analyzing techniques in recent years. Many techniques had been used such as time domain analysis, frequency analysis, power spectrum density, wavelet analysis, high-speed camera analysis, VHF interferometer technique, X-ray radiation and the list goes on. It was found that a lot of researchers suggest to interpret CPTs as a kind of pulse activity produced by the dart phase of subsequent leader or a result of the superposition of several regular pulse bursts produced by dart leader type discharge processes in the cloud. The similarity between the all reported previous studies in both chaotic and regular pulse bursts strengthen this suggestion. The characteristic of chaotic pulse train had also been reviewed in this study. Some authors also suggest that whenever a "chaotic" component is present in a subsequent leader, the HF intensity increases dramatically. It also suggested that the downward dart leader gets very bright and travels to ground with "chaotic" leader behavior. Speed of the downward leaders (associated with CPTs) from some researchers also been discussed in this paper. It is also suggested that power spectrum density may be one of the method to identify CPTs from another subsequent leader. Several hypothesis on the origin of the CPTs was discussed. In future research, more research and analysis should be done in order to clarify the physical phenomena happen behind chaotic pulse train that occurred in between return stroke or cloud flashes.

Keywords : lightning; chaotic pulse trains; techniques; analysis; review

Design and Implementation of Analog Transceiver Circuit for Patient Monitoring System Based on OWC

Paper ID : 1570463541

*Trio Adiono, Radhian Ferel Armansyah, Amy Hamidah Salman, Syifaul Fuada (Institut Teknologi
Bandung, Indonesia)*

Abstract - This paper would provide the design and implementation of analog front-end (AFE) module for visible light and infrared communication by a duplex link. The communication link will go through by visible light as a downlink communication and infrared as an uplink communication. Design environment will follow an indoor wireless communication standard and also implemented for patient monitoring system application. Therefore, the external light source from lamp and sunlight will be considered as external noise. This design is compatible with digital modulation especially for On-off Keying (OOK) modulation up to 25 KHz optical frequency for visible light and 1500 Hz optical frequency for infrared and implemented with the microcontroller. The output from modules is a digital waveform; then it is connected to microcontroller's GPIO. The zero angle communication distance can reach up to 2 meters and 80 degrees Field of View (FOV).

Keywords : *Analog front end; visible light; infrared*

Removal of Modulo as Hashing Modification Process in Essay Scoring System Using Rabin- Karp

Paper ID : 1570463652

Errissya Rasywir (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Hendrawan Hendrawan and Marrylinteri Istoningtyas (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia)

Abstract - The evaluation of study by essay can be better than an objective evaluation. Various e-learning (eg Moodle & Dukeos) can help evaluate quickly, but most e-learning is still not automated for the essay. This research builds Essay Scoring System with LSA Method using Rabin-Karp. We also experimented and modified the Rabin-Karp algorithm by removing the modulo process on the Hashing technique used in Rabin-Karp. This process is done with the assumption that modulo can generate a non-unique hashing value so that this value can affect the result of matching key and answer. The data used is the answer from Graph Student Computer Exam on STIKOM Dinamika Bangsa Jambi. The results of this study assess the error 1.062989982. The percentage of errors obtained from the experiments conducted by the essay case obtained the number 14.732% and the accuracy of 85.27678%. This shows that matching results can still be categorized well because the results are above 70%. Modification of the Hashing process performed on this method has been quite successful in improving the matching syntax matching of words

Keywords : *Rabin-Karp; Essay; Hashing; Modulo; Software*

Real Time Detection on Face Side Image with Ear Biometric Imaging Using Integral Image and Haar-Like Feature

Paper ID : 1570463667

Fachruddin Fachruddin (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Yovi Pratama (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Errissya Rasywir (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Desi Kisbianty (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Hendrawan Hendrawan and Maria Borroek (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Palembang, Indonesia)

Abstract - It is well known that there are no CCTV recordings that accurately record human movement directly against the camera. Sometimes more often the recording only shows the figure of a human face from the side. Face detection is used to search or identify facial data from faces with different expressions and backgrounds. Effective identification methods are required in real time based on certain characteristics. Various studies have been developed on Facial Recognition and Expression. However, most of the analysis comes from the face from the front side. To deal with the problem, it is necessary to develop research on the face from the side. In biometric ear biopsy. Because the ear is one of the unique biometrics that can be analyzed. This research uses Integral Image, Adaboost and Haar-Like techniques. Direct test via laptop webcam with the object facing from the side. The result of this research is that the system successfully classifies 33 ears that can be detected by adaboost technique from 60 ear database which has been labeled manually. Of 33 ear detected there are 29 ears that can be classified correctly. So the accuracy is 88%. Fault tolerance of ear position 45.07 / 345384 or 0.01% in data testing. The use of Haar-Like Feature as a special feature for facial biometric (Face Recognition) has been successfully used as a biometric ear detector on the side of the face image.

***Keywords* : Biometric; Real Time,; Adaboost,; Integral-Image,; Haar-Like**

Automatic Cost Estimation Analysis on Datawarehouse Project with Modified Analogy Based Method

Paper ID : 1570463673

*Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Errissya Rasywir (Sekolah Tinggi Ilmu Komputer
Dinamika Bangsa Jambi, Indonesia)*

Abstract - The approximate cost of software is the success of the project determinant. Before determining the estimated cost of the software, it must first estimate the effort, because the business is a component that affects almost all cost objects. In this study used Analogy Modification method that will be implemented in a system to estimate the cost of building datawarehouse automatically. The data used is Datawarehouse UNSRI data development project. From the value of automated estimation result by MRE system equal to 1,735888282 with effort value equal to 20,97, it can be concluded that the error value generated is big enough above 0 (zero). This suggests that price estimates by software engineering techniques, especially Software Cost Estimates using Analogy Modification Methods, are significantly different from the actual field price or pricing. After the observation between the approximate price and the actual price offered in the field it can be stated that the price of data warehouse in the field is highly valued at low. It does not even reach 50% of the estimated price.

Keywords : *Effort; Cost; Estimation; Modified-Analogy; Datawarehouse*

Analysis on Knowledge Layer Application for Knowledge Based System

Paper ID : 1570463676

Maria Borroek and Errissya Rasywir (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Fachruddin Fachruddin and Marrylinteri Istoningtyas (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia)

Abstract - In building a knowledge-based system, the system must have 4 (four) layers as modules integrated in the system. The modules are a unity in a knowledge-based system. According to the researchers, this knowledge layer module can be separated as a separate application, especially when it wants to update knowledge, so when it wants to build a knowledge-based system, we only need to build 3 layers apart from the knowledge layer. Based on this, the researchers tried to build the Application Knowledge Layer Management as a separate application. System modeling method used by UML (Unified Modeling Language). We then developed a Knowledge Layer management app that serves as a separate module for managing the knowledge layer on a knowledge-based system. This process includes designing user interfaces, encoding and testing. To evaluate the output, the system will be tested using black box testing. We also analyze the efficiency of building a knowledge-based system that uses this layer application. Of the four models of this layer management application. The highest average is 6,714 of scale 7 and the lowest score is 5,429 of scale 7. The highest value is available in the input feature (manual input manually). Meanwhile, the lowest value is in Match-process (rule-driven) for each iteration. On average 70%, application layer management is feasible to be used as an engine in system development

Keywords : Knowledge-based; System; Analysis; Software; Engineering

Comparative Study; Different Types of PWM Control Scheme in Three-Phase Four-Wire Shunt Active Power Filter (APF) Topology

Paper ID : 1570463775

Ahmad Shukri Abu Hasim (Universiti Pertahanan Nasional Malaysia, Malaysia); Zulkifilie Bin Ibrahim (Universiti Teknikal Malaysia Melaka, Malaysia); Syed Mohd Fairuz Syed Mohd Dardin, Akram Abdul Azid and Asnor Mazuan Ishak (Universiti Pertahanan Nasional, Malaysia)

Abstract - This paper focus on the comparative study for five commonly harmonics extraction methods through different types of pulse-width modulation (PWM) designed for three-phase four-wire shunt active power filter (APF). Three harmonics extraction methods consist of instantaneous reactive power theories (IRPT) which are p-q method, modified p-q, and p-q-r method, whilst two other methods are stationary reference frame and vectorial method. Two types of PWM namely; carrier and hysteresis current control were implemented for generating the injected current which are then feedback to the system for correction. The comparison was examining using MATLAB/Simulink (MLS) environment. The results revealed that continuous total harmonics distortion (THD) was establish when applying the hysteresis current control while the p-q-r method produce the preminent performances in THD reduction with elimination of the neutral current harmonics.

Keywords : *shunt APF; instantaneous reactive power theory; PWM modulation technique; total harmonics distortionshunt*

Performance Consideration in Signal Acquisition for High Dynamic Application in Tropical Environment

Paper ID : 1570463900

Syed Mohd Fairuz, Syed Mohd Dardin and Akram Abdul Azid (Universiti Pertahanan Nasional Malaysia, Malaysia); Zuhairi Abdul Rashid (Universiti Pertahanan Nasional Malaysia ; Engineering Faculty, Malaysia); Asnor Mazuan Ishak and Ahmad Shukri Abu Hasim (Universiti Pertahanan Nasional Malaysia ; Engineering Faculty, Malaysia)

Abstract - The signal acquisition stage in GNSS receiver is considered the first step in the baseband processing after the signal has been down-converted by the front end. The signal components consist of a spreading code, residual carrier frequency that has been down-converted to an intermediate frequency and a navigation data. Acquisition phase aim is to coarsely estimate the code delay that shifted due to propagation delay and the carrier frequency that has been heavily influenced by Doppler. In the high dynamic application such as UAV will face an enormous problem in trying to acquire the signal especially when it is used in a harsh type of environment such as under the canopy tropical environment. An in-house synthetic raw signal is generated and the receiver processing using different acquisition strategy is being implemented using MATLAB®. This paper will evaluate the performance of a few acquisition techniques when dealing with GPS L1 signal and further proposed the best strategy when dealing with such condition.

Keywords : **Signal acquisition; High dynamic; Tropical environment; UAV**

Face Movement Detection Using Template Matching

Paper ID : 1570463919

Ahmad Zarkasi (Universitas Sriwijaya, Indonesia); Siti Nurmaini and Deris Stiawan (University of Sriwijaya, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya ; Unsri, Indonesia); Huda Ubaya (Universitas Sriwijaya, Indonesia); Yogie Sanjaya and Yesi Novaria Kunang (Sriwijaya University, Indonesia)

Abstract - Face recognition process can be used for individual verification and identification. Generating an image that can be used for identification, manipulation, modeling, pattern recognition, and object search is the main thing on face area determination. The template matching method used the intercourse between the input image pattern and the referral face pattern along with its features. In this paper will be purposed about face detection use template matching method on movement face. The technique used is to determine the face region by separating the skin region to non-skin region. Detected face area is dynamic. Faces can move horizontal or vertical. Then the results of the process is a face image model. The face image model will show whether the skin is a face region, which will also produce coordinates of the face region.

Keywords : *Face recognition; template matching; movement face detection*

Fast Fourier Transform (FFT) Data Sampling Using Hamming and Blackman Method for Radar

Paper ID : 1570463927

*Sulis Tyaningsih (Indonesian Institute of Science (LIPI), Indonesia); Prasetyo Putranto, Winy Desvasari
and Pamungkas Daud (Indonesian Institute of Sciences, Indonesia)*

Abstract - In this research, experiments on signal processing on radar system is conducted. Inside radar system, digital signal processing (DSP) in Analog Digital Converter (ADC) module is necessary for obtaining the results of image detection using filtering, sampling and windowing method. Filter is defined as a process or a circuit that passes certain desired frequency bands and suppresses unwanted ones. One of the methods in designing a Finite Impulse Response (FIR) digital filter is windowing method. In this study, Hamming and Blackman window type are used. Testing is done by taking 512, 1024 and 16384 frame length. Simulation and implementation is done for all frequency bands. Parameters tested in this filter implementation are amplitude response and signal-to-noise ratio (SNR). Simulation result showed no significant difference among those frame lengths.

Keywords : radar; DSP; signal; Blackman; Hammingradar; DSP; signal; Blackman; Hamming

Multistage Scanning Method on 64-Channels ECVT Sensor

Paper ID : 1570463953

*Arbai Yusuf, Agus Santoso Tamsir, Dodi Sudiana, and Harry Sudiby S. (Universitas Indonesia ; C-Tech
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Abstract - This research proposes a scanning method on capacitance tomography known as Electrical Capacitance Volume Tomography (ECVT). This study discusses a new scanning method i.e. multistage scanning used to retrieve data from 64-channel capacitive sensor. The scanning process is divided into six groups which is each group can scan up to 24 electrodes. The experimental result were performed at each sensor level, followed by the first group on a multistage scanning, and finally for all 64-channel electrodes. The pattern of capacitance data in each group has a similar however its value is different. A adjacent of electrodes pair produce a capacitance value of about 0.8 pF to 1.5 pF, while the opposite of electrodes pair produce a capacitance value of about 0.2 pF.

Keywords : *ECVT; capacitive sensor; multistage scanning; stray capacitance*

An Improved Circuit-Based Grounding Electrode Considering Frequency Dependence of Soil Parameters

Paper ID : 1570463971

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Zulkurnain Abdul-Malek (University Technology Malaysia, Malaysia)

Abstract - This paper presents the simulation of circuit-based grounding electrodes with the consideration of frequency dependence of soil parameters, namely, the soil resistivity and the soil relative permittivity. This study was limited to a single vertical grounding electrode. Sundae and Dwight equations were used to determine the circuit parameters. Scott's model was used to simulate the frequency dependence effect. Soil resistivity of 100 Ωm , 300 Ωm and 1000 Ωm were considered in this study. Results show that there is a difference of 3.65% in voltage responses as a result of the frequency dependence effect taken into consideration at highest soil resistivity of 1000 Ωm , while 1.41% error for lowest soil resistivity of 100 Ωm . A case study was conducted to further validate the results, and the results show the peak response of higher soil resistivity (1000 Ωm) give 3.32% lower compared to frequency independent model, while the difference of less than 1% was found for the low soil resistivity case (10 Ωm). It shows that frequency dependence of soil resistivity and relative permittivity should be considered in transient analysis to obtain accurate results.

Keywords : *circuit-based; frequency dependence of soil; resistivity; relative permittivity; grounding*

Radar Software Development for the Surveillance of Indonesian Aerospace Sovereignty

Paper ID : 1570464006

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Abstract - This research, the manufacture and development of air radar software using QT creator application. The manufacture of air radar software is done with 2 stages, the first design with flowchart and programming with the process of coding. Radar software integrated with hardware that must be able to display the results of the detection of radar objects can be sorted. From the results of radar detection, all flying objects that are able to reflect radar reflection will be in the show, whether cloud, bird, or mountain and even tall buildings, as long as still in the radar detection area. To only see moving objects in the form of high-speed aircraft, used MTI feature. Developed radar software is also capable of tracking objects and using guardzone feature as an observation area. There are 2 types of guardzone that can be created, arc (and circle) To set the area of the zone to be created, enter the inner range, outer range, start bearing, and end bearing.

Keywords : radar; air; display; MTI; tracking

Design of a Solar Micro Power Plant for Home Lighting

Paper ID : 1570464020

Julie Rante, Alexander Patras, Lianly Rompis (Universitas Katolik De La Salle Manado, Indonesia)

Abstract - Indonesia is a country located on the equator so that Indonesia is often referred to as one of the tropical countries in the world. Countries with tropical climate usually have two kinds of seasons, dry season and rainy season. Being on the equatorial line, Indonesia has a constant supply of sunshine throughout the year. Given the high intensity of sunlight, Indonesians should be able to utilize sunlight by developing and constructing Solar Power Plants, PLTS. This solar power plant is very beneficial for remote hinterlands and isolated islands where it is not covered by electricity from PLN. This power plant is made by using solar thermal receiver panel, Solar Cell. This paper discusses the method of design and manufacture of solar power plants for a home. It includes literature study, observation, design, and implementation. The result of making this PLTS gives a basic solution in designing solar micro plant for home lighting, and conducting better improvements in the future. It is expected to be a solution for rural communities left behind or can be a solution for urban communities who often experience power cuts with energy efficiency and affordable prices.

Keywords : *micro power plant; solar cell; equatorial line; PLTS; PLN*

Distance Effect on Lightning Electromagnetic Pulse over Lossy Ground

Paper ID : 1570464179

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Engineering, Universitas Sriwijaya, Indonesia)*

Abstract - Electromagnetic pulses produced by lightning return strokes travel both above and underground for long distances. Lightning electromagnetic pulses caused significant effects and disturbances on the function of nearby systems such as power, communications, and etcetera. Electromagnetic fields propagate over long distances in both above and under the ground. This study aims to increase comprehension on the effects of frequency dependent soil and travel distance on the lightning electromagnetic field propagation. The modified transmission line with exponential decay (MTLE) model was used to represent the lightning return stroke channel. The return stroke channel and electromagnetic propagation models were simulated using finite element analysis via COMSOL software. The observed electromagnetic components are radial and vertical electric fields, and azimuthal magnetic fields for various observation distances from the lightning channel. The effect of soil water content on various parameters of observed fields were studied. The field peak values, waveshapes, and polarities for both above and under ground locations are influenced by the observation distance.

Keywords : **LEMP; Finite element analysis; Lossy ground; Water content; Distance effect**

Benchmarking Low Latency Kernel and Xenomai for a Network Gateway Encryption Application

Paper ID : 1570464182

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Abstract - In past years, development of Real Time Operating System has been growing rapidly. What makes RTOS different with General Purpose Algorithm (GPOS) is its ability to interrupt and take over CPU by a high priority task. While GPOS focused on promotes fairness and high throughput. Every RTOS has different characteristics. We need data to decide which RTOS most suitable to support network application with set of its characteristics. To gather this data, we compare performance of two free and open source RTOS: Low Latency Kernel and Xenomai in serving a real time application. RTOS performance assessed through performance of a network gateway encryption application. We use three performance metrics; processing time, jitter, and throughput. Test result shows that in overload condition, low latency kernel is able to perform better than Xenomai by delivering higher throughput and more predictable processing time. In low load condition, Xenomai is able to process packet faster than low latency kernel.

Keywords : *Real Time Operating System; Real Time Application; benchmark; low latency kernel; Xenomai*

Identification of the Reproductive Apparatus of Tarantula Genus *Brachypelma* Using Linear Discriminant Analysis Method

Paper ID : 1570464231

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Abstract - Tarantulas are animals that rely on exoskeleton for muscle support. Tarantula has two male and female reproductive apparatus. Male tarantulas have a short span of time, compared to female tarantulas that have a long life span. *Brachypelmas* is a species of tarantula that has its own uniqueness or characteristic that in most male and female appearance is an almost identical tarantula, which are not visible the difference of the reproductive apparatus by naked eye. The problem in this paper is the difficult to identify the reproductive apparatus of the tarantula. To identify the reproductive apparatus of tarantula is not a cushy due to identify the reproductive apparatus of tarantula takes a long-time, even when they fail to molting the consequences is death. The goal of our work is to identify and predict the reproductive apparatus of the tarantula. Using the Linear Discriminant Analysis (LDA) method, we are identifying the reproductive apparatus by using discriminant function. The results of the experiment show, our proposed method performs more accurate than other methods (i.e. 85%) with faster execution time of 2.1 Sec.

Keywords : *Tarantula; Reproductive Apparatus; Identification; Linear Discriminant Analysis*

The Consistency of Using Failure Mode Effect Analysis (FMEA) on Risk Assessment of Information Technology

Paper ID : 1570464242

Apol Pribadi Subriadi, Nina Najwa and Brigitta Cahyabuana (Institut Teknologi Sepuluh Nopember, Indonesia)

Abstract - A FMEA method assists in performing a risk analysis to provide an assessment for risk prioritization. The application of a FMEA method has weaknesses if it is applied directly to the actual environmental conditions of the company. Therefore, it is important to do consistency analysis of risk assessment result using FMEA method so it meet with the requirement and the company condition. Risk assessment in this study was conducted on one of the Public Banks in Indonesia performed by two of different team to determine the risk result obtained consistently or not. FMEA consistency analysis is done by gap analysis method and qualitative method to identify the cause of unequal risk assessment result. The results obtained on the causes of risk assessment using the FMEA method to be inconsistent are: (1) the method of prioritization used, (2) the procedures in assessing risk, (3) knowledge of resource persons, and (4) the ability of facilitators in conducting risk assessments using the FMEA method. This research is expected to show the result of consistency of FMEA method usage and recommendation for improvement of the adjusted FMEA method according to company condition.

Keywords : *Risk Management; Failure Mode Effect Analysis; FMEA Consistency*

Automated Examination Timetabling Optimization Using Greedy-Late Acceptance- Hyperheuristic Algorithm

Paper ID : 1570464270

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Abstract - Due to its NP-hard nature, exam timetabling problem is one of challenging combinatorial optimisation problems. Therefore, it attracts researchers especially in operation research and artificial intelligence fields for decades. Since the problem is very complex, exam timetable in many universities is developed manually which is very time consuming. This paper presents a new hybrid algorithm, i.e. greedy-late acceptance within hyper-heuristic framework to generate exam timetable automatically. Greedy algorithm is used to generate initial solution, whereas late acceptance is used as move acceptance strategy. The algorithm is simple but proven powerful. The algorithm is tested over two datasets from real-world exam timetabling problem from Information Systems Department, Institut Teknologi Sepuluh Nopember (ITS). Over 11 different scenarios, the experimental results show that in addition to its ability to generate feasible solution, the algorithm also could produce more optimal solutions compared to the timetables generated manually.

Keywords : *Examination Timetabling Problem; Optimisation problem; hyper-heuristics; greedy algorithm; late acceptance algorithm; timetabling problem*

Artificial Neural Network for Health Data Forecasting, Case Study: Number of Dengue Hemorrhagic Fever Cases in Malang Regency, Indonesia

Paper ID : 1570464303

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Abstract - Dengue Hemorrhagic Fever (DHF) has become one of the most deadly diseases in the world. Diseases caused by Aedes-type mosquitoes are found in many tropical countries, one of them in Indonesia. Indonesia becomes the country with the highest number of DHF cases in ASEAN, even among the highest in the world. Malang Regency is one of dengue endemic areas in Indonesia. DHF's current handling strategy is more reactive than anticipatory. As a result, the opportunity to prevent transmission and control the epidemic is reduced. On this basis, efforts should be made to deal with DHF cases. One effort that can be done is to predict the number of dengue cases that will occur in the future. With the forecasting, Malang District Health Office can immediately formulate strategies and take precautions quickly. Also required visualization on the map to show the spread of dengue cases so easy to do the analysis. Artificial Neural Network Method (ANN) is used to predict the number of dengue cases in Malang Regency. The independent variables used as input are the number of dengue cases in each neighboring Puskesmas (Pusat Kesehatan Masyarakat or Community Health Centers) and weather conditions in Malang Regency. After the forecasting, the results obtained are then visualized using the Google Maps API. The Google Maps API provides the ability to display each of the Puskesmas points along with a description of the number of forecasting cases on a Google Maps map through a web browser. This research produced a model that can predict the number of dengue cases in Malang Regency and visualization capable of displaying the spread of cases.

***Keywords* : forecasting; visualization; artificial neural network; google maps API; dengue fever**

Power Generation from Wave Energy Using Floating Device

Paper ID : 1570464569

Asnor Mazuan Ishak, Ahmad Shukri Abu Hasim, Syed Mohd Fairuz Syed Mohd Dardin and Akram Abdul Azid (Universiti Pertahanan Nasional Malaysia, Malaysia)

Abstract - In Malaysia, there are a lot of islands that use diesel generators to generate electricity. This is because of expensive power connection from the grid system. However, when using the generators, it contributes to high pricing of diesel and difficult to distribute the supply to each island. Furthermore, the source is not sustainable and can affect environment due to carbon monoxide and carbon dioxide from the generators. Therefore, renewable energy sources have becomes an alternative solution for these problems. The advantages of using renewable energy are it is sustainable resources, produce clean energy, and low operating cost. One of the possible renewable energy sources is sea wave energy. There are few techniques to generate power from wave energy which are oscillating water column (OWC), tapered channel (TAPCHAN) and floating device. From this project, the technique of floating device was chosen because this technique is more affective and only requires small area of construction. SOLIDWORKS software was used to design the prototype for this project. From the result, the designed model can produce about 13mV. The effect of wave heights, number of turns, and diameter of coil wire were analyzed.

Keywords : *renewable energy; wave energy; SOLIDWORKS software*

Electricity Demand Forecasting of Household Sector in Papua Province 2050

Paper ID : 1570465365

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Abstract - Household sector electricity demand plays an important role in electricity demand forecasts in the short, medium, and long-term. This is due to the increasing electricity demand from year to year in line with the increase of the population, the electrification ratio (ER) and the people's welfare. This study is intended to simulate household electricity demand and the average electricity needs per household in 2016-2050 in some areas of Papua Province. Biak-Numfor Regency, Jayapura Municipality, Jayawijaya Regency, and Merauke Regency selected in this study to represent each of these areas. The method used is an exponential regression between HDI and average electricity consumption per household using system dynamics model based on historical data 2007-2015. A Powersim studio tool used to simulate the household sector electricity demand model. At the beginning of the simulation year obtained HDI were 71.47; 78.93; 55.03 and 68.41 respectively in Biak-Numfor Regency, Jayapura Municipality, Jayawijaya Regency, and Merauke Regency. At the end of the simulation, year obtained HDI were 83.65; 87.80; 75.88 and 83.56. Electricity demand of the household sector at the beginning of the simulation year was 55.128 GWh, 191.610 GWh, 34.425 GWh, 95.329 GWh. At the end of the simulation, the year was 126,473 GWh, 515,517 GWh, 141,321 GWh, 321,997 GWh. The average electricity needs per household at the beginning of the simulation year was 1,649; 2,810; 2,300; 2,019 in kWh/household. At the end of the simulation was 2,250; 5,466; 2,241; 4,0484 in kWh/household.

Keywords : HDI, electricity of the household sector; electricity is nee

Wavelet Analysis of the Onset of VHF and Microwave Radiation Emitted by Lightning

Paper ID : 1570465894

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Abstract - Lightning flash is an electrical discharge in air (dielectric breakdown) which emits electromagnetic (EM) fields across very wide spectra from a few Hertz up to visible wavelength. Electrical breakdown process is an important event that initiates lightning. For electrical breakdown process to occur, it must fulfill two conditions which are at least has one free electron and the electric field region is more than 3 MV/m. This process starts with electron avalanche in millimeter scale then grows into streamer in centimeter scale. Lastly, from streamer it will grow into leader in meter scale. It has already established that streamer emits intensely at Very High Frequency (VHF) band as it's already proven both theoretically and experimentally. A study by [1] theoretically proved that emission of electron avalanche peaks at microwave band. Air-gap parallel plate antenna which could operate at 1 GHz with remote sensing is designed and simulated to measure the microwave radiation emitted by lightning. Both temporal and wavelet analyses are used to compare the onset of microwave radiation and VHF radiation in both time and frequency domains to determine electron avalanche appears at which electromagnetic band.

Keywords : *electron avalanche; lightning; microwave; VHF; wavelet*

VHF Emissions Prior to the Onset of Initial Electric Field Changes of Intracloud Flashes

Paper ID : 1570465903

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Abstract - We present the observation of VHF impulses electric (E) field emissions found in two normal intracloud (IC) flashes accompanied by initial electric field changes (IECs) in a tropical thunderstorm. The data was collected on November 23rd, 2017 (within reversal distance) to our lightning sensor in Malacca, Malaysia. The durations from the onset of IECs to the first initial breakdown (IB) pulse are range between 0.68 and 0.69 ms and the magnitudes of IECs are range between 0.18 and 0.50 V/m. Besides that, before the onset of IECs there is small pulses was detected for IC flash (Nov_67) same with the VHF impulse for both IC flash. It was detected earlier before the onset of IEC by 12.69 and 251.60 μ s for the VHF impulse.

Keywords : *initial electric field changes; lightning initiation; tropical thunderstorm; very high frequency*

Performance Analysis of Stacked Capacitive Antenna for Lightning Remote Sensing

Paper ID : 1570465906

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Abstract - Antennas are the important elements in the lightning detection system. To improve performance of the lightning detection system, it is so necessary to improve the efficiency of the antennas. There are two types of antennas used in the system which are capacitive antenna for electric field sensing and loop antenna for magnetic field sensing [1]. Both of these antennas are big in size and causing inconvenient during set up. Thus, small and portable antennas are designed. It is so important to remain or improve the sensitivity of the antennas even though it is small in size. Stacking method is used in capacitive antenna by increase copper plate layer in between the parallel plate antenna. After prototype the multi-stacked capacitive antenna, performance analysis is carried out. Performances of the antennas are compared using CST simulation and hardware set up. Multi-stacked capacitive antenna is compared with the single plate antenna and found that the performance of the antenna increases as the stacked number increases.

***Keywords* : Capacitive antenna; lightning remote sensing**

Using Metadata in Detection Spam Email with Pornography Content

Paper ID : 1570465907

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Abstract - Spam or junk email is a disturbance in email service. They usually have contents that cause inconvenience to users such as electronic news, advertisements, and other things. One of the most troubling contents of spam email is pornography. In this work, we focus on developing a general framework of spam detection which related to the pornographic content. We utilize metadata which has been ignored in detecting spam. The principle of information retrieval is implemented by tracing the URLs which are listed in the email and then obtain the metadata keywords from the page which those URLs pointed. Next, after the similarity calculation and the spam has been detected then the notification is released to dump the email automatically into a spam folder.

Keywords : **spam; pornography detection; metadata; jaccard similarity; email filtering**

The Performance Evaluation of Capacitive Antenna with Various Structures and Permittivity Values

Paper ID : 1570465909

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Abstract - This paper evaluates the capacitive antenna performance as a lightning sensor. The performance is evaluated by looking at two aspects, antenna structures and the background permittivity value of the antenna. Two experiments were carried out, Experiment A - using two different structure antennas, one with its Bayonet Neill-Concelman (BNC) connector's core direct touching the top plate (DBNC) while the other was connected via single core wires (WBNC), capturing the electric field (E-field) generated by the small spark at a distance of 1 meter away from both antennas. Furthermore, both capacitive antennas with top plates directly soldered to their BNC cores were used to study their performance with and without being covered by plastic (dielectric constant of 2.25) during Experiment B. The result from Experiment A showed that WBNC has different onset polarity and significant decreased in amplitude of the signals captured compared to DBNC (mean ratio is 1.095 with range between 0.5838 and 4.528). Meanwhile, Experiment B shows that a comparable average ratio of 0.7835 and 0.7447 during the measurement where antenna Awc with and without the presence of plastic cover respectively.

Keywords : *capacitive antenna; lightning sensor; small spark; dielectric constant*

Enhancement of the Fuzzy Control Response with Particle Swarm Optimization in Mobile Robot System

Paper ID : 1570466026

*Siti Nurmaini (University of Sriwijaya, Indonesia); Febrina Setianingsih (Universitas Sriwijaya,
Indonesia)*

Abstract - Membership functions (MFs) play a crucial role in Fuzzy Logic based decision-making systems. However, in the fuzzy logic design, to select the value of MFs is difficult. Such process always using a trial and error way based on the linguistic from the expert and some works resulting in poor response. Hence, the selection of optimal MFs is desirable. In this research, the optimization method based on Particle Swarm Optimization (PSO) algorithm is applied to tuning the fuzzy membership functions. The method is implemented to control the position and orientation DDMR. By using such method, the fuzzy control produces good response in terms of fast rise time, minimum maximum peak overshoot and fast time to reach the steady-state condition.

Keywords : *Control System; Mobile Robot; Kinematic Model; Fuzzy Logic; Particle Swarm Optimization*

Automatic Features Extraction Using Autoencoder in Intrusion Detection System

Paper ID : 1570467025

Yesi Novaria Kunang (Universitas Sriwijaya, Indonesia); Siti Nurmaini and Deris Stiawan (University of Sriwijaya, Indonesia); Ahmad Zarkasi (Universitas Sriwijaya, Indonesia); Firdaus Firdaus, F , Jasmin (Universitas Sriwijaya ; Unsri, Indonesia)

Abstract - Intrusion Detection System (IDS) can detect attacks by Analyzing the patterns of data was captured on the network. The large amount of data that must be processed in the IDS. It is necessary to consider features extraction to reduce computation cost of raw information to be processed on the IDS system. Features extraction itself will transform the input data into features that have been extracted to speed up learning process and accuracy. These automatic features extraction research used a simple autoencoder and SVM to classify attacks on the Intrusion Detection System. We use various functions activation and loss to see how far this feature extraction feature can improve accuracy. In this approach, we used KDD Cup 99 dataset to evaluate the effectiveness of the detection mechanism after a features extraction reduces the dimensions of the processed data. From the proposed result, hyperparameter autoencoder using linear activation function and binary_crossentropy loss function gives best accuracy value than other function.

Keywords : *Intrusion Detection System; Machine Learning; Features Extraction; Autoencoder*

Dual Circular-Polarized Slot Antenna Design for Wireless MIMO System at 2.4 GHz

Paper ID : 1570467416

Nornikman Hassan and Badrul Hisham Ahmad, Mohamad Zoinol Abidin Bin Abd Aziz, Mohd Riduan Ahmad, Zahriladha Zakaria and Chew Siang (Universiti Teknikal Malaysia Melaka ; Hang Tuah Jaya, Malaysia)

Abstract - This work proposed a dual circular-polarized slot antenna for wireless LAN application at 2.4 GHz. This design is by means of FR-4 substrate as is based. In this work, three stages of antenna had been simulated in CST Microwave Studio. First two antenna, Design 1-A and Design 1-B is containing a single polarized antenna with different feedline port location. An X-shaped patch is located into the middle of the slot of length, LS at angle of 42.5 degrees. Then, dual feedline port antenna, Design B1 are designed to create dual circular-polarized effect. The return loss S11 results at 2.4 GHz of Design 2-A antenna are - 21.511 dB and - 28.48 dB for simulation results and measurement results, respectively. For axial ratio for Port 1 and Port 2 are 0.63 and 1.12, respectively. In the end, the simulation and measured antenna had been compared.

Keywords : *wireless MIMO system; circular-polarized antenna; patch antenna; wireless LAN*

A Comparison of Back Propagation Neural Network and Elman Recurrent Neural Network Algorithms on Altitude Control of Heavy-lift Hexacopter Based on Direct Inverse Control

Paper ID : 1570467900

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Abstract - The altitude control is one of the important factors in controlling the heavy-lift hexacopter. This altitude control needs precise control since the heavy-lift hexacopter moves based on the speed of its driving motors. This paper uses a control based on Direct Inverse Controller with Neural Network Algorithm. The algorithm which used in this paper is Elman Recurrent Neural Network compared with Back propagation Neural Network. The Back propagation is the most used algorithm in Neural Network. In the testing result, The Elman Recurrent Neural Network algorithm result in smaller MSE value and capable to keep up with given data test compared with Back propagation Neural Network algorithm.

Keywords : *Altitude Control; Backpropagation Neural Network; Direct Inverse Controller; Elman Recurrent Neural Network; Heavy-lift Hexacopter*

Emotional Design on User Experience-based Development System

Paper ID : 1570468087

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Abstract - In UX process, user as a center of process has crucial role in determining the quality of a system. So far, there are so many approaches conducted in order to involve user in the process. Involving user in the UX process not limited on a role as evaluator in the measurement. Moreover, user research, which is aims to excavate all about user more deep and broad. In order to excavate user in more deep and broad, we can dig their behavior, furthermore are their physiological and psychological aspects. Psychology and physiology theories related to the process of designing are reviewed. Result of this study is the overview of methodology proposed. The overview is conducted based on the strengthen ideas on the collaboration between UX process and User mental model theories deeply.

Keywords : *UX process; mental model; user-based development; psychology aspects; physiology aspects*

Review of Automatic Emotion Recognition Through Facial Expression Analysis

Paper ID : 1570468314

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(Universitas Indonesia, Indonesia)*

Abstract - Nowadays, the social intelligent machine is developed to be more human-like by understanding human emotion. Therefore, many researches attempt to capture nonverbal signals which visually appears on facial expressions to recognize human emotions. Face is being explored because face mostly reveals the emotion contains in it. Many researches on facial expression recognition have been done and delivered optimistic results, however continuous research must be afforded to increase the performance of some methods. This paper is written as a part of doctoral research study on human emotion recognition as an effort to depict and elaborate the roadmap of research on automatic emotion recognition. In this paper, firstly we describe about Social Signal Processing as the emotion recognition domain. Secondly, the analysis of a human emotion model. Thirdly, the method of Facial Expression Recognition (FER), followed by the description about state of the art research on FER. Lastly, we explore about the prospect of the next research on FER as a part of the development on this field.

Keywords : *facial expression recognition; social signal processing,; affective computing; emotion recognition*

Breast Cancer Classification Using Deep Learning

Paper ID : 1570468334

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Abstract - Breast cancer has been identified as the most widespread cancer amongst women and also the major cause of female cancer death all over the world. In this paper, we build the classification model of a person who is exposed to breast cancer based on recurrences-event and no-recurrences event. This classification using datasets from the University of Medicine Center, Institute Of Oncology, Ljubljana, Yugoslavia of the 286 datasets consist 2 classes, 201 No-Recurrences-Events classes, 85 Recurrences-events classes and 10 attributes including classes. The algorithm used for breast cancer classification is the Multilayer Perceptron algorithm with the accuracy level of 96,5% and high evaluation is 69,93% in 8-fold cross validation from 10-fold cross validation

Keywords : **deep learning; breast cancer; multilayer perceptron; classification**

Multisensors System for Real Time Detection of Length, Weight, and Heartbeat of Premature Baby in the Incubator

Paper ID : 1570468344

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Abstract - Premature babies inserted into the incubator will always be monitored progressively, especially the heart rate, body length, and body weight. The aims of this research are to design and to create an incubator that can detect the abnormalities of baby's heartbeat through the baby's fingers in real time. The incubator also able to measured baby's length and weight automatically. The systems also able to allow some notifications if any abnormalities have been occur. As a result, the heartbeat detector has a precision of $\pm 95\%$ when compared to a comparator heartbeat detector. The system also can measure the length and weight of the infant with the measurement results are closer to the reference instrument, which the average error is not more than 5%. The results are most likely is a good preliminary results in order to build a smart incubator.

Keywords : *pulse sensor; ping sensor; load-cell sensor; incubator*

Shaft Mechanical Design of 250 kW Electric Motor

Paper ID : 1570468697

Budi Fadjarin and Harry Purnama (BPPT, Indonesia); Muhammad Adhynugraha (The Agency for the Assessment and Application of Technology, Indonesia); Cuk Supriyadi Ali Nandar (Agency for the Assessment and Application of Technology, Indonesia)

Abstract - One part of the complexity in designing electric motors is to provide suitable mechanical support of the motors. BPPT is developing a 250 kW electric motor to be applied on 100 Teus container vessels. Minimum information available is used to design it from the scratch. To fulfil the design objective, that includes manufacturability with high local contents, the optimal design of shaft and the choice of suitable bearings are crucial. This paper provides the contribution of the shaft design and bearing calculation in the overall design of the motor. As supplication to the study, a numerical simulation based on Finite Element Analysis is also carried out.

Keywords : *design; shaft; bearing; electric motor; FEA*

An Analysis of Points System of Hotel Loyalty Program Based on the Return on Investment

Paper ID : 1570468826

Long Zuo and Hiroyuki Iida (Japan Advanced Institute of Science and Technology, Japan); Shuo Xiong (Huazhong University of Science and Technology, P.R. China)

Abstract - This paper explores the benefits of a sales promotion in the hotel industry known as the hotel loyalty program. The hotel loyalty program describes how customers accumulate and redeem their points in the framework of the program, and determines the number of benefits customers can receive. Five well-known hotel loyalty programs are chosen as a benchmark to assess their gamification effect with a focus on game sophistication and return on investment. A data-driven approach is employed to analyze the gamification techniques of the points system. The present contribution illustrates how the points system works and the real return on investment from the perspective of marketing. It also shows an advantage of its harmonious combination to attract more potential customers and retain the frequent customers.

Keywords : ***Hotel Loyalty Program; Return on Investment; Game Refinement Theory; Point System***

Using Pressure Sensors Towards Pipeline Leakage Detection

Paper ID : 1570470552

Kemahyanto Exaudi, Rossi Passarella and Rendyansyah Rendyansyah (Universitas Sriwijaya, Indonesia); Rido Zulfahmi (Sriwijaya University, Indonesia)

Abstract - Pipe leakage is one of the problems that can make costly for the company. Water, Oil, and Gas are the three natural resources in which the distribution uses piped media. The occurrence of a leaky pipe is caused by many factors such as environment, pipe resistance, illegal tapping and etc. This Research is aimed to detect leakage of pipes caused by illegal tapping. Illegal tapping is defining as theft by stabbing or tapping pipeline. The impact is a change in pressure between the upstream and downstream pipes. This pressure change will be detected by pressure sensors mounted upstream and downstream of the experimental pipe. This value then analyst using continues wavelet transforms for finding the difference time and frequency. Based on the results of the experiment, the pipeline leaked can detect.

Keywords : *Leaking Pipe; Pressure Sensor,; wavelet transformation*

Development and Validation of Rogowski Coil with Commercial High Frequency Current Transformer for Partial Discharge Detection

Paper ID : 1570470713

Mohd Hafizi Ahmad, Nur Hazirah Abdul Khalid and Abdul Hakim Muhammad Nasib (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia)

Abstract - This paper proposes a simple construction of a low cost air-core Rogowski coil (RC) sensor to measure PD pulse current by investigating the effect of winding turn number. In this study, the characteristic of the designed RC sensor was identified using Vector Network Analyser (VNA) prior to PD measurement in the laboratory. The selection of a suitable number of turn of winding for the RC has been identified to produce an optimal design of the sensor. The experimented performance of RC was compared and validated with a commercial ferrite-core high frequency current transformer (HFCT). Moreover, linear regression statistical methods have been used to validate the performance similarity between both sensors. This comparison shows a positive linear relationship and hence, validating the constructed RC with higher turn number was suitable for PD detection.

Keywords : *Partial Discharge; Rogowski coil; Vector Network Analyser; High Frequency Current Transformer*

The Development of MSMEs Promotion and Recommendation Application Based on Android with the Use of Collaborative Filtering Method and Google Firebase (Case Study: Salatiga City)

Paper ID : 1570471127

Radius Tanone and Yoga Adi Dharma (Satya Wacana Christian University, Indonesia)

Abstract - Micro small medium enterprise (MSMEs) is one of the important supports in the economic development of a certain region, including Salatiga. According to Salatiga's industry and cooperative office (Disperindagkop), there are 3.663 MSMEs in Salatiga and 1.450 of which have already registered. The main problem for the owners of MSMEs is the lack of facility in promoting the products, thereby it indicates that there should be media to help promoting MSMEs products. This research uses Collaborative Filtering method which is developed based on Android Platform to count the similarity value between products based on the rating given by the users, to get the recommended products for each user. Stages of collaborative filtering method include the calculation of the similarity value by using Adjusted cosine method. Furthermore, the calculation of prediction value, which is used as the recommendation value is done using weighted sum method, as well as the accuracy value calculation using Mean Absolute Error (MAE) method. A batch of datasets which will be processed first, are saved into cloud storage by utilizing Google firebase services

Keywords : MSMEs; Collaborative Filtering; Adjusted Cosine; Weighted Sum; Google Firebase; Mean Absolute Error

Function Points Method in Game Casual Context

Paper ID : 1570471210

Renny Sari Dewi (Universitas Internasional Semen Indonesia, Indonesia)

Abstract - Metode Function Points (FP) dapat dikatakan telah teruji dengan baik untuk mengestimasi effort ribuan proyek pengembangan perangkat lunak. Namun seiring berkembangnya mobile game, khususnya berjenis casual, yang dapat dimainkan oleh seluruh pengguna smartphone, maka penulis ingin membuktikan apakah metode FP juga demikian cocok untuk memprediksi effort produksi game casual. Metode FP umumnya memiliki 3 tahapan utama, yaitu membobot 5 parameter unadjusted FP, menghitung 14 faktor kompleksitas, dan menghitung adjusted FP. Setelah dilakukan survey terhadap 8 game casual, maka penulis mendapatkan nilai estimasi effort untuk masing-masing game casual. Kami menyimpulkan, metode FP sejatinya tidak cocok untuk diterapkan dalam penerapan mobile-casual game. Banyak faktor yang perlu disesuaikan jika metode FP digunakan pada studi kasus mobile-casual game, mulai dari 5 parameter input, faktor kompleksitas, konversi bahasa pemrograman, hingga productivity rate.

Keywords : *function points; effort estimation; mobile game; game effort*

1931(SMD) Configuration Array on Light Distribution on LED Lamp

Paper ID : 1570471448

*Herlina Wahab (Sriwijaya University, Indonesia); Rudy Setiabudy (Universitas Indonesia (UI),
Indonesia); Muhammad Rully Syahputra (Universitas Indonesia, Indonesia)*

Abstract - Electricity consumption is still dominated by utilization for lighting. Savings and optimization of energy management are obvious to achieve is by the selection of lights that can perform effectively and efficiently, one of them is operating the LED lights. The luminance values of the LED lights are impressed by the configuration of the LED array in the lamp circuit. This research aims to earn the appropriate LED array configuration to achieve the finest light distribution array. Experiments were carried out by assessing 5 LED lamps (Brand A, B, C, D, and custom) on the illumination level from several points to obtain the pattern of light distribution that appears in the work area when there are various configurations. From the assessment proceeds attained that the LED configuration of a circular shape involves a pattern of distribution of light that spread pursuing the work area. The light distribution on the E (Custom) LED lamp is better with a uniform distribution of angles from 0° to 180° with a rate 189% brighter than with LED D. The greatest illumination point of the five lights takes place at the measurement position at the center or at an angle of 90° .

Keywords : LED lamp; Illumination; Conguration; LED Array; Light Distribution

Different Types of Fuzzy Logic in Obstacles Avoidance of Mobile Robot

Paper ID : 1570471452

Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Andry Meylani (Politeknik Negeri Sriwijaya, Indonesia); Ciksadan Dansadan (State of Polytechnic Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia)

Abstract - This paper presents a comparison performance of T1FLS and IT2FLS with the simulation on matlab of mobile robot for obstacle avoidance in different environment, start-target point, and number of obstacles. A comparison is done by analyzing the time taken by the mobile robot in reaching the target on each type of FLS. Experimental result show that IT2FLS produce good performance compare to T1FLS, but IT2FLS has the disadvantages of processing algorithms a little longer.

Keywords : mobile robot; fuzzy logic; avoidance obstacles

Analysis of Counter-Strike: Global Offensive

Paper ID : 1570471563

*Muhammad Nazhif Rizani and Hiroyuki Iida (Japan Advanced Institute of Science and Technology,
Japan)*

Abstract - This paper explores the nature of multiplayer first-person shooter video games, which have been very popular. We have chosen Counter-Strike: Global Offensive (CS:GO) as the benchmark in this study. Many data from official CS:GO tournaments and public match are collected for the analysis, whereas game refinement measure is employed for the assessment with a focus on two aspects: gameplay and rounds system. The results show that the gameplay aspect has lower game refinement, i.e., the game is highly skillful, whereas the rounds system aspect has higher game refinement, i.e., the game is highly stochastic. The combination of the two aspects successfully balances the skillfulness and chance, which results in their popularity. In addition, since their release, CS: GO has sold more than 40 million game copies, awarded as "Best eSports Game of The Year" and updated maps and successfully maintain the game balance of the maps, as measured by game refinement.

Keywords : *game refinement; multiplayer first-person shooter video games; Counter-Strike: Global Offensive*

Measurement of Component Performance (Sensor) on Internet of Thing (IoT)

Paper ID : 1570471638

Sharipuddin Sharipuddin and Kurniabudi Kurniabudi (STIKOM Dinamika Bangsa, Indonesia); Benni Purnama (STIKOM Dinamika Bangsa Jambi ; STIKOM Dinamika Bangsa Jambi, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia); Darmawijoyo Hanapi (Sriwijaya University, Indonesia)

Abstract - This paper presents experiments on sensors/devices attached on an IoT system to measure their performance. An IoT system testbed is used and the sensor capability in term of accuracy and reliability is evaluated based on the data captured. Accuracy and reliability have important role in generating accurate sensing data. The analysis results would be used to as a benchmark in constructing policies in the development of Internet of Things (IoT) system espically in sensing part. We present the results of measurement of different type of sensors in the testbed using normal dataset as well as abnormal (attack) dataset to produce accurate and reliable IoT-based system so it could provide good information to the user

Keywords : *IoT; Sensing; IoT ArchitectureIoT; Sensing; IoT Architecture*

Preprocessing and Framework for Unsupervised Anomaly Detection in IoT: Work on Progress

Paper ID : 1570471642

Kurniabudi Kurniabudi (STIKOM Dinamika Bangsa, Indonesia); Benni Purnama (STIKOM Dinamika Bangsa Jambi ; STIKOM Dinamika Bangsa Jambi, Indonesia); Sharipuddin Sharipuddin (STIKOM Dinamika Bangsa, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia)

Abstract - A robust increasing on smart sensors in Internet of Thing (IoT) results huge and heterogenous data and becomes a challenge in data preprocessing and analysis for anomaly detection. The lack of IoT publicly available dataset is one issue in anomaly detection research. To resolve that problem, a testbed topology is proposed in this research. In addition, a high-dimensionality data analysis faces a computational complexity. This paper presents a global framework for anomaly detection in IoT and proposes a distributed preprocessing framework. Unsupervised learning approach has been chosen to reduce dimensionality of IoT data traffic.

Keywords : ***IoT; anomaly detection; feature extraction; feature selection; unsupervised learning***

An Integrated Child Safety Using Geo-fencing Information on Mobile Devices

Paper ID : 1570471711

Dinda Lestarini (Sriwijaya University, Indonesia); Sarifah Putri Raflesia (Universitas Sriwijaya ; Institut Teknologi Bandung, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya ; Unsri, Indonesia)

Abstract - In Indonesia, the child abuse has been huge problem as the number of case gains year by year. In this paper, the IT-based child abuse prevention is built by engaging the geo-fencing technique and gravity sensor. This paper is conducted to provide IT-based child protection that can facilitate the parents and government the children monitoring. The use of sensing module triggers the system to send notification to parents and systems server. Meanwhile, the geo-fencing technique aims to enable the feature of virtual fence which enable the parents to monitor the children.

Keywords : *Child Abuse; IT-Based; Sensor; Geo-fencing*

Monitoring Connectivity of Internet of Things Device on Zigbee Protocol

Paper ID : 1570471933

Benni Purnama (STIKOM Dinamika Bangsa Jambi ; STIKOM Dinamika Bangsa Jambi, Indonesia); Sharipuddin Sharipuddin and Kurniabudi Kurniabudi (STIKOM Dinamika Bangsa, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia); Darmawijoyo Hanapi (Sriwijaya University, Indonesia)

Abstract - Internet of Things (IoT) networks operators may not be fully aware whether each IoT device in their network is functioning safe enough from cyber-attacks. This paper develops an IoT traffic dataset with the purpose of network traffic analytics to characterize IoT devices, including their typical behaviour mode. We set up an IoT environment/testbed consists of several sensors/nodes and uses Zigbee communication protocol to collect and synthesize traffic traces. Normal dataset and anomaly/attack dataset are built using AES technique. We then perform the traffic analysis using key extraction technique. The analysis approach used in this work provides good results in differentiating anomaly from normal traffic.

Keywords : *Internet of things; zigbee; AES; key extraction; network tra*

Development of Computational Intelligence-based Control System Using Backpropagation Neural Network for Wheeled Robot

Paper ID : 1570471964

Karlisa Priandana, Iqbal Abiyoga, Wulandari Wulandari, Sri Wahjuni, Medria Hardhienata and Agus Buono (Bogor Agricultural University, Indonesia)

Abstract - This study aims to develop an optimal autonomous control system for a three-wheeled robot with two motors. The focus of this research is a neural network direct inverse controller system that is trained using backpropagation algorithm. Autonomous control system training is carried out by using the real data of manually controlled wheeled robot. This study analyzed the use of two Backpropagation learning algorithms namely Levenberg Marquardt Backpropagation and Bayesian Regularization Backpropagation, and compares 3 different controller network configurations, i.e. 13-10-2, 13-20-2 and 13-26-2. The simulation results revealed that the best control system network architecture is 13-10-2 which was trained using Bayesian Regularization Backpropagation algorithm. The training converged at the 178th epoch and produced training and testing mean-squared errors of 0.0173 and 0.0139, respectively. This result serves as early evidence that a neural network-based control system can be used for autonomous wheeled robots.

Keywords : *Backpropagation neural network; direct inverse controller; wheeled robot*

Optimal Kernel Classifier in Mobile Robots for Determining Gases Type

Paper ID : 1570472092

Nyayu Latifah Husni and Muhammad Muhaajir (Politeknik Negeri Sriwijaya, Indonesia); Ekawati Prihatini (State Polytechnic of Sriwijaya, Indonesia); Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Siti Nurmaini (Uni

Abstract - The use of TGS sensor and Arduino could create a robot to be capable of detecting and classifying some gases. In this research, 3 kinds of Kernel Classifiers are investigated. Robots equipped with 3 TGS sensors are used to classify gases. The robots are run in the experimental environment, when they detect the gas, they will get closer to the source and classify the gas type. The classified gas data is sent to the server in order to monitor the values that the robot got. The robots in this research used Xbee modul as a communication medium between robots and server.

Keywords : acetone; methanol; kernel classifier; TGS sensor; SVM

Optimal Gas Sensors Arrangement in Odor Searching Robot

Paper ID : 1570472112

Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia); Irsyadi Yani (Universitas Sriwijaya, Indonesia)

Abstract - This paper presents an analysis of an optimal sensor arrangement in Odor Searching Robot (OSR). 5 gas sensors integrated in OSR can help the OSR to navigate to the source. Since low cost, low computation and robust robot is preferred in swarm robot application, the OSR, as an individual robot of swarm in this study, is designed to be able to switch into the mode 3 or the mode 5 in order to analyze the optimal distance of the gas sensors arrangement that can be integrated in the OSR. By knowing the optimal sensor arrangement, the low cost and or the low computation OSR can be established. Algorithms of fuzzy logic for 3 and 5 gas sensors are tested in open environment. The concentration of gas is used as the input of the fuzzy logic. The robot uses the concentration as its parameters in determining which way that it should take. From this research, it can be concluded that 3 gas sensors has good performance. It needs shorter time and simpler path in OSR navigation to the source.

Keywords : *fuzzy logic; gas sensor; mobile robot; navigation*

Smart Parking Using Wireless Sensor Network System

Paper ID : 1570472177

Anggi Sahfutri (State Polytechnic of Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Muhammad Nawawi, Iskandar Lutfi and Evelina Ginting (State Polytechnic of Sriwijaya, Indonesia); Ade Handayani, ASH (Politeknik Negeri

Abstract - This paper presents a wireless sensor networking smart parking system that can provide information about parking slots located in the parking area. In this study, to find out the parking slots available in the parking area, a wireless communication that can be monitored through the monitor screen is proposed. The monitor serves as a monitoring of the parking slot area to be displayed, so that visitors know whether the parking slot is still available or even fully charged. The HC-SR04 ultrasonic sensor is installed in each parking slot area, the sensor will detect the parking slot, which will be filled by the car. The data obtained from the ultrasonic sensor will be managed by arduino mega 2560 located in monitor area and then sent to the monitoring area using the Wireless Sensor Network Xbee-Pro S2 communication. The parking slot area available or already filled by car will be displayed using Visual Studio software display 2013.

Keywords : *smart parking; wireless sensor network; ultrasonic sensor*

Power Transistor 2N3055 as a Solar Cell Device

Paper ID : 1570472274

*Tresna Dewi, Yohandri Bow, Ahmad Taqwa, Rusdianasari Rusdianasari and Zulkarnain Zulkarnain
(Politeknik Negeri Sriwijaya, Indonesia)*

Abstract - The abundance of power radiated by the sun can be converted into alternative electric energy. The proposed method in this paper is by utilizing the transistor waste type 2N3055. The transistor contains photocell that can convert energy radiated by the sun into electricity. The 2N3055 type of transistor composed by Aluminum (Al) 45.55%, (Al) 45.55 %, Carbon (C) 32.40 %, Nb (Niobium) 13.42 %, Zr (Zirconium) 7.02 %, and O (Oxygen) 1,61 %, this data is provided by SEM-EDX analysis. The experiment was conducted at 10.00 AM, 12.00 PM and 02.00 PM. The experimental results show that the maximum energy is acquired at 12.00 PM since 12.00 PM the position of the sun and the earth are at the smallest angle. The maximum power conversion is obtained when the sun is perpendicular to the earth position at 12.00 PM. The maximum power acquired is 3.55 watt during the radiation intensity of 51729 lux.

Keywords : *Solar Cell; Transistor; Efficiency; Intensity*

Acoustic Partial Discharge Detection Using Low-cost Pre-amplified Piezoelectric Transducer and Coated Optical Fiber Sensor

Paper ID : 1570472305

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Azmi(Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia);
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Abstract - Partial discharges (PD) occur in high voltage equipment are considered as major problem that required to be prevented to avoid any breakdown, damage and loss from happening. In addition, this pre-breakdown phenomenon can be detected using appropriate sensors such as acoustic emission sensor. In this study, acoustic emission sensor was chosen as the method to detect the PD in high voltage insulation. Low-cost piezoelectric transducer (PZT) with pre-amplifier and optical fiber sensor (OFS) were used as a sensing device to detect PD but OFS was expected to highlight its usage towards PD detection. Development of optical fiber sensor (OFS) based on Single Mode-Multi mode-Single Mode (SMS) structure which implementing a Multimode Interference effects (MMI) was focused on. PD measurement test was conducted according to IEC 60270 and IEC TS 62478 standards. A coated SMS based OFS was fabricated and then was used in PD measurement test. Furthermore, after implementing the pre-amplified PZT sensor and coated OFS in PD measurement test, results were compared with a measuring impedance by analyzing the Phase Resolved Partial Discharge (PRPD) patterns. From the results, all sensors can detect PD as accurately as the MI but the usage of pre-amplifier on PZT has shown a great deal of advantage in removing noises and amplifying small signal but the SMS coated OFS has shown similar ability in detecting the PD.

Keywords : *Partial discharges; Acoustic; Piezoelectric transducer; SMS structure; multimode interference*

Safety Communicational System Using Shifting Cryptography in Smart Parking

Paper ID : 1570472331

Wulan Dari (State Polytechnic of Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Evelina Ginting, Iskandar Lutfi, Muhammad Nawawi and Dewi Permata Sari, adella rialita, ade silvia (State Polytechnic of Sriwijaya, Indonesia)

Abstract - Smart Parking have develop technologies enabling people an easier parking information access via internal networks. However, when more people access the network the higher the risk of personal data leaks, as well as, a more vulnerable network will be, that can even lead to a data breakdown. Therefore, it is necessary to pay attention to the information and the data security in the smart parking systems. This paper explains the role of the encryption and the decryption of the required data while communicating based on the shifting cryptography method to ensure the system safety.

Keywords : **information; data security; shifting cryptography; smart parking**

Analyzing of Different Features Using Haar Cascade Classifier

Paper ID : 1570472379

Ratna Yustiawati (State Polytechnic Of Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Evelina Ginting (State Polytechnic of Sriwijaya, Indonesia); Sabilal Rasyad (State Polytechnic Of Sriwijaya, Indonesia); Iskandar L (State Polytechnic of Sriwijaya, Indonesia)

Abstract - Staying secure in the modern world is more difficult than ever. Technology always developed all the time and makes many humans utilize the technology for doing everything. Not only used for doing something good, but there are many humans use it for doing criminal, such as robbing. On the other hand, there is something found for preventing that problem. It is a tool for detecting face. Face recognition is made for identifying a face by digital image such as visitor who enter and leave through the door. This paper presents a research on security of a room. The room can only be opened by identifying and matching the face of the one that has been inputted to the data base of the system. Haar cascade classifier is used in this research. The processes of identifying of the objects were discussed in this paper. From the experimental test, it can be concluded that the proposed method is effective enough in processing the features of the objects.

Keywords : *face detection; face recognition; haar cascade classifier; security*

Application of WSNs for Detection Land and Forest Fire in Riau Province Indonesia

Paper ID : 1570472431

Evizal Abdul Kadir, Sri Listia Rosa and Ana Yulianti (Universitas Islam Riau, Indonesia)

Abstract - Riau Province is one of the area that high risk to land and forest fires due to the type of land which is peat land and flammable during summer season. Land and forest fires are badly impact not only on the biological ecosystems but on the activities and economy of local communities. This research proposes development intelligent environmental monitoring system to prevent the occurrence of land and forest fires. Wireless Sensor Networks (WSNs) use in development of this system. A monitoring system with a wide screen will install at the centre of monitoring and command centre to monitor environmental information in real time. Using WSNs technology, several smart sensors are install in the location that are very high risk for fire to get environmental data and then send to monitoring centre, because of large area to cover first phase of project 3 locations selected. Sensor base station will install in each location to collect data from WSNs and then communicate to monitoring centre use wireless communication because of the distance very far. Base station collect environmental information from all intelligent sensors deploy in the area such as temperature, humidity, haze (air quality), Carbon (Co2). Additional information for image analyse, every base station will install with High Definition (HD) camera to analyse behaviour of environmental in term of imaging. System detected indication for fire or abnormal environmental condition then an alert signal sent to authority as warning system for further action or precaution action of fire. New technology and method of sensing system and image processing as well as communication between sensor base station to data centre to make intelligent system is novelty in this research. Furthermore, all the information collected be able to share to others institution worldwide for sharing data in case required for global climate change analysis.

Keywords : WSNs; Land and Forest Fire; Sensors

Power Consumption Optimization in Cooling System Using Knowledge Base Temperature System

Paper ID : 1570473787

Andi Adriansyah, Akhmad Wahyu Dani and Krisna Brotoatmodjo (Universitas Mercu Buana, Indonesia)

Abstract - A Power Monitoring System (PMS) is a needed unit on a system Base Transceiver Station (BTS). In their operation, a PMS must have a reliable cooling system that operates for a long day. Therefore, a power consumption of a cooling system became a primary problem in PMS. Several studies have tried to solve this problem. This paper attempts to offer optimization of power consumption on the cooling system by using a Knowledge Base Temperature System (KBTS). Several experiments of the KBTS has been performed. There is a reduced power consumption for a cooling system of significant value. The system also maintains a shelter temperature in the permissible one for the system performs well.

Keywords : *Power Monitoring System; Base Transceiver Station; Knowledge Base Temperature System*

Optimization of Coffee Bean Drying Using Hybrid Solar Systems and Wi-Fi Data Communication

Paper ID : 1570473809

D. A. Larasati, Ike Fibriani, Dedy Wahyu Herdiyanto, Widyono Hadi, Guido Dias Kalandro, Catur Suko Sarwono (University of Jember, Indonesia)

Abstract - Coffee bean is one of high commodity from Indonesia. The drying process is the important step in its production. The process is to determine the moisture level of the coffee bean which also affects to the quality of a coffee. However this process takes a long time. This paper presents the optimization of the drying process of Robusta coffee bean Indonesian national standardization. The technology consists of hybrid solar systems as efficient resource energy and moisture level indicator using Wi-Fi data communication to efficient the operator. Test results showed that hybrid solar systems able to produce temperature 75°C in sunny day and temperature 45°C - 50 °C in mild weather. It can speed up drying processing and keep the texture of coffee bean. Besides that proposed moisture level indicator can help the operator by Wi-Fi data communication in 10 m to 100 m. It is more efficient and easy to produce coffee bean Indonesian national standardization.

Keywords : *hybrid solar systems; moisture level indicator; Wi-Fi data communication; coffee bean Indonesian national standarization*

Web Scraping Techniques to Collect Weather Data in South Sumatera

Paper ID : 1570475399

Fatmasari Asmuni (Universitas Binadarma, Indonesia); Yesi Novaria Kunang (Universitas Sriwijaya, Indonesia); Susan Purnamasari (Universitas Bina Darma, Indonesia)

Abstract - The availability of weather datasets is urgently needed in conducting research in the field of analytics data to predict weather and research for DSS requiring weather patterns. However, to get the weather dataset in a city sometimes constrained the problem of institutional bureaucracy that become obstacles in research. On the other hand some websites provide the latest weather data for some cities that can be freely accessed. For this purpose we use web scraping technology to collect weather data in several cities in South Sumatera and its surroundings on some websites. Web scraping technology itself is a technique to retrieve the contents of a web page specifically. The data collected by this web scraping technique will form a database or dataset that can be used for further research for weather analytics estimates in South Sumatra, which in the future can be developed weather-based decision support application.

Keywords : *Web scraping, weather data, weather statistics, South Sumate*

Fabrication of Integrated Power Divider and Filter for X Band Radar Applications

Paper ID : 1570475409

Folin Oktafiani (Indonesian Institute of Sciences (LIPI), Indonesia)

Abstract - This paper presents the prototype of power divider that integrated with filter for X-band radar applications. The prototype was designed and fabricated on a single board using substrate duroid RT 5880 which has ϵ_r of 2.2 and the thickness of 0.78 mm. In this research, Wilkinson power divider and coupled line filter are used base on their benefit. The simulation and measurement show that the prototype has a high performance to be applied in 9.3 GHz radar antenna system. Improvement of return loss achieves by integrating power divider and filter. Comparing with the conventional type, the prototype was proven to reduce loss power by 8%.

Keywords : radar antenna; array antenna; power loss; power divider; coupled line filter

Comparison Double Dielectric Barrier Using Perforated Aluminium for Ozone Generation

Paper ID : 1570476547

Syarifa Fitria and Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Dwirina Yuniarti (Universitas Sriwijaya, Indonesia); Rizda Kurnia (University of Sriwijaya)

Abstract - Ozone generation has widely known may replace chlorine compounds in various applications including wastewater treatment, polluted air processing, antimicrobial, bacterial inactivation, semiconductor oxidation, and serve as disinfectant. This study mainly focuses on comparison of different dielectric materials performances using perforated aluminium to obtain high concentrated ozone. Perforated aluminium with sharp edges used for ozone generation as electrode. Dielectric barrier discharge (DBD) using glass and 96% alumina ceramic have been chosen for limiting discharge current due to its low thermal conductivity and low dielectrics loss when high breakdown voltage occur. Double dielectric barrier using perforated aluminium has been observed using 96% alumina and quartz glass, both within 2 mm thickness. Ozone concentration of alumina ceramic dielectric for 0.5mm space gap was higher than quart glass. However, for 1mm space gap, ozone concentration using quart glass was higher than alumina ceramic. These results lead to optimum condition for DBD using alumina ceramic is not more than 0,5mm space gap.

Keywords : DBD; Ozone; Dielectric Material

Evaluation of the Existence of Initial Breakdown Process for Cloud-to-Ground Flashes

Paper ID : 1570476623

Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Muhammad Zikri (Universitas Sriwijaya, Indonesia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia)

Abstract - In this paper, we are motivated to evaluate the existence of Initial Breakdown (IB) process in Cloud-to-Ground (CG) flashes of a tropical storm by using both broadband E-field and B-field antenna systems. It is important to note here that all previous studies were using only broadband E-field antenna system. In this study, the evaluation of existence of IB process was done based on both broadband E-field and B-field antenna systems. The data of lightning flashes were collected on June 3rd 2016 by our station in Malacca, Malaysia. We analyzed 50 CG flashes from a tropical storm happened in Kuala Lumpur area. The data recorded by broadband E-field antenna system shows that 94% of CG flashes were preceded by IB process. On the other hand, by using B-field antenna system, all CG flashes have been observed to be preceded by IB process. This finding is very significant because we can conclude that all CG flashes are initiated by IB process. The average pulse duration of the first, second, third, and the largest IB pulses are 33.52 μs , 36.08 μs , 37.76 μs , 43.02 μs , respectively. The average peak amplitude of the first, second, third, and the largest IB pulses are 179.60 mV, 261.90 mV, 272.94 mV, 609.57 mV, respectively.

***Keywords* : electromagnetic fields; ground flash; initial breakdown; lightning**

Enhancement of Cogging Torque Reduction on Inset Permanent Magnet Generator by Using Magnet Edge Shaping Method

Paper ID : 1570478564

*Herlina Wahab (Sriwijaya University ; University of Indonesia, Indonesia); Tajuddin Nur (Atma Jaya
Catholic University, Indonesia)*

Abstract - — This paper handled with the investigation of the cogging torque reduction method in Inset-Permanent Magnet Generators using fractional slot stator/rotor combination. Cogging torque of Inset-Permanent Magnet Generator is analyzed to be cut down by slot opening width reduction and permanent magnets shaping. Electromagnetic simulations of the Inset-PMG in this paper were implemented by applying finite element analysis. Finite element method magnetic (FEMM 4.2) tool is employed to determine and analyze the cogging torque. It can be proved that by mixing of slot opening reduction and permanent magnet shaping at a particular shoe height can diminish the cogging torque of Inset-Permanent Magnet Generator sharply.

Keywords : *Inset-PMG; Cogging Torque; Finite Element; Slot Opening Width; Permanent Magnet Shaping*

A Secure Voice Channel Using Chaotic Cryptography Algorithm

Paper ID : 1570478619

*Munawar A Riyadi, M Reza Khafid, Natanael Pandapotan and Teguh Prakoso (Diponegoro University,
Indonesia)*

Abstract - In non-public communication exchange, the requirement for secure channel is high, notably to prevent unintended parties to take the private or classified messages. We developed a prototype of secure voice channel using Chaotic cryptographic algorithm employing Cipher Feedback. Two Spartan-3 FPGA boards were employed to implement the encryption and decryption modules on both ends of a simplex voice channel. The channel was tested in four scenarios: unsecure channel, fully secure channel, eavesdropping and decrypted unsecure messages. The testing result indicated that the cryptographic algorithm works well in securing the channel for asynchronous communication. The low MSE and THD-N in fully secure channel compared to eavesdropping scenario confirms the findings. Moreover, the test also reveals that the quality of restored encrypted message is very similar with recovered message in unsecure channel.

Keywords : *chaotic cryptography; chiper feedback; secured communication channel; FPGA Spartan-3*

Modified Logistic Maps for Discrete Time Chaos Based Random Number Generator

Paper ID : 1570478727

Magfirawaty Magfirawaty (Universitas Indonesia, Indonesia); Andriani Adi Lestari (Sekolah Tinggi Sandi Negara, Indonesia); Suryadi Suryadi and Kalamullah Ramli (Universitas Indonesia, Indonesia)

Abstract - This research designs a discrete time (DT) chaos based random number generator (RNG), which uses one-dimension chaos modification as deterministic function in the distillation process. One-dimensional chaos (1D) is a simple dynamic system, which is widely applied to generate random numbers. Our work modifies logistic map that will be applied as DT chaos-based RNG. The logistic map is a chaotic system that is usually applied in the cryptosystem. The modification performed yields a new deterministic equations, which is capable to process data of real numbers, and generate positive and negative numbers. Through empirical verification the extractor function is obtained with the threshold values are greater than 0.718 to convert the real number that is generated by a deterministic function into a sequence of bits which has high entropy value. Through NIST 800-22 randomness test it is revealed that the obtained bit sequences have the proportion values at intervals 0.9804-0.9994 and P-value > 0.01 for the frequency test, the cumulative sums test, the rank test, and a linear complexity test. Implementation of the DT chaos-based RNG method with the our proposed function using ZedBoard Zynq 7000 presents the number of resources used are LUT=3.9%, FF=1.6% and DSP=12.7%.

Keywords : *chaotic system; random numbers; bit sequence; bitstream; discrete time chaos*

Variation of Pattern and Cavity Diameter of Aluminium Perforated with Single Glass Dielectric Barrier for Ozone Generation

Paper ID : 1570478772

Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Akhlar Wista Arum and Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Irfan Jambak, R.F. Kurnia, S. Fitria (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Z. Buntat (Universiti Teknologi Malaysia, UTM Johor Bahru, Malaysia)

Abstract - One of the high-voltage applications that are widely used is ozone generation. Research on ozone generations have been carried out for many years, such as by using Dielectric Barrier Discharge (DBD) method to produce optimum ozone. This paper presents a variation of pattern and cavity diameter of perforated aluminium, which was used as electrodes for ozone generation using a DBD method with single barrier glass. It was found that although pure oxygen with 99.9% concentration was used, the pattern variations and the cavity diameter of the perforated aluminium affect the ozone concentration. The highest ozone concentration was 2175.8 ppm in a chamber with A2 cavity pattern with electrode area of 99.58% and at 18 kV. The lowest ozone concentration was 567,5 ppm in a chamber with A1 cavity pattern with 98,33% electrode area at 17 kV. For stability values, chamber with a cavity pattern of B2, with a 97.38% electrode area at voltage 17 kV or 18 kV shows that the stability of ozone concentrations was achieved more rapidly.

Keywords : *Ozone; DBD; Perforated Aluminum*

Conceptual Modeling for Intelligent Knowledge-Based System in Agriculture: Case Study of Indonesia

Paper ID : 1570478783

Sarifah Putri Raflesia (Universitas Sriwijaya ; Institut Teknologi Bandung, Indonesia); Dinda Lestarini (Sriwijaya University, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya ; Unsri, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia)

Abstract - Agriculture is a pillar for economic growth in Indonesia. It drives the needs of agricultural information and knowledge increase. In order to provide information for farmers and knowledge to support the decision-making process in strategic level, the conceptual modeling for intelligent knowledge-based system in agriculture is proposed. The conceptual model combines the geo-fencing technique to ensure the availability of information for farmers and machine learning to provide the knowledge for strategic decision-making process in order to improve agricultural sector performance.

***Keywords* : Agriculture; Intelligent knowledge-based system; Geo-fencing; Machine Learning**

Effects of Cold Plasma Treatment on the Growth Rate of Corn and Eggplant

Paper ID : 1570478793

Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Zolkafle Buntat (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Irfan Jambak (Faculty of Engineering, University of Sriwijaya)

Abstract - This paper investigates the effect of cold plasma on the germination, growth, and yield of corn and eggplant plant. The effect of plasma plume was applied to the corn and eggplant seeds to kill the bacteria on the outer surface of the seeds to investigate the effects of cold plasma towards the germination and growth rate of the seeds. The time of treatment was varied from 3, 5 and 10 minutes to identify the optimum treatment time. The result showed that the corn seeds that treated with 3 minutes plasma treatment germinates faster and show excellent growth rate compared to the untreated seed. While, optimum treatment time for the eggplant seed is 5 minutes. This revealed that cold plasma treatment as an alternative method to promote seed germination and enhance seed growth of the corn and eggplant plant.

Keywords : cold plasma; germination; growth

Non-thermal Plasma for Removal of NO_x from Diesel Engine Vehicle: A Simulation Study

Paper ID : 1570478797

Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Zolkafle Buntat (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Irfan Jambak (Faculty of Engineering, University of Sriwijaya)

Abstract - This paper presents the simulation case study of non-thermal plasma for removal of nitrogen oxide, NO_x from diesel engine vehicle. The geometric properties of the exhaust chamber are analyzed and discussed in order to obtain the most effective geometric properties of exhaust chamber that will help the process of NO_x reduction become more effective. The gap between the exhaust case and perforated metal, the length of the exhaust chamber, no. of stages, hole diameter of the perforated metal and the thickness of the perforated metal are studied in details. The method used to study these geometric properties of the exhaust chamber is mesh and boundary condition. Optimum NO_x reduction is achieved using exhaust chamber gap between 4-5mm and exhaust chamber length of 190mm with NO_x reduction by 61.11%. Maximum NO_x reduction is achieved by using 3 stages of the exhaust chamber with reduction by 70.63%. In addition, the hole diameter of the perforated metal with 5 mm and 1 mm of thickness are the most effective geometric properties of the perforated metal that will produce a high speed of gaseous inside the exhaust chamber and uniform speed of flow in the exit duct.

Keywords : *non-thermal; plasma; exhaust; engine*

Selection of Single-tuned Filter and High Pass Damped Filter with Changes of Inverter Type to Reduce Harmonics on Microgrid AC-DC

Paper ID : 1570478800

Herlina Wahab (Sriwijaya University ; University of Indonesia, Indonesia); Rudy Setiabudy (Universitas Indonesia (UI), Indonesia); Guru Wibowo (Universitas Indonesia, Indonesia)

Abstract - Distributed Generation such as solar and wind power system operating power electronics equipment that is the inverter to be connected with the grid system. The inverter is a power electronics equipment based on a switching system, so its work can induce power quality problem in the power system that is harmonics. The harmonics generated from the inverter depend on the number of pulses applied. In this research, the type of inverter based on the number of pulses was diversified to identify the phenomenon of harmonics in the electric power system that takes place with each type of inverter. The percentage of THD and IHD was gained from the simulation which was later compared with the IEEE 519-1992 harmonic standard. In addition to diversifying the type of inverter based on the number of pulses also designed two types of filters that are the single-tuned passive filter and high pass damped filter in accordance with the order to be diminished. The filters are combined with each inverter (6,12,24, and 48 pulses) if the harmonic distortion nevertheless appears not comply to the standard. Based on the simulation of harmonics that have been worked out from each inverter, it is noticed the operation of inverter 6, 12, and 24 pulses require passive filter while inverter 48 pulses do not require the passive filter.

Keywords : Harmonic; Solar power system; Wind power power system; Distributed Generation; Filter; Inverter

Object Position Estimation Using Naive Bayes Classifier Algorithm

Paper ID : 1570481931

Reza Firsandaya Malik, Eko Pratama, Huda Ubaya, Rido Zulfahmi, Deris Stiawan and Kemahyanto Exaudi (University of Sriwijaya ; Faculty of Computer Science, Indonesia)

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Abstract - This study discusses the estimated position of objects in buildings with the value of Received Signal Strength Indicator (RSSI) on IEEE 802.11 used as the research parameter. The algorithm used in estimating the location of the RSS Fingerprint measurement is the Naive Bayes classifier. Position Estimation is done on the 1st floor of Building B majoring in computer system, University Sriwijaya with an area 305, $[(28 \text{ m})^2]$ with length 31.8 meters and width 9.6 meters. The result of the position estimation that has been done by comparing training dataset with the test data shows that the estimation is successful with the prediction of room 2 with the coordinate point (11.3).

Keywords : Position Estimation; RSS Fingerprint; RSSI

Quality Assessment Level of Quality of Cocoa Beans Export Quality Using Hybrid Adaptive Neuro - Fuzzy Inference System (ANFIS) and Genetic Algorithm

Paper ID : 1570483280

Gayatri Dwi Santika, Diah Ayu Wulandari, Fitriyana Dewi (Jember University, Indonesia)

Abstract - The cocoa cultivated at cocoa center in Kebun Kalisepanjang is Bulk cacao type. At every stage must be approved by the Assistant processing techniques especially in determining the quality of cocoa beans. Assistant processing techniques to take full responsibility for the quality produced so that the resulting quality level determination to be accurate. The use of ANFIS method in expert system is implemented to process the external factors used in this research and for determining the quality of export from the quality of cocoa beans used Genetic Algorithm (GAs). The RMSE of this research is 4.3 indicates that the algorithms is feasible as an expert system to select the quality of cocoa beans.

Keywords : ANFIS; Genetic Algorithm; RMSE; cocoa beans; expert system

Measuring Customer Satisfaction Using CRM Scorecard in Canteen FASILKOM UNSRI

Paper ID : 1570483290

*Ali Ibrahim, Aris Pratiwi, Devi Indra Meytri, Madri, Muhammad Aziz Kurniawan, Nadia Yuniarti
(Sriwijaya University, Indonesia)*

Abstract - Fasilkom canteen as businesses can compete with other canteens on Sriwijaya University both in relation to gain or maintain customers. Problems faced by fasilkom canteen pertaining to customers can be overcome by Customer Relationship Management (CRM) model. This paper is written with objective of knowing the service has been accepted by students as one of the ultimate. Methods used is CRM Scorecard . That these findings it will give evaluation future for the fasilkom canteen in doing management of customers .The total number of respondents valid of the questionnaires about 51 people consisting of the students fasilkom 2013-2016. Customer satisfaction to canteen fasilkom worth less, well that needs to be improved concern for seating, courtesy and patience when serve their customers. Other perspective are seller performance 3.547 that is the greatest value of four perspective, the process 3.297 and infrastructure 3.253 proven it has indicated good value. But must keep improved because of it is near from enough range.

Keywords : Service level; Perspective; CRM; CRM Scorecard

Theme : Communication and Vehicular Technologies
 Room : Batu Bedaun 1
 Moderator : Evizal Abdul Kadir, Ph.D
 Time : 13.00 – 15.24
 Articles : 8

<i>Title</i>	<i>Authors with affiliation and country</i>
RFI Suppression Based on Time-Frequency Spectrogram for FMCW Radar	Oktanto Dedi Winarko (Labs247); Andrian Andaya Lestari (Labs247, Indonesia)
Performance Consideration in Signal Acquisition for High Dynamic Application in Tropical Environment	Syed Mohd Fairuz Syed Mohd Dardin and Akram Abdul Azid (Universiti Pertahanan Nasional Malaysia, Malaysia); Zuhairi Abdul Rashid (Universiti Pertahanan Nasional Malaysia; Engineering Faculty, Malaysia); Asnor Mazuan Ishak and Ahmad Shukri Abu Hasim (Universiti Pertahanan Nasional Malaysia, Malaysia)
Benchmarking Low Latency Kernel and Xenomai for a Network Gateway Encryption Application	Mastura Diana Marieska (Sriwijaya University, Indonesia); Achmad Imam Kistijantoro (Bandung Institute of Technology, Indonesia)
Dual Circular-Polarized Slot Antenna Design for Wireless MIMO System at 2.4 GHz	Nornikman Hassan and Badrul Hisham Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Mohamad Zoinol Abidin Bin Abd Aziz (Universiti Teknikal Malaysia Melaka; Hang Tuah Jaya, Malaysia); Mohd Riduan Ahmad, Zahriladha Zakaria and Chew Siang (Universiti Teknikal Malaysia Melaka, Malaysia)
Application of WSNs for Detection Land and Forest Fire in Riau Province Indonesia	Evizal Abdul Kadir, Sri Listia Rosa and Ana Yulianti (Universitas Islam Riau, Indonesia)
Optimal Drying of Robusta Coffee Bean Indonesian National Standardization Using Hybrid Solar Systems and Wi-Fi Data Communication	D. A. Larasati (University of Jember, Indonesia)
Fabrication of Integrated Power Divider and Filter for X Band Radar Applications	Folin Oktafiani (Indonesian Institute of Sciences (LIPI), Indonesia)
Object Position Estimation Using Naive Bayes Classifier Algorithm	Reza Firsandaya Malik (University of Sriwijaya; Faculty of Computer Science, Indonesia); Eko Pratama and Huda Ubaya (Universitas Sriwijaya, Indonesia); Rido Zulfahmi (Sriwijaya University, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia); Kemahyanto Exaudi (Universitas Sriwijaya, Indonesia)

Theme : **Electronics, Circuits, and Systems**
Room : Batu Bedaun 2
Moderator : Munawar Agus Riyadi, Ph.D./Nyayu Latifah Husni, M.T..
Time : 13.00 – 19.00
Articles : 18

Title	Authors with affiliation and country
Optimal Route Driving for Leader-Follower Using Dynamic Particle Swarm Optimization	Bambang Tutuko (Sriwijaya University, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia); Putri Sahayu (Intelligent System Research Group, Universitas Sriwijaya, Indonesia)
Electronic Transaction Device Based on Contact Smart Card Using Programmable System-on-Chip	Trio Adiono (Institut Teknologi Bandung, Indonesia); Reynhart Malingkas and Adi Candra Swastika (Bandung Institute of Technology, Indonesia); Syifaul Fuada (Institut Teknologi Bandung, Indonesia)
Visual Servoing Design and Control for Agriculture Robot; a Review	Tresna Dewi (Politeknik Negeri Sriwijaya, Indonesia); Pola Risma (Sriwijaya Polytechnic, Indonesia); Yurni Oktarina (Polytechnic Sriwijaya Palembang-Indonesia, Indonesia); Selamat Muslimin (State Polytechnic of Sriwijaya, Indonesia)
Design and Implementation of Analog Transceiver Circuit for Patient Monitoring System Based on OWC	Trio Adiono and Syifaul Fuada (Institut Teknologi Bandung, Indonesia)
Multistage Scanning Method on 64-Channels ECVT Sensor	Arbai Yusuf (Universitas Indonesia ; C-Tech Labs Edwar Technology, Indonesia)
Enhancement of the Fuzzy Control Response with Particle Swarm Optimization in Mobile Robot System	Siti Nurmaini (University of Sriwijaya, Indonesia); Febrina Setianingsih (Universitas Sriwijaya, Indonesia)
A Comparison of Back Propagation Neural Network and Elman Recurrent Neural Network Algorithms on Altitude Control of Heavy-lift Hexacopter Based on Direct Inverse Control	Bhakti Yudho Suprpto (University of Sriwijaya, Indonesia); Benyamin Kusumoputro (Universitas Indonesia, Indonesia)
Multisensors System for Real Time Detection of Length, Weight, and Heartbeat of Premature Baby in the Incubator	Sri Purwiyanti (Unila, Indonesia); Sri Ratna Sulistiyanti and Arinto Setyawan (University of Lampung, Indonesia); Helmy Fitriawan (Lampung University, Indonesia)
Using Pressure Sensors Towards Pipeline Leakage Detection	Kemahyanto Exaudi, Rossi Passarella and Rendyansyah Rendyansyah (Universitas Sriwijaya, Indonesia); Rido Zulfahmi (Sriwijaya University, Indonesia)

Different Types of Fuzzy Logic in Obstacles Avoidance of Mobile Robot

Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Andry Meylani (Politeknik Negeri Sriwijaya, Indonesia); Ciksadan Dansadan (State of Polytechnic Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia); Irsyadi Yani (Universitas Sriwijaya, Indonesia); Carlos Sitompul (Politeknik Negeri Sriwijaya, Indonesia)

Development of Computational Intelligence-based Control System Using Backpropagation Neural Network for Wheeled Robot

Karlisa Priandana, Iqbal Abiyoga, Wulandari Wulandari, Sri Wahjuni, Medria Hardhienata and Agus Buono (Bogor Agricultural University, Indonesia)

Optimal Kernel Classifier in Mobile Robots for Determining Gases Type

Nyayu Latifah Husni and Muhammad Muhaajir (Politeknik Negeri Sriwijaya, Indonesia); Ekawati Prihatini (State Polytechnic of Sriwijaya, Indonesia); Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia); Irsyadi Yani (Universitas Sriwijaya, Indonesia)

Optimal Gas Sensors Arrangement in Odor Searching Robot

Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia); Irsyadi Yani (Universitas Sriwijaya, Indonesia)

Smart Parking Using Wireless Sensor Network System

Anggi Sahfutri (State Polytechnic of Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Muhammad Nawawi, Iskandar Lutfi and Evelina Ginting (State Polytechnic of Sriwijaya, Indonesia); Ade Handayani, ASH (Politeknik Negeri Sriwijaya ; Engineering Electrical, Indonesia); Ekawati Prihatini (State Polytechnic of Sriwijaya, Indonesia)

Safety Communicational System Using Shifting Cryptography in Smart Parking

Wulan Dari (State Polytechnic of Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Evelina Ginting, Iskandar Lutfi, Muhammad Nawawi and Dewi Permata Sari (State Polytechnic of Sriwijaya, Indonesia)

Analyzing of Different Features Using Haar Cascade Classifier

Ratna Yustiawati (State Polytechnic Of Sriwijaya, Indonesia); Nyayu Latifah Husni (Politeknik Negeri Sriwijaya, Indonesia); Evelina Ginting (State Polytechnic of Sriwijaya, Indonesia); Sabilal Rasyad (State Polytechnic Of Sriwijaya, Indonesia); Iskandar Lutfi (State Polytechnic of Sriwijaya, Indonesia); Niksen Alfarizal (State Polytechnic Of Sriwijaya, Indonesia)

Power Consumption Optimization in Cooling System Using Knowledge Base Temperature System

Andi Adriansyah, Akhmad Wahyu Dani and Krisna Brotoatmodjo (Universitas Mercuru Buana, Indonesia)

A Secure Voice Channel Using Chaotic Cryptography Algorithm

Munawar A Riyadi, M Reza Khafid, Natanael Pandapotan and Teguh Prakoso (Diponegoro University, Indonesia)

Theme : Information Technology #1
Room : Batu Bedaun 3
Moderator : Dr. Reza Firsandaya Malik/Yovi Pratama, M.T.
Time : 13.00 – 18.42
Articles : 17

Title	Authors with affiliation and country
Image Steganography Using Combine of Discrete Wavelet Transform and Singular Value Decomposition for More Robustness and Higher Peak Signal Noise Ratio	Adam Nevriyanto and Erwin E (Universitas Sriwijaya, Indonesia); Sutarno Sutarno (University of Sriwijaya, Indonesia); Sri Desy Siswanti (Universitas Sriwijaya, Indonesia)
Game Complexity Factor: A Collaborative Study of LeBlanc Taxonomy and Function Points Method	Renny Sari Dewi and Trias Andari (Universitas Internasional Semen Indonesia, Indonesia)
Removal of Modulo as Hashing Modification Process in Essay Scoring System Using Rabin-Karp	Errissya Rasywir (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Hendrawan Hendrawan and Marrylinteri Istoningtyas (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia)
Real Time Detection on Face Side Image with Ear Biometric Imaging Using Integral Image and Haar-Like Feature	Fachruddin Fachruddin (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Errissya Rasywir, Desi Kisbianty, Hendrawan Hendrawan and Maria Borroek (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia)
Automatic Cost Estimation Analysis on Datawarehouse Project with Modified Analogy Based Method	Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Errissya Rasywir (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia)
Analysis on Knowledge Layer Application for Knowledge Based System	Maria Borroek and Errissya Rasywir (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia); Yovi Pratama (Stikom Dinamika Bangsa, Indonesia); Fachruddin Fachruddin and Marrylinteri Istoningtyas (Sekolah Tinggi Ilmu Komputer Dinamika Bangsa Jambi, Indonesia)
Fast Fourier Transform (FFT) Data Sampling Using Hamming and Blackman Method for Radar	Sulis Tyaningsih (Indonesian Institute of Science (LIPI), Indonesia); Prasetyo Putranto, Winy Desvasari and Pamungkas Daud (Indonesian Institute of Sciences, Indonesia)

Radar Software Development for the Surveillance of Indonesian Aerospace Sovereignty

Yussi Saputera (Indonesian Institute of Sciences, Indonesia); Sulis Tyaningsih (Indonesian Institute of Science (LIPI), Indonesia); Topik Teguh Estu (PPET LIPI, Indonesia); Mashury Wahab (PPET-LIPI, Indonesia)

Quality Assessment Level of Quality of Cocoa Beans Export Quality Using Hybrid Adaptive Neuro - Fuzzy Inference System (ANFIS) and Genetic Algorithm

Gayatri Dwi Santika, Diah Ayu Wulandari, DARW and Fitriyana Dewi (Jember University, Indonesia)

The Consistency of Using Failure Mode Effect Analysis (FMEA) on Risk Assessment of Information Technology

Apol Pribadi Subriadi, Nina Najwa and Brigitta Cahyabuana (Institut Teknologi Sepuluh Nopember, Indonesia)

Automated Examination Timetabling Optimization Using Greedy-Late Acceptance-Hyperheuristic Algorithm

Ahmad Muklason, Putri C Bwananesia and Sasmi Hidayatul YT (Institut Teknologi Sepuluh Nopember, Indonesia); Nisa Angresti (Sepuluh Nopember Institute of Technology, Indonesia); Vicha Azthanty Supoyo (Institut Teknologi Sepuluh Nopember, Indonesia)

Artificial Neural Network for Health Data Forecasting, Case Study: Number of Dengue Hemorrhagic Fever Cases in Malang Regency, Indonesia

Wiwik Anggraeni, Graha Pramudita and Edwin Riksakomara (Institut Teknologi Sepuluh Nopember, Indonesia); Radityo Prasetyanto Wibowo (Institut Teknologi Sepuluh Nopember, Indonesia); Febriliyan Samopa (Institut Teknologi Sepuluh Nopember, Indonesia); Puji Adi (Ministry of Health, Indonesia); Renny Sari Dewi (Universitas Internasional Semen Indonesia, Indonesia)

Using Metadata in Detection Spam Email with Pornography Content

Dewi Wardani (Universitas Sebelas Maret, Indonesia)

Automatic Features Extraction Using Autoencoder in Intrusion Detection System

Yesi Novaria Kunang (Universitas Sriwijaya, Indonesia); Siti Nurmaini and Deris Stiawan (University of Sriwijaya, Indonesia); Ahmad Zarkasi (Universitas Sriwijaya, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya ; Unsri, Indonesia)

Emotional Design on User Experience-based Development System

Andhika Giri Persada (Universitas Islam Indonesia, Indonesia)

Review of Automatic Emotion Recognition Through Facial Expression Analysis

Dewi Yanti Liliانا (Universitas Indonesia ; State Polytechnic of Jakarta, Indonesia); Chan Basaruddin (Universitas Indonesia, Indonesia)

Breast Cancer Classification Using Deep Learning

Jasmir Jasmir (STIKOM Dinamika Bangsa Jambi, Indonesia);
Siti Nurmaini (University of Sriwijaya, Indonesia); Reza
Firsandaya Malik (University of Sriwijaya ; Faculty of
Computer Science, Indonesia); Dodo Abidin (STIKOM
Dinamika Bangsa Jambi, Indonesia); Ahmad Zarkasi and
Yesi Novaria Kunang (Universitas Sriwijaya, Indonesia);
Firdaus Firdaus, F (Universitas Sriwijaya; Unsri, Indonesia)

Theme : Information Technology #2
Room : Soll Marina 2
Moderator : Sarifah Putri Raflesia, M.T.
Time : 14.12 – 17.30
Articles : 10

Title	Authors with affiliation and country
An Analysis of Points System of Hotel Loyalty Program Based on the Return on Investment	Long Zuo and Hiroyuki Iida (Japan Advanced Institute of Science and Technology, Japan); Shuo Xiong (Huazhong University of Science and Technology, P.R. China)
The Development of MSMEs Promotion and Recommendation Application Based on Android with the Use of Collaborative Filtering Method and Google Firebase (Case Study: Salatiga City)	Radius Tanone and Yoga Adi Dharma (Satya Wacana Christian University, Indonesia)
Function Points Method in Game Casual Context	Renny Sari Dewi (Universitas Internasional Semen Indonesia, Indonesia)
Analysis of Counter-Strike: Global Offensive	Muhammad Nazhif Rizani and Hiroyuki Iida (Japan Advanced Institute of Science and Technology, Japan)
An Integrated Child Safety Using Geo-fencing Information on Mobile Devices	Dinda Lestarini (Sriwijaya University, Indonesia); Sarifah Putri Raflesia (Universitas Sriwijaya; Institut Teknologi Bandung, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya; Unsri, Indonesia)
Web Scraping Techniques to Collect Weather Data in South Sumatera	Fatmasari Asmuni (Universitas Binadarma, Indonesia); Yesi Novaria Kunang (Universitas Sriwijaya, Indonesia); Susan Purnamasari (Universitas Bina Darma, Indonesia)
Modified Logistic Maps for Discrete Time Chaos Based Random Number Generator	Magfirawaty Magfirawaty (Universitas Indonesia, Indonesia); Andriani Adi Lestari (Sekolah Tinggi Sandi Negara, Indonesia); Suryadi Suryadi and Kalamullah Ramli (Universitas Indonesia, Indonesia)
Conceptual Modeling for Intelligent Knowledge-Based System in Agriculture: Case Study of Indonesia	Sarifah Putri Raflesia (Universitas Sriwijaya; Institut Teknologi Bandung, Indonesia); Dinda Lestarini (Sriwijaya University, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya; Unsri, Indonesia); Siti Nurmaini (University of Sriwijaya, Indonesia); Anugrah Pamosoaji (Universitas Atma Jaya Yogyakarta, Indonesia)
Measuring Customer Satisfaction Using CRM Scorecard in Canteen FASILKOM UNSRI	Ali Ibrahim (Sriwijaya University, Indonesia)

Identification of the Reproductive Apparatus of Tarantula
Genus Brachypelma Using Linear Discriminant Analysis
Method

Apriandy Angdresey (De La Salle Catholic University,
Indonesia)

Theme : Pervasive Computing and Internet of Thing
Room : Soll Marina 2
Moderator : Firdaus, M.Kom
Time : 13.00 -14.12
Articles : 4

Title	Authors with affiliation and country
Face Movement Detection Using Template Matching	Ahmad Zarkasi (Universitas Sriwijaya, Indonesia); Siti Nurmaini and Deris Stiawan (University of Sriwijaya, Indonesia); Firdaus Firdaus, F (Universitas Sriwijaya ; Unsri, Indonesia); Huda Ubaya (Universitas Sriwijaya, Indonesia); Aditya Prasetyo (Sriwijaya University, Indonesia); Yesi Novaria Kunang (Universitas Sriwijaya, Indonesia)
Measurement of Component Performance (Sensor) on Internet of Thing (IoT)	Sharipuddin Sharipuddin and Kurniabudi Kurniabudi (STIKOM Dinamika Bangsa, Indonesia); Benni Purnama (STIKOM Dinamika Bangsa Jambi ; STIKOM Dinamika Bangsa Jambi, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia); Darmawijoyo Hanapi (Sriwijaya University, Indonesia); Rahmat Budiarto (Al Baha University, Saudi Arabia)
Preprocessing and Framework for Unsupervised Anomaly Detection in IoT: Work on Progress	Kurniabudi Kurniabudi (STIKOM Dinamika Bangsa, Indonesia); Benni Purnama (STIKOM Dinamika Bangsa Jambi ; STIKOM Dinamika Bangsa Jambi, Indonesia); Sharipuddin Sharipuddin (STIKOM Dinamika Bangsa, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia); Darmawijoyo Hanapi (Sriwijaya University, Indonesia); Rahmat Budiarto (Al Baha University, Saudi Arabia)
Monitoring Connectivity of Internet of Things Device on Zigbee Protocol	Benni Purnama (STIKOM Dinamika Bangsa Jambi ; STIKOM Dinamika Bangsa Jambi, Indonesia); Sharipuddin Sharipuddin and Kurniabudi Kurniabudi (STIKOM Dinamika Bangsa, Indonesia); Deris Stiawan (University of Sriwijaya, Indonesia); Darmawijoyo Hanapi (Sriwijaya University, Indonesia); Rahmat Budiarto (Al Baha University, Saudi Arabia)

Theme : Power Systems #1
Room : Soll Marina 1
Moderator : Muhammad Abu Bakar Sidik, Ph.D./Dr. Mohd Riduan bin Ahmad
Time : 13.00 – 19.00
Articles : 18

Title	Authors with affiliation and country
Techno-Economic Analysis of Sea Floating PV/Diesel Hybrid Power Plant with Battery Arrangement Scheme for Residential Load at Remote Area in Indonesia (Case Study: Small Kei Island, South East Moluccas)	Achmad Tofani (University of Indonesia, Indonesia)
A 250 kW Three Phase Induction Motor Design for Electric Bow Thruster	Asep Andi Suryandi (BPPT ; ITB, Indonesia); Cuk Supriyadi Ali Nandar (Agency for the Assessment and Application of Technology, Indonesia); Dewi Rianti Mandasari and Katri Yulianto (BPPT, Indonesia)
Comparative Analysis of Applications Off-Grid PV System and On-Grid PV System for Households in Indonesia	Aryulius Jasuan (University of Sriwijaya, Indonesia)
Techniques for Analysis of Chaotic Pulse Trains Generated by Lightning: A Review	Chin-Leong Wooi (Universiti Malaysia Perlis, Malaysia); Zulkurnain Abdul-Malek (UTM, Malaysia); M. N. K. H. Rohani (University Malaysia Perlis ; UNIMAP, Malaysia); Syahrudin Nizam Md Arshad Hashim (Universiti Malaysia Perlis, Malaysia); Ahmad Muhyiddin Bin Yusof (Faculty of Engineering Technology, Universiti Malaysia Perlis (Unimap), Malaysia)
Comparative Study; Different Types of PWM Control Scheme in Three-Phase Four-Wire Shunt Active Power Filter (APF) Topology	Ahmad Shukri Abu Hasim (Universiti Pertahanan Nasional Malaysia, Malaysia); Zulkifilie Bin Ibrahim (Universiti Teknikal Malaysia Melaka, Malaysia); Syed Mohd Fairuz Syed Mohd Dardin, Akram Abdul Azid and Asnor Mazuan Ishak (Universiti Pertahanan Nasional Malaysia, Malaysia)
An Improved Circuit-Based Grounding Electrode Considering Frequency Dependence of Soil Parameters	Ruqayyah Othman (Universiti Teknologi Malaysia ; Faculty of Electrical Engineering, Malaysia); Zulkurnain Abdul-Malek (University Technology Malaysia, Malaysia)
Selection of Single-tuned Filter and High Pass Damped Filter with Changes of Inverter Type to Reduce Harmonics on Microgrid AC-DC	Herlina Wahab (Sriwijaya University ; University of Indonesia, Indonesia); Rudy Setiabudy (Universitas Indonesia (UI), Indonesia); Guru Wibowo (Universitas Indonesia, Indonesia)

Distance Effect on Lightning Electromagnetic Pulse over Lossy Ground

Muhammad Irfan Jambak (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Malaysia); Mohammed Imran Mousa and Zulkurnain Abdul-Malek (University Technology Malaysia, Malaysia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia)

Power Generation from Wave Energy Using Floating Device

Asnor Mazuan Ishak, Ahmad Shukri Abu Hasim, Syed Mohd Fairuz Syed Mohd Dardin and Akram Abdul Azid (Universiti Pertahanan Nasional Malaysia, Malaysia)

Electricity Demand Forecasting of Household Sector in Papua Province 2050

Yosef Lefaan (Universitas Indonesia, Indonesia)

Wavelet Analysis of the Onset of VHF and Microwave Radiation Emitted by Lightning

Shamsul Ammar Shamsul Baharin and Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia); Dinesh Periannan, Muhammad Haziq Mohammad Sabri and Seah Boon York (Universiti Teknikal Malaysia Melaka, Malaysia); Sulaiman Ali Mohammad (Universiti Teknologi Malaysia, Malaysia); Gaopeng Lu (Chinese Academy of Sciences ; Institute of Atmospheric Physics, P.R. China); Mohamad Zoinol Abidin Bin Abd Aziz (Universiti Teknikal Malaysia Melaka ; Hang Tuah Jaya, Malaysia); Norbayah Yusop (Utem, Malaysia); Mohd Muzafar Ismail (University Tecnical Malaysia Melaka, Malaysia); Zulkurnain Abdul-Malek (UTM, Malaysia)

VHF Emissions Prior to the Onset of Initial Electric Field Changes of Intracloud Flashes

Muhammad Haziq Mohammad Sabri and Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia); Dinesh Periannan and Seah Boon York (Universiti Teknikal Malaysia Melaka, Malaysia); Sulaiman Ali Mohammad (Universiti Teknologi Malaysia, Malaysia); Mohamad Zoinol Abidin Bin Abd Aziz (Universiti Teknikal Malaysia Melaka ; Hang Tuah Jaya, Malaysia); Gaopeng Lu (Chinese Academy of Sciences ; Institute of Atmospheric Physics, P.R. China); Mohd Muzafar Ismail (University Tecnical Malaysia Melaka, Malaysia); Norbayah Yusop (Utem, Malaysia); Vernon Cooray (Uppsala University, Sweden); Zulkurnain Abdul-Malek (UTM, Malaysia)

Performance Analysis of Stacked Capacitive Antenna for Lightning Remote Sensing

Jin Ying Ong and Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia); Muhammad Haziq Mohammad Sabri, Dinesh Periannan and Seah Boon York (Universiti Teknikal Malaysia Melaka, Malaysia); Sulaiman Ali Mohammad (Universiti Teknologi Malaysia, Malaysia); Gaopeng Lu (Chinese Academy of Sciences ; Institute of Atmospheric Physics, P.R. China); Norbayah Yusop (Utem, Malaysia); Mohd Muzafar Ismail (University Tecnical Malaysia Melaka, Malaysia); Vernon Cooray (Uppsala University, Sweden); Mohamad Zoinol Abidin Bin Abd Aziz (Universiti Teknikal Malaysia Melaka ; Hang Tuah Jaya, Malaysia); Zulkurnain Abdul-Malek (UTM, Malaysia)

The Performance Evaluation of Capacitive Antenna with Various Structures and Permittivity Values

Seah Boon York and Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia); Dinesh Periannan and Muhammad Haziq Mohammad Sabri (Universiti Teknikal Malaysia Melaka, Malaysia); Sulaiman Ali Mohammad (Universiti Teknologi Malaysia, Malaysia); Gaopeng Lu (Chinese Academy of Sciences ; Institute of Atmospheric Physics, P.R. China); Mohamad Zoinol Abidin Bin Abd Aziz (Universiti Teknikal Malaysia Melaka ; Hang Tuah Jaya, Malaysia); Norbayah Yusop (Utem, Malaysia); Mohd Muzafar Ismail (University Tecnical Malaysia Melaka, Malaysia); Vernon Cooray (Uppsala University, Sweden); Zulkurnain Abdul-Malek (UTM, Malaysia)

Shaft Mechanical Design of 250 kW Electric Motor

Budi Fadjrln and Harry Purnama (BPPT, Indonesia);
Muhammad Adhynugraha (The Agency for the Assessment
and Application of Technology, Indonesia); Cuk Supriyadi
Ali Nandar (Agency for the Assessment and Application of
Technology, Indonesia)

Development and Validation of Rogowski Coil with
Commercial High Frequency Current Transformer for
Partial Discharge Detection

Mohd Hafizi Ahmad, Nur Hazirah Abdul Khalid and Abdul
Hakim Muhammad Nasib (Universiti Teknologi Malaysia,
Malaysia); Zainuddin Nawawi (Universitas Sriwijaya,
Indonesia); Muhammad Abu Bakar Sidik (Faculty of
Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Eka
Waldi (Andalas University, Indonesia); Muhammad Irfan
Jambak (Faculty of Engineering, Universitas Sriwijaya Ogan
Ilir, Malaysia); Aulia Aulia (Universitas Andalas, Indonesia);
Chaganti Lakshmana Geetha Pavan Kumar (Universiti
Teknologi Malaysia, Malaysia)

The Effect of Surface Mounted Device (SMD) Configuration
Array on Light Distribution on LED Lamp

Herlina Wahab (Sriwijaya University ; University of
Indonesia, Indonesia); Rudy Setiabudy (Universitas
Indonesia (UI), Indonesia)

Power Transistor 2N3055 as a Solar Cell Device

Tresna Dewi, Yohandri Bow, Ahmad Taqwa, Rusdianasari
Rusdianasari and Zulkarnain Zulkarnain (Politeknik Negeri
Sriwijaya, Indonesia)

Theme : Power Systems #2
Room : Batu Bedaun 1
Moderator : Dr. Bhakti Yudho Suprpto
Time : 15.42 – 18.06
Articles : 8

Title	Authors with affiliation and country
Acoustic Partial Discharge Detection Using Low-cost Pre-amplified Piezoelectric Transducer and Coated Optical Fiber Sensor	Mohd Hafizi Ahmad, Izzul Hilmi Arizu and Chaganti Lakshmana Geetha Pavan Kumar (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Eka Walidi (Andalas University, Indonesia); Aulia Aulia (Universitas Andalas, Indonesia); Muhammad Yusof Mohd Noor (Universiti Teknologi Malaysia, Malaysia); Asrul Izam Azmi (Universiti Teknologi Malaysia; The University of New South Wales, Malaysia)
Comparison Double Dielectric Barrier Using Perforated Aluminium for Ozone Generation	Syarifa Fitria and Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Dwirina Yuniarti (Universitas Sriwijaya, Indonesia); Rizda Kurnia (University of Sriwijaya, Indonesia); Zolkafle Buntat (Universiti Teknologi Malaysia, Malaysia)
Evaluation of the Existence of Initial Breakdown Process for Cloud-to-Ground Flashes	Mohd Riduan Ahmad (Universiti Teknikal Malaysia Melaka, Malaysia); Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Muhammad Zikri (Universitas Sriwijaya, Indonesia); Mona Riza Mohd Esa (Universiti Teknologi Malaysia, Malaysia); Muhammad Haziq Mohammad Sabri and Dinesh Periannan (Universiti Teknikal Malaysia Melaka, Malaysia); Gaopeng Lu (Chinese Academy of Sciences; Institute of Atmospheric Physics, P.R. China); Zhang Hongbo (Institute of Atmospheric Physics, Chinese Academy of Sciences, P.R. China)
Enhancement of Cogging Torque Reduction on Inset Permanent Magnet Generator by Using Magnet Edge Shaping Method	Herlina Wahab (Sriwijaya University; University of Indonesia, Indonesia); Tajuddin Nur (Atma Jaya Catholic University, Indonesia)

Variation of Pattern and Cavity Diameter of Aluminium Perforated with Single Glass Dielectric Barrier for Ozone Generation

Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Akhlar Wista Arum and Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Irfan Jambak (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Malaysia); Rizda Kurnia (University of Sriwijaya, Indonesia); Zolkafle Buntat (Universiti Teknologi Malaysia, Malaysia); Syarifa Fitria (Universitas Sriwijaya, Indonesia)

Effects of Cold Plasma Treatment on the Growth Rate of Corn and Eggplant

Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Zolkafle Buntat (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Irfan Jambak (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Malaysia); Yahya Buntat (Universiti Teknologi Malaysia, Malaysia)

Non-thermal Plasma for Removal of NO_x from Diesel Engine Vehicle: A Simulation Study

Muhammad Abu Bakar Sidik (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Indonesia); Zolkafle Buntat (Universiti Teknologi Malaysia, Malaysia); Zainuddin Nawawi (Universitas Sriwijaya, Indonesia); Muhammad Irfan Jambak (Faculty of Engineering, Universitas Sriwijaya Ogan Ilir, Malaysia)

Design of a Solar Micro Power Plant for Home Lighting

Julie Rante (Universitas Katolik De La Salle Manado, Indonesia)



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