INTERNATIONAL CONFERENCE

on Mechanical, Electronics, Computer, and Industrial Technology

MECnIT 2017

December 6th -8th, 2017

GRAND KANAYA HOTEL

Medan - Indonesia

BOOK OF ABSTRACTS

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Book of Abstracts

2017 International Conference on

Mechanical, Electronics, Computer, and Industrial Technology

December 6th-8th, 2017 | Medan, Indonesia

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Welcome Message

On behalf of the organizing committee of the 2017 - International Conference on Mechanical, Electronics, Computer, and Industrial Technology (MECnIT 2017), we would like to welcome with great pleasure, all delegates to Medan, North Sumatera, Indonesia.

Being held from December 6 to 8, 2017 at Grand Kanaya Hotel, Medan, this event is organized by Faculty of Technology & Computer Science, Universitas Prima Indonesia, and also co-organized by Technology, Informatics, Management and Engineering Research Support (TIMERS), National Taiwan University of Science and Technology (NTUST), Universiti Utara Malaysia (UUM), Universitas Sumatera Utara (USU), Institut Teknologi Bandung (ITB), Universitas Padjadjaran (UNPAD), and also Asosiasi Perguruan Tinggi Informatika dan Ilmu Komputer (APTIKOM).

The MECnIT 2017 have attracted many academicians, scientists, engineers, postgraduates, and other professionals from many countries. These conferences aim to promote interaction among engineers, researchers, and scientists active in the related areas. The events are intended to provide a high-level international forum to present, to exchange, and to discuss recent advances, new techniques, and applications in the field of knowledge discussed in this conference.

Our special thank also goes to all individuals and organizations such as the international program committees (IPC), the conference organizers, the reviewers, and the authors, for their contribution in making MECnIT 2017 not only a successful international conference but also as a memorable gathering event. We are also grateful for the support of the publication service of IOP. We hope that it should give you a beautiful memory to bring home in addition to new insights and friends gathered during the conference. We are truly grateful for your contribution and interest. We hope that you will get pleasure from MECnIT 2017 in this beautiful city, Medan, Indonesia.

Best regards,
Abdi Dharma (General Chair of MECnIT 2017)

Contents

2017 International Conference on

Mechanical, Electronics, Computer, and Industrial Technology

December 6th-8th, 2017 | Medan, Indonesia

Welcome to the 2017 - International Conference on Mechanical, Electronics, Computer, and Industrial Technology (MECnIT 2017), to be held on December 2017, at Medan, Sumatera Utara, Indonesia. In addition to the technical sessions, there will be invited sessions, panel sessions and keynote addresses. We solicit full-length, high-quality, and original papers on the following topics:

Track: Mechanical Engineering

Control Systems and Mechanical Engineering, Aerodynamics, Applied Mechanics and Control Systems, Computational Mechanics and Techniques, Dynamics and Vibration, Energy Engineering and Management, Fluid dynamics, Fluid Mechanics and Machinery, Fuels and Combustion, Instrumentation and Control, Material science and Processing, Mechatronics and Mechanical Design, Mechanical Power Engineering, Nanomaterial Engineering, New and Renewable Energy, Pc Guided Design and Manufacture, Plasticity Mechanics, Pollution and Environmental Engineering, Power-train Solutions, Powertrain Technology, Precision Mechanics, Mechatronics, Production Technology, Robotic Automation and Control, Textile and Leather Technology, Vehicle Design and Manufacturing, Vehicle Dynamics and Intelligent Control Systems, Vehicle Safety, Thermodynamics, Transportation Systems, Mechanical Sciences.

International Conference - MECnIT 2017

Track: Electrical Engineering

Electronics and Devices, Nanotechnologies, Smart Grids, Sensing and Sensor Technologies, Power Electronics, Digital Circuits, Analog Circuits & Signal Processing, Factory and Design Automation, Motion Control, Intelligent Systems and Machine Vision, 3D Semiconductor Device Technology, Advanced Electromagnetics, Component Technology of MEMS, Electronics System-Level Based Design, Adaptive Signal Processing, Compound Semiconductor Physics and Devices, Control System and Robotics, Biomedical Engineering, Mechatronic Technologies, Telecommunication.

Track: Computer Science

Mathematics for Computing, Computer Graphics Rendering, Cryptography, Multimedia Processing (Image Processing, Audio Processing, etc), Computer Vision, Intelligence System, Artificial Intelligence (Soft Computing, Neural Network, Machine Learning, Bioinformatics, etc), Assembler Programming, Data Structure (Graph, Tree, Compression, etc), File System (Structured Data Storage, Database Storage, Multimedia Storage), Natural Language Processing, Compilation Technique, Virtual Object Modelling, Networking and Data Communication.

Track: Information System & Technology

Business Process Modelling, System Prototyping, Decision Support System, Data Mining, Data Warehouse, Big Data, E-Business, E-Commerce, IT Risk & Disaster, Information Technology Infrastructure Library (ITIL), IT Services, Enterprise Resources Planning (ERP), Network Security, Service Oriented Architecture (SOA), Internet of Things.

Track: Industrial Technology

Planning and Control Project management, Green Manufacturing Technology, Ergonomic, Supply chain management and logistics, Environmental impact of Industrial Engineering, Industrial engineering and Operations management, Healthcare engineering and management, Design and Manufacturing, Sustainable Transportation System, Internet of Things.

Conference Organization

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R.V. Hari Ginardi, Institut Teknologi Sepuluh November, Indonesia

Opim Salim Sitompul, Universitas Sumatera Utara, Indonesia

Erna Budhiarti, Universitas Sumatera Utara, Indonesia

Keynote & Invited Speaker

Keynote Speaker	**Professor Dong-Hau Kuo**
	Department of Materials Science and Engineering National Taiwan University of Science and Technology No. 43, Sec. 4, Keelung Road Taipei, Taiwan TEL: 886-2-2730-3291; FAX: 886-2-2730-3291; E-MAIL:dhkuo@mail.ntust.edu.tw
Doctorate	Ceramic Engineering, University of Illinois at Urbana - Champaign, 1990 - 1996 “Investigation of Oxide/Oxide Composites with a Weak Interphase” Advisor : W. M. Kriven
Master	Mining, Metallurgy and Materials Science, National Cheng Kung University, 1985 - 1987 “Growth and Microstructure of Low - Pressure CVD - SiC”, Advisor : M. H. Hon
Bachelor	Materials Science, Feng Chia University, 1981 - 1985.

Keynote Speaker	**Professor Wonsub Chung**
	Division of Material Science & Engineering Pusan National University 2, Busandaehak - ro 63beon - gil, Geumjeong - gu Busan, 46241 Korea e -mail: wschung1@pusan.ac.kr Tel: +82-51-510-2386; H.P. : +82-10-8517-0855; Fax : +82-51-514-4457
Doctorate **Ph.D**	Materials Science and Engineering. 1985 - 1989 Kyushu University, Hukuoka, Japan (Advisor: Prof. Ono Yoichi) Thesis: A Basic Study on Gas Reduction of Calcium Ferrite
Master **M.S.**	Materials Science and Engineering, 1983 - 1985 Pusan National University, Busan, South Korea (Advisor: Prof. Kyusub Song)
Bachelor **B.S.**	Materials Science and Engineering, 1978 - 1983 Pusan National University, Busan, South Korea

Keynote & Invited Speaker

Keynote Speaker	**Wahyu Caesarendra, Ph.D**
	Mechanical Engineering Department, Faculty of Engineering Diponegoro University, Semarang, Indonesia Email: wc026@uowmail.edu.au; wcaesarendra@ntu.edu.sg
Doctorate **Ph.D**	University of Wollongong, Australia(Feb 2011 - Dec 2015) School of Mechanical, Materials and Mechatronics Engineering, Faculty of Engineering and Information Sciences PhD Thesis: “Vibration and acoustic emission-based condition monitoring and prognosis methods for very low speed slew bearing”
Master **M.Eng (Hons.)**	Pukyong National University, South Korea (Feb 2008 - Feb 2010) School of Mechanical Engineering, Mechanical Design Engineering Department Master of Engineering Thesis: “Model-based and data-driven approach for machine prognostics” Credits: 24; GPA: 4.44 (scale 4.5); Predicate: Cum Laude
Bachelor **B.Eng (Hons.)**	Diponegoro University,Indonesia(Aug 2000 -Aug2005) Faculty of Engineering, Mechanical Engineering Department Final Year Project Title: “Development of vibration educational apparatusbased on virtual instrument for dynamic analysis” Credits: 150; GPA: 3.09 (scale 4); Predicate: Very satisfactorily

Invited Speaker	**Poltak Sihombing, Ph.D**
	Computer Science Faculty of Computer Science and Information Technology Universitas Sumatera Utara Email: poltakhombing@yahoo.com; poltak@usu.ac.id
Doctorate	Universiti Sains Malaysia (USM), Penang, Malaysia Ilmu Komputer 2007 - 2010 Keyword Competition Approach in Ranked Document Retrieval Prof.Dr. Abdullah Embong, MSc/Assoc. Prof. Dr. Putra Sumari
Master	Universitas Indonesia (UI) Jakarta Ilmu Komputer 1996 - 1999 Sistem Temu - Kembali Informasi Menggunakan Jaringan Syaraf Tiruan dengan Beberapa Ukuran Kemiripan Prof. Dr. Zainal Hasibuan, MSc
Bachelor	Universitas Sumatera Utara (USU), Medan Fisika Komputasi 1981 - 1988 Penggunaan Micro - System Troubleshooter Pada Instrumen Yang Memakai Mikroprosesor Drs. Luhut Sihombing, MSc / Drs. Zakaria Santoso, MSc

Program at a Glance

Time	Activities	Description
Wednesday, December 6th 2017		
14:00 - 20:00	Registration	Presenter and Attendee Registration
Thursday, December 7th 2017		
08:00 - 08:15	Opening Ceremony	Master of Ceremony
08:15 - 08:20	National Anthem	Indonesia Raya
08:20 - 08:30	Welcoming Message	**Abdi Dharma** General Chair of MECnIT 2017
08:30 - 08:40	Opening Remarks	**Chrismis Novalinda Ginting** Rector of Universitas Prima Indonesia
08:40 - 09:00	Photo Session	Master of Ceremony
09:00 - 09:40	Keynote Talk I	**Prof. Dong-Hau Kuo** National Taiwan University of Science and Technology, Taiwan
09:40 - 10:20	Keynote Talk II	**Prof. Wonsub Chung** Pusan National University
10:20 - 10:30	Coffee Break	Master of Ceremony
10:30 - 11:00	Keynote Talk III	**Wahyu Caesarendra, Ph.D.** Nanyang Technological University, Singapore
11:00 - 11:30	Invited Speaker	**Poltak Sihombing, Ph.D.** Universitas Sumatera Utara, Indonesia
11:30 - 13:00	Lunch Break	
13:00 - 15:00	**Parallel Session 1**	
	Class 1	Mechanical Engineering
	Class 2	Electrical Engineering
	Class 3	Computer Science
	Class 4	Information System & Technology
	Class 5	Industrial Technology
15:00 - 15:15	Coffee Break	
15:15 - 17:15	**Parallel Session 2**	
	Class 1	Mechanical Engineering
	Class 2	Electrical Engineering
	Class 3	Computer Science
	Class 4	Information System & Technology
	Class 5	Industrial Technology
17:15 - 19:00	Time Off	
19:00 - 19:05	Closing Ceremony	Master of Ceremony
19:05 - 19:15	Closing Message	**Abdi Dharma** General Chair of MECnIT 2017
19:15 - 20:30	**Gala Dinner**	

Program at a Glance

Friday, December 8th 2017		
08:00 - 12:00	Tourism	Great Mosque of Medan
		Maimun Palace
		Tjong A Fie Mansion

Visit the Sights Of:

Great Mosque of Medan or Masjid Raya Al Mashun is a mosque located in Medan, Indonesia. The mosque was built in the year 1906 and completed in 1909. In beginning of its establishment, the mosque was a part of the Maimun palace complex. Its architectural style combines Middle Eastern, Indian and Spanish elements. The mosque has an octagonal shape and has wings to the south, east, north and west.

Maimun Palace or Maimoon Palace (Indonesian: Istana Maimun) is an istana (royal palace) of the Sultanate of Deli and a well-known landmark in Medan, the capital city of North Sumatra, Indonesia. Today, it serves as a museum.

Tjong A Fie Mansion is a two-story mansion in Medan, North Sumatra, built by Tjong A Fie (1860–1921) a Hakka merchant who came to own much of the land in Medan through his plantations, later becoming 'Majoor der Chineezen' (leader of the Chinese') in Medan and constructing the Medan-Belawan railway.

Parallel Session

Session 1	Computer Science	
13:00 - 13:10	Ontology Design of Influential People Identification Using Centrality	Rolly Maulana Awangga
13:10 - 13:20	The Simple Absenteeism Face Recognition System with Viola Jones Method	Rudolfo Damanik
13:20 - 13:30	Overview Electrotactile Feedback for Enhancing Human Computer Interface	Daniel S Pamungkas
13:30 - 13:40	Diagnosis of Palm Oil Disease Based on Expert System Technology Using Navie Bayes Method	Marlince Nababan
13:40 - 13:50	An Online Condition Monitoring System Implemented an Internet Connectivity and FTP for Low Speed Slew Bearing	Wahyu Caesarendra
13:50 - 14:00	Mining Association Rule Based on the Population Diseases for Recommendation of Medicine Needs	Mawaddah Harahap
14:00 - 14:10	Combination Base64 Algorithm and EOF Technique for Steganography	Heri Nurdiyanto
14:10 - 14:20	Searching Process with Raita Algorithm and Its Application	Robbi Rahim
14:20 - 14:30	EMG Finger Movement Classification Based on ANFIS	Wahyu Caesarendra
14:30 - 14:40	Extraction of ECG Signal with Adaptive Filter for Hearth Abnormalities Detection	Mardi Turnip
14:40 - 14:50	Improve Key Performance on One Time Pad Algorithm with Dynamic Keys Using Random Numbers Linear Congruential Generator	Dicky Apdillah
14:50 - 15:00	Attribute Weighting Based K-Nearest Neighbor Using Gain Ratio	Adli Abdillah Nababan

Parallel Session

Session 2	Computer Science	
15:15 - 15:25	The Development of Encryption Application and Decryption of Document Files with Advanced Encryption Standard (AES) 256 Bits Based on Android	Hendra Pasaribu
15:25 - 15:35	Performance of the Lax-Wendroff Finite Volume Method for Solving the Gravity Wave-Model Equations	Cecilia Heru Purwitaningsih
15:35 - 15:45	Improving Data Security in Mobile Phone Device with RSA and AES Method	Yonata Laia
15:45 - 15:55	Image Steganography in Securing Sound Files Using Arithmetic Coding Algorithm, Triple Data Encryption Standard (3DES) and Modified Least Significant Bit (MLSB)	Adnan Buyung Nasution
15:55 - 16:05	Performance Analysis of AES-Blowfish Hybrid Algorithm for Security of Patient Medical Record Data	Amir Mahmud Husein
16:05 - 16:15	Variational Estimate Method for Solving Autonomous Ordinary Differential Equations	Sudi Mungkasi
16:15 - 16:25	Smart Home Simulation Concept in Electronic Device Monitoring Through Wireless Home Gateway Network Using Cisco Packet Tracer	Oloan Sihombing
16:25 - 16:35	Performance of the IEEE 802.15.4 Protocol as the Marker of Augmented Reality in Museum	Adi Kurniawan Saputro
16:35 - 16:45	Bellman Ford Algorithm - In Routing Information Protocol (RIP)	Oris Krianto Sulaiman
16:45 - 16:55	A Simple Compression Scheme Based on Ascii Value Differencing	Tommy

Parallel Session

Session 1	Electrical Engineering	
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13:10 - 13:20	Constant Voltage and Constant Current Control Implementation for Electric Vehicles (EVs) Wireless Charger	Marojahan Tampubolon
13:20 - 13:30	Controller and Monitor of Room Temperature Based on Computer	Hendrik Siagian
13:30 - 13:40	Passivity-Based Control for Two-Wheeled Robot Stabilization	Nur Uddin
13:40 - 13:50	Application of Sensor in Trash Picker Tool	Despa Perangin Angin
13:50 - 14:00	A Low Cost Indoor Localization System for Mobile Robot Experimental Setup	Sisdarmanto Adinandra
14:00 - 14:10	Prototype Trolley Following Human Movement	Eka Suryanto
14:10 - 14:20	Biomass Analysis at Palm Oil Factory as an Electric Power Plant	Yusniati Yusniati
14:20 - 14:30	Brain Mapping of Drug Addiction in Witdrawal Condition Based P300 Signals	Arjon Turnip

Parallel Session

Session 1	Industrial Technology	
13:00 - 13:10	Developing Business Strategies Using SWOT Analysis in a Color Crackers Business	Irwan Budiman
13:10 - 13:20	Defect Analysis of Quality Palm Kernel Meal Using Statistical Quality Control in Kernels Factory	Meilita Tryana Sembiring
13:20 - 13:30	Design of Training for Distributors in Improving Total Consumers in Multilevel Marketing Industry	Anggianika Mardhatillah
13:30 - 13:40	Analysis of Optimal Transport Route Determination of Oil Palm Fresh Fruit Bunches from Plantation to Processing Factory	Ukurta Tarigan
13:40 - 13:50	Feasibility Study Analysis of Establishing Archery Sports Special Place	Uni Pratama Pebrina Tarigan
13:50 - 14:00	PERFORMANCE ANALYSIS OF SUPPLY CHAIN MANAGEMENT WITH SUPPLY CHAIN OPERATION REFERENCE MODEL (Case Study: PT Shamrock Manufacturing Corpora)	Abdurrozzaq Hasibuan
14:00 - 14:10	The Improvement of Space Utilization Using Layout Systematic Design in Private Higher Education	Anita Kembaren
14:10 - 14:20	A Framework for Text Mining in Scientometric Study; A Case Study in Biomedicine Publications	V M M Silalahi
14:20 - 14:30	The Robust Design for Improving Crude Palm Oil Quality in Indonesian Mill	Siti Maretia Benu

Parallel Session

Session 1	Information System & Technology	
13:00 - 13:10	Disaster Mitigation Model using Geofencing Technique : Case Study of Indonesia	Rossi Passarella
13:10 - 13:20	SQL Collaborative Learning Framework Based on SOA	Sari Armiati
13:20 - 13:30	Improving TOGAF ADM 9.1 Migration Planning Phase by ITIL V3 Service Transition	Nisa Hanum Harani Harani
13:30 - 13:40	Analysis of Investment IT Planning on Logistic Company Using COBIT 5	Syafrial Fachri Pane
13:40 - 13:50	Sms Security System on Mobile Devices Using Tiny Encryption Algorithm (TEA)	M S Novelan
13:50 - 14:00	INA-RXIV : The Missing Puzzle in Indonesia's Scientific Publishing Workflow	Robbi Rahim
14:00 - 14:10	CariKos, an E-Commerce Web Application Using Weighting Method, K-Means Method, and Back Propagation Method	R. V. Hari Ginardi
14:10 - 14:20	Comparison Ahp and Saw to Promotion of Head Major Department Smk Muhammadiyah 04 Medan	Muhardi Saputra
14:20 - 14:30	Application of Forward Chaining Method to Diagnosis of Onion Plant Diseases	Delima Sitanggang
14:30 - 14:40	Text Mining of UU-ITE Implementation in Indonesia	Lukmanul Hakim
14:40 - 14:50	Increasing Prediction the Original Final Year Project of Student Using Genetic Algorithm	Rijois Iboy Erwin Saragih
14:50 - 15:00	Factors Determining Tourist Preferences on Smart Tourism (Case: Vredeburg Fort Museum)	Rima Amanda

Parallel Session

Session 2	Information System & Technology	
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15:25 - 15:35	Analysis of User Readiness Toward ICT Usage at Small Medium Enterprise in South Tangerang	Darmawan Napitupulu
15:35 - 15:45	Optimization Training Back-Propagation Neural Network Algorithm Using Nguyen-Widrow for Diagnosis of Ludwig Angina	Siti Aisyah
15:45 - 15:55	Testing Technology Readiness Index Model Based on Exploratory Factor Analysis Approach	AF Ariani
15:55 - 16:05	E-Business, the Impact of Regional Growth on the Improvement of Information and Communication Development	MI Setiawan
16:05 - 16:15	The Effect of Mining Data K-Means Clustering Toward Students Profile Model Drop Out Potential	Windania Purba
16:15 - 16:25	E-Business, the Impact of the Local Government Development (APBD) on the Increase of Information and Communication Development in Indonesia	MI Setiawan
16:25 - 16:35	Problem recording system based on website at Universitas Prima Indonesia	Rico Wijaya Dewantoro
16:35 - 16:45	E-Business, Airport Development and Its Impact on the Increasing of Information of Communication Development in Indonesia	MI Setiawan
16:45 - 16:55	Distribute off -Time Office Internet Bandwidth Using Topology Mesh for Surrounding Neighbour	Niskarto Zendrato

Parallel Session

Session 1	Mechanical Engineering	
13:00 - 13:10	Convenient Synthesis of Mn-doped Zn(O,S) Nanoparticle Photocatalyst for 4-Nitrophenol Reduction	Noto Susanto Gultom
13:10 - 13:20	Photocatalytic Antibacterial Activity of Copper-Based Nanoparticles Under Visible Light Illumination	Zong-Yan Wu
13:20 - 13:30	Design and Testing of UMM Vertical Ball Mill (UVBM) for Producing Aluminium Powder	I S Aisyah
13:30 - 13:40	Effect of the Machined Surfaces of AISI 4337 Steel to Cutting Conditions on Dry Machining Lathe	Robbi Rahim
13:40 - 13:50	Comparation Between PCI Girder and Box Girder in Bridges Presstressed Concrete Design	Cut Rahmawati
13:50 - 14:00	The Design of Mechanical Arm the System Sort of Tin Cans	Yulia Resti
14:00 - 14:10	Identification of Bearing Failure Using Signal Vibrations	Irsyadi Yani
14:10 - 14:20	Implementation of Push Recovery Strategy Using Triple Linear Inverted Pendulum Model in "T-FloW" Humanoid Robot	Riananda Dimas Pristovani
14:20 - 14:30	Flex Sensor Based Biofeedback Monitoring Post-Stroke Fingers Myopathy Patients	Y R Garda
14:30 - 14:40	Generate an Optimum Lightweight Legs Structure Design Based on Critical Posture in A-FLoW Humanoid Robot	A Luthfi
14:40 - 14:50	Variational Iteration Solution to the Gravity Wave-Model Equations	Sudi Mungkasi
14:50 - 15:00	Design of Arm Robot Using Ultrasonic Sensors	Rahayu Sashanti

Ontology Design of Influential People Identification Using Centrality

Rolly Maulana Awangga; Muhammad Yusril Helmi Setyawan

Track: Computer Science | Session: 1 | Time: 13:00 - 13:10

Abstract. Identifying influential people as a node in a graph theory commonly calculated by social network analysis. The social network data has the user as node and edge as relation forming a friend relation graph. This research is conducting different meaning of every nodes relation in the social network. Ontology was perfect match science to describe the social network data as conceptual and domain. Ontology gives essential relationship in a social network more than a current graph. Ontology proposed as a standard for knowledge representation for the semantic web by World Wide Web Consortium. The formal data representation use Resource Description Framework(RDF) and Web Ontology Language(OWL) which is strategic for Open Knowledge-Based website data. Ontology used in the semantic description for a relationship in the social network, it is open to developing semantic based relationship ontology by adding and modifying various and different relationship to have influential people as a conclusion. This research proposes a model using OWL and RDF for influential people identification in the social network. The study use degree centrality, betweenness centrality, and closeness centrality measurement for data validation. The data come from Facebook user data by building Facebook apps.

The Simple Absenteeism Face Recognition System with Viola Jones Method

Rudolfo Damanik

Track: Computer Science | Session: 1 | Time: 13:10 - 13:20

Abstract. Absence was a list of documents that the company used to record the attendance time of each employee. At present fingerprint machines were used to record absences. The most common problem in a fingerprint machine is the identification of a slow sensor or a sensor not recognizing a finger. To overcome this problem, this research tried to utilize facial recognition for attendance process. The method used for facial recognition was Viola Jones. Through the processing phase of the RGB face image was converted into a histogram equalization face image for the next stage of recognition. The result of this research was the absence process could be done less than 1 second with a maximum slope of ± 700 and a distance of 20-200 cm.

Abstracts

Overview Electrotactile Feedback for Enhancing Human Computer Interface

Daniel S Pamungkas; Wahyu Caesarendra

Track: Computer Science | Session: 1 | Time: 13:20 - 13:30

Abstract. To achieve effective interaction between a human and a computing device or machine, adequate feedback from the computing device or machine is required. Recently, haptic feedback is increasingly being utilised to improve the interactivity of the Human Computer Interface (HCI). Most existing haptic feedback enhancements aim at producing forces or vibrations to enrich the user's interactive experience. However, these force and/or vibration actuated haptic feedback systems can be bulky and uncomfortable to wear and only capable of delivering a limited amount of information to the user which can limit both their effectiveness and the applications they can be applied to. To address this deficiency, electrotactile feedback is used. This involves delivering haptic sensations to the user by electrically stimulating nerves in the skin via electrodes placed on the surface of the skin. This paper presents a review and explores the capability of electrotactile feedback for HCI applications. In addition, a description of the sensory receptors within the skin for sensing tactile stimulus and electric currents alsoseveral factors which influenced electric signal to transmit to the brain via human skinare explained.

Diagnosis of Palm Oil Disease Based on Expert System Technology Using Navie Bayes Method

Marlince Nababan

Track: Computer Science | Session: 1 | Time: 13:30 - 13:40

Abstract. Expert System is a system that uses computer-based human knowledge to solve a problem and which is usually done by an expert or experts in the field. The problem that often occurs the disease of oil palm crops, the farmers are often late in handling the disease resulting in decreased production. Given that palm oil expert systems or man-made intelligence using the Navie Bayes method can help farmers to make informed decisions about the type of oil palm disease that increases productivity and profitability for oil palm farmers, and the development of expert systems helps farmers in oil palm cultivation.

Abstracts

An Online Condition Monitoring System Implemented an Internet Connectivity and FTP for Low Speed Slew Bearing

Wahyu Caesarendra; Buyung Kosasih; Tegoeh Tjahjowidodo; Mochammad Ariyanto; Lee Wei Qiang Daryl; Daniel Pamungkas

Track: Computer Science | Session: 1 | Time: 13:40 - 13:50

Abstract. Rapid and reliable information in slew bearing maintenance is not trivial issue. This paper presents the online monitoring system to assist maintenance engineer in order to monitor the bearing condition of low speed slew bearing in sheet metal company. The system is able to pass the vibration information from the place where the bearing and accelerometer sensors are attached to the data center; and from the data center it can be access by opening the online monitoring website from any place and by any person. The online monitoring system is built using some programming languages such as C language, MATLAB, PHP, HTML and CSS. Generally, the flow process is start with the automatic vibration data acquisition; then features are calculated from the acquired vibration data. These features are then sent to the data center; and form the data center, the vibration features can be seen through the online monitoring website. This online monitoring system has been successfully applied in School of Mechanical, Materials and Mechatronic Engineering, University of Wollongong.

Mining Association Rule Based on the Population Diseases for Recommendation of Medicine Needs

Amir Mahmud Husein; Mawaddah Harahap; Siti Aisyah; Fachrul Rozi; Bayu Wijaya

Track: Computer Science | Session: 1 | Time: 13:50 - 14:00

Abstract. Selection of medicine that is not as needed will lead to a vacancy at drug, this has an impact on medical services and economic value in hospital. The importance of an appropriate medicine selection process requires an automated way to select needs according to the development of the patient's illness. In this study, we analysed patient prescriptions to identify the relationship between the disease and the medicine used by the physician in treating the patient's illness. The analytical framework includes: (1) patient prescription data collection, (2) applying k-means clustering to classify the top 10 diseases, (3) applying Apriori algorithm to find association rules based on support, confidence and lift value. Of the results of tests of patient prescription datasets 2015-2016, the application of the k-means algorithm for the clustering of 10 dominant diseases significantly affects the value of trust and support of all association rules on the Apriori algorithm making it more consistent with finding association rules of disease and related medicine. The value of support, confidence and the value lift of disease and related medicine can be used as recommendations for appropriate medicine selection. according to conditions of disease progressions of the hospital, so more optimal medicine procurement.

Abstracts

Combination Base64 Algorithm and EOF Technique for Steganography

Heri Nurdiyanto; Rahmat Hidayat; Robbi Rahim; Ansari Saleh Ahmar; Dodi Siregar; Andysah Putera Utama Siahaan; Ilham Faisal; Sayuti Rahman; Dahlan Abdullah; Darmawan Napitupulu; Muhammad Ikhsan Setiawan; S Sriadhi

Track: Computer Science | Session: 1 | Time: 14:00 - 14:10

Abstract.The steganography process combines mathematics and computer science. Steganography consists of a set of methods and techniques to embed the data into another media so that the contents are unreadable to anyone who does not have the authority to read these data. The main objective of the use of base64 method is to convert any file in order to achieve privacy. This paper discusses a steganography and encoding method using base64, which is a set of encoding schemes that convert the same binary data to the form of a series of ASCII code. Also, the EoF technique is used to embed encoding text performed by Base64. As an example, for the mechanisms a file is used to represent the texts, and by using the two methods together will increase the security level for protecting the data, this research aims to secure many types of files in a particular media with a good security and not to damage the stored files and coverage media that used.

Searching Process with Raita Algorithm and Its Application

Robbi Rahim; Ansari Saleh Ahmar; Dahlan Abdullah; Dedy Hartama; Darmawan Napitupulu; Andysah Putera Utama Siahaan; Muhammad Noor Hasan Siregar; S Sriadhi

Track: Computer Science | Session: 1 | Time: 14:10 - 14:20

Abstract. Searching is a common process performed by many computer users, Raita algorithm is one algorithm that can be used to match and find information in accordance with the patterns entered. Raita algorithm applied to the file search application using java programming language and the results obtained from the testing process of the file search quickly and with accurate results and support many data types.

Abstracts

EMG Finger Movement Classification Based on ANFIS

Wahyu Caesarendra; Tegoeh Tjahjowidodo; Yohanes Nico; Sri Wahyudati; Lisa Nurhasanah

Track: Computer Science | Session: 1 | Time: 14:20 - 14:30

Abstract. An increase number of people suffering from stroke has impact to the rapid development of finger hand exoskeleton to enable an automatic physical therapy. Prior to the development of finger exoskeleton, a research topic yet important i.e. machine learning of finger gestures classification is conducted. This paper presents a study on EMG signal classification of 5 finger gestures as a preliminary study toward the finger exoskeleton design and development in Indonesia. The EMG signals of 5 finger gestures were acquired using Myo EMG sensor. The EMG signal features were extracted and reduced using PCA. The ANFIS based learning is used to classify reduced features of 5 finger gestures. The result shows that the classification of finger gestures is less than the classification of 7 hand gestures.

Extraction of ECG Signal with Adaptive Filter for Hearth Abnormalities Detection

Mardi Turnip; Rijois Iboy Erwin Saragih; Abdi Dharma; Dwi Kusumandari; Arjon Turnip; Delima Sitanggang; Siti Aisyah

Track: Computer Science | Session: 1 | Time: 14:30 - 14:40

Abstract. This paper demonstrates an adaptive filter method for extraction of electrocardiogram (ECG) feature in hearth abnormalities detection. In particular, electrocardiogram (ECG) is a recording of the heart's electrical activity by capturing a tracing of cardiac electrical impulse as it moves from the atrium to the ventricles. The applied algorithm is to evaluate and analyze ECG signals for abnormalities detection based on P, Q, R and S peaks. In the first phase, the real-time ECG data is acquired and pre-processed. In the second phase, the procured ECG signal is subjected to feature extraction process. The extracted features detect abnormal peaks present in the waveform. Thus the normal and abnormal ECG signal could be differentiated based on the features extracted.

Abstracts

Improve Key Performance on One Time Pad Algorithm with Dynamic Keys Using Random Numbers Linear Congruential Generator

Dicky Apdillah; Muhammad Khoiruddin Harahap; Nurul Khairina; Amir Mahmud Husein; Mawaddah Harahap

Track: Computer Science | Session: 1 | Time: 14:40 - 14:50

Abstract. The basic of One Time Pad algorithm always requires a pairing of the key for plaintext. If the length of keys less than a length of the plaintext, the key will be repeated until the length of the plaintext same with the length of the key. In this research, we use Linear Congruential Generator method for generating a random number. One Time Pad use a random number as a key for encryption and decryption process. Key will generate through the first letter from the plaintext, resulting not n recursively key in each generated key. This research aims to see whether the One Time Pad Dynamic Key is completely safe to use as data security. Expectation in this paper is how to protecting sensitive data as end goal of IT security. This proposed method is easy to apply but strong security.

Attribute Weighting Based K-Nearest Neighbor Using Gain Ratio

Adli Abdillah Nababan; O S Sitompul; Tulus

Track: Computer Science | Session: 1 | Time: 14:50 - 15:00

Abstract. K- Nearest Neighbor (KNN) is a good classifier, but from several studies, the result performance accuracy of KNN still lower than other methods. One of the causes of the low accuracy produced, because each attribute has the same effect on the classification process, while some less relevant characteristics lead to miss-classification of the class assignment for new data. In this research, we proposed Attribute Weighting Based K-Nearest Neighbor Using Gain Ratio as a parameter to see the correlation between each attribute in the data and the Gain Ratio also will be used as the basis for weighting each attribute of the dataset. The accuracy of results is compared to the accuracy acquired from the original KNN method using 10-fold Cross-Validation with several datasets from the UCI Machine Learning repository and KEEL-Dataset Repository, such as abalone, glass identification, haberman, hayes-roth and water quality status. Based on the result of the test, the proposed method was able to increase the classification accuracy of KNN, where the highest difference of accuracy obtained hayes-roth dataset is worth 12.73%, and the lowest difference of accuracy obtained in the abalone dataset of 0.07%. The average result of the accuracy of all dataset increases the accuracy by 5.33%.

Abstracts

The Development of Encryption Application and Decryption of Document Files with Advanced Encryption Standard (AES) 256 Bits Based on Android

Hendra Pasaribu

Track: Computer Science | Session: 2 | Time: 15:15 - 15:25

Abstract. Currently the development of smartphone technology is increasing every day. It is proven by the increasing transfer of document files between computers with smartphones, sending documents with email, and others. With the transfer of document files cause the occurrence of tapping, file theft, sniffing, etc. One solution to overcome the occurrence of file tapping and theft is by using AES 256 bits cryptography techniques and MD5. AES 256 bits cryptography has the ability to use the key as much as 256 bit and has 4 stages of the process in each round and do the turnaround process as much as 14 times. AES 256 bits cryptography also has a fairly complex calculation process. MD5 is one-way hashing formula and it cannot be reversed. MD5 are designed to protect the integrity a piece of data. The combination of AES 256 bit and MD5 is expected to secure the document files on Android-based smartphone users.

Performance of the Lax-Wendroff Finite Volume Method for Solving the Gravity Wave-Model Equations

Cecilia Heru Purwitaningsih; Sudi Mungkasi

Track: Computer Science | Session: 2 | Time: 15:25 - 15:35

Abstract. The gravity wave-model equations are simplifications of the Saint-Venant equations by neglecting the convective term. This is realistic as long as the gravity effect is more significant than the convective effect in the system. In this paper, we present the performance of the Lax-Wendroff finite volume method used to solve the gravity wave-model equations. This is the first work in discussing the aforementioned method's performance in solving the gravity wave model equations. We obtain that the Lax-Wendroff method is suitable for solving problems without discontinuity in the solution. When there is a discontinuity, the LaxWendroff method produces artificial oscillation in the solution.

Abstracts

Improving Data Security in Mobile Phone Device with RSA and AES Method

Yonata Laia

Track: Computer Science | Session: 2 | Time: 15:35 - 15:45

Abstract. This research discussed how to improve data security on mobile android based applications, as we already know that currently mobile users use android applications are increasing and mobile users are also very accustomed to storing important documents on personal mobile. But when mobile users store data on their own mobile it did not think about how well the data was maintained, because on each mobile it did not have a specific key to secure data but only use the keys already provided by the type of car respectively. This research used RSA and AES algorithm to improve file security on mobile with RSA and AES method increments, and in this case RSA and AES methods had improved data security on mobile.

Image Steganography in Securing Sound Files Using Arithmetic Coding Algorithm, Triple Data Encryption Standard (3DES) and Modified Least Significant Bit (MLSB)

Adnan Buyung Nasution; Syahril Efendi; Saib Suwilo

Track: Computer Science | Session: 2 | Time: 15:45 - 15:55

Abstract. The amount of data inserted in the form of audio samples that use 8 bits with LSB algorithm, affect the value of PSNR which resulted in changes in image quality of the insertion (fidelity). So in this research will be inserted audio samples using 5 bits with MLSB algorithm to reduce the number of data insertion where previously the audio sample will be compressed with Arithmetic Coding algorithm to reduce file size. In this research will also be encryption using Triple DES algorithm to better secure audio samples. The result of this research is the value of PSNR more than 50dB so it can be concluded that the image quality is still good because the value of PSNR has exceeded 35dB.

Abstracts

Performance Analysis of AES-Blowfish Hybrid Algorithm for Security of Patient Medical Record Data

Amir Mahmud Husein; Bayu Wijaya; Tommy; Andi Elhanafi; Rosyidah Siregar

Track: Computer Science | Session: 2 | Time: 15:55 - 16:05

Abstract. A security file is one of way to keep confidentiality of data, integrity and security of information. Cryptography is one of the techniques used to secure and guarantee the confidentiality of data by doing a conversion to the plaintext (original message) to cipher text (hidden message) with two important processes, namely encrypt and decrypt. Some researchers proposed a hybrid method to improve data security. In this research we proposed hybrid method of AES-blowfish (BF) to secure the patient's medical report data onto the form of a PDF file that is sourced from a database. Generation method of private key and public key using two approaches, namely the method of RSA and ECC. Both these approaches, we will Analyze its effect on hybrid method of AES-blowfish based on time and Throughput. Based on the testing results, BF method is faster than AES and AES -BF hybrid, however AES-BF hybrid better for throughput compared to AES and BF is higher.

Variational Estimate Method for Solving Autonomous Ordinary Differential Equations

Sudi Mungkasi

Track: Computer Science | Session: 2 | Time: 16:05 - 16:15

Abstract. In this paper, we propose a method for solving first-order autonomous ordinary differential equation problems using a variational estimate formulation. The variational estimate is constructed with a Lagrange multiplier which is chosen optimally, so that the formulation leads to an accurate solution to the problem. The variational estimate is an integral form, which can be implemented in a computer software. As the variational estimate is an explicit formula, the solution is easy to compute. This is a great advantage of the variational estimate formulation.

Abstracts

Smart Home Simulation Concept in Electronic Device Monitoring Through Wireless Home Gateway Network Using Cisco Packet Tracer

Oloan Sihombing

Track: Computer Science | Session: 2 | Time: 16:15 - 16:25

Abstract. The current technological developments become a process of ease in controlling home electronics using wireless home gateway networks via smartphones or computers connected to the Internet on the Internet of Things, so there is no need for action to press the switch on or off manually. The ease is done by controlling household electronic hardware is an achievement of the development of network technology, where the home gateway device is used as a medium in a wireless network that connects multiple electronic hardware interacting or interconnecting, thus facilitating the control and monitoring of electronic hardware.

Performance of the IEEE 802.15.4 Protocol as the Marker of Augmented Reality in Museum

Adi Kurniawan Saputro, Surya Sumpeno, Mochamad Hariadi

Track: Computer Science | Session: 2 | Time: 16:25 - 16:35

Abstract. Museum is a place to keep the historic objects and historical education center to introduce the nation's culture. Utilizing technology in a museum to become a smart city is a challenge. Internet of thing (IOT) is a technological advance in Information and communication (ICT) that can be applied in the museum. The current ICT development is not only a transmission medium, but Augmented Reality technology is also being developed. Currently, Augmented Reality technology creates virtual objects into the real world using markers or images. In this study, researcher used signals to make virtual objects appear in the real world using the IEEE 802.14.5 protocol replacing the Augmented Reality marker. RSSI and triangulation are used as a substitute microlocation for AR objects. The result is the performance of Wireless Sensor Network could be used for data transmission in the museum. LOS research at a distance of 15 meters with 1000 ms delay found 1.4% error rate and NLOS with 2.3% error rate. So it can be concluded that utilization technology (IOT) using signal wireless sensor network as a replace for marker augmented reality can be used in museum.

Abstracts

Bellman Ford Algorithm - In Routing Information Protocol (RIP)

Oris Krianto Sulaiman; Amir Mahmud Siregar; Khairuddin Nasution; Tasliyah Haramaini

Track: Computer Science | Session: 2 | Time: 16:35 - 16:45

Abstract.In a large scale network need a routing that can handle a lot number of users, one of the solutions to cope with large scale network is by using a routing protocol, There are 2 types of routing protocol that is static and dynamic, Static routing is manually route input based on network admin, while dynamic routing is automatically route input formed based on existing network. Dynamic routing is efficient used to network extensively because of the input of route automatic formed, Routing Information Protocol (RIP) is one of dynamic routing that uses the bellman-ford algorithm where this algorithm will search for the best path that traversed the network by leveraging the value of each link, so with the bellman-ford algorithm owned by RIP can optimize existing networks.

A Simple Compression Scheme Based on Ascii Value Differencing

Tommy; Rosyidah Siregar; Imran Lubis; Andi Marwan Elhanafi; Amir Mahmud Husein; Mawaddah Harahap

Track: Computer Science | Session: 2 | Time: 16:45 - 16:55

Abstract. ASCII characters have a different code representation where each character has a different numeric value between the characters to each other. The characters is usually used as a text message communication has the representation of a numeric code to each other or have a small difference. The value of the difference can be used as a substitution of the characters so it will generate a new message with a size that is a little more. This paper discusses the utilization value of the difference of characters ASCII in a message to a much simpler substitution by using a dynamic-sized window in order to obtain the difference from ASCII value contained on the window as the basis in determining the bit substitution on the file compression results.

Abstracts

Brain Mapping of Low and High Implusivity Based P300 Signals

Dwi Esti Kusumandari; Arjon Turnip; Taufik Hidayat; Muhammad Agung; Artha Ivonita Simbolon; Muhammad Ilham Risqywan

Track: Electrical Engineering | Session: 1 | Time: 13:00 - 13:10

Abstract. Impulsiveness is defined as action without good planning and with little consideration the consequences. Impulsive actions are typically poorly conceived, prematurely expressed, or inappropriate to the undesirable situation such as abuse of drugs. Instead of taking treatment for an addiction subject, it is better take prevention. In this paper, an implusivity detection based EEG-P300 potential is proposed. Twenty four subjects consist of three groups (addiction, methadone, and control) are involved in the experiment. Five different pictures (one picture related drug is used as a target) were randomly flashed to the subjects. The subject is asked to comfortly sit in a chair and to silently count the appearance number of the target. The average 61% and 65% classification accuracies for moderate and high implusive, respectively, are achieved.

Constant Voltage and Constant Current Control Implementation for Electric Vehicles (EVs) Wireless Charger

Marojahan Tampubolon; Laskar Pamungkas; Yao-Ching Hsieh; Huang-Jen Chiu

Track: Electrical Engineering | Session: 1 | Time: 13:10 - 13:20

Abstract. This paper presents the implementation of Constant Voltage (CV) and Constant Current (CC) control for a wireless charger system. A battery charging system needs these control modes to ensure the safety of the battery and the effectiveness of the charging system. Here, the wireless charger system does not employ any post-regulator stage to control the output voltage and output current of the charger. But, it uses a variable frequency control incorporated with a conventional PI control. As a result, the size and the weight of the system are reduced. This paper discusses the brief review of the SS-WPT, control strategy and implementation of the CV and CC control. Experimental hardware with 2kW output power has been performed and tested. The results show that the proposed CV and CC control method works well with the system.

Abstracts

Controller and Monitor of Room Temperature Based on Computer

Hendrik Siagian; Abdi Dharma; Budi Heryanto

Track: Electrical Engineering | Session: 1 | Time: 13:20 - 13:30

Abstract. Control and monitoring of room temperature are not effective to be done manually in buildings that consist of many rooms. This research was conducted to design the controller and monitor of room temperature via computer using microcontroller board Arduino Uno and LM35DZ module. LM35DZ as temperature sensor installed in every room. Sensor data results are stored in the local MySQL database. Control and monitoring processes done through a web browser by accessing the PHP interface page. The test results show that the room temperature can be displayed on the web browser. The fan can be turned on or off automatically according to the specified temperature range.

Passivity-Based Control for Two-Wheeled Robot Stabilization

Nur Uddin; Teguh Aryo Nugroho; Wahyu Agung Pramudito

Track: Electrical Engineering | Session: 1 | Time: 13:30 - 13:40

Abstract. A passivity-based control system design for two-wheeled robot (TWR) stabilization is presented. A TWR is a statically-unstable non-linear system. A control system is applied to actively stabilize the TWR. Passivity-based control method is applied to design the control system. The design results in a state feedback control law that makes the TWR closed loop system globally asymptotically stable (GAS). The GAS is proven mathematically. The TWR stabilization is demonstrated in computer simulation. The simulation results show that the designed control system is able to stabilize the TWR.

Abstracts

Application of Sensor in Trash Picker Tool

Despaleri Perangin-Angin; Hendrik Siagian; Marcopolo Chang

Track: Electrical Engineering | Session: 1 | Time: 13:40 - 13:50

Abstract. One of waste management can be overcome by recycling. Before recycling, garbage must be sorted first. The large amount of automatic waste sorting can be done by utilizing infrared sensors, metal sensors and light sensors. Hacyl testing of similar garbage obtained show the devices have similar accuracy garbage sorting is a metal (98%), organic (26.67%), paper (32%), and plastics (58%). The accuracy of the mixed waste sorting is a metal (94.67%), organic (28%), paper (12%), and plastics (41.3%)

A Low Cost Indoor Localization System for Mobile Robot Experimental Setup

Sisdarmanto Adinandra; Ahmad Syarif

Track: Electrical Engineering | Session: 1 | Time: 13:50 - 14:00

Abstract. Indoor localization becomes one of the most important part in mobile robot system. One fundamental requirement is to provide an easy-to-use and practical localization system for real-time experiments. In this paper we propose a combination of a recent open source virtual reality (VR) tools, a simple MATLAB code and a low cost USB webcam as an indoor mobile robot localization system. Using the VR tools as a server and MATLAB as a client, the proposed solution can cover up to 1.6 [m] ? 3.2 [m] with the measurement position accuracy up to 1.2 [cm]. The system is insensitive to light, easy to move and can be quickly set up. A series of successful real-time experiments with three different mobile robot types has been conducted.

Abstracts

Prototype Trolley Following Human Movement

Eka Dodi Suryanto; Despaleri Perangin-Angin; Suthes Yogen

Track: Electrical Engineering | Session: 1 | Time: 14:00 - 14:10

Abstract. Automatic mobile trolley was a prototype of wheel robot that serves as a trolley or shopping cart. This paper proposed an automatic mobile trolley using ultrasonic sensors. It can follow humans movement automatically. It did not need to be encouraged or withdrawn. It would make an easier shopping for people as a customers. The trolley can detect the presence of the customers and follow the direction of human movement. The trolley controlled by a microcontroller module unit. Some ultrasonic sensors was installed to detect customers movement. The automatic mobile trolley prototype was driven by 4 DC motors and a 9V DC batterie source. The trolley can detect the direction of the user's movement to a distance of 180 cm. It can follow the human movement wherever they go, during they were in range. It can control its movement automatically to stop, turn based on the direction of the user, forward, backward, and speed. The trolley just move when there was anyone in front of it. So it can go behind anyone if he pass in front of the sensors.

Biomass Analysis at Palm Oil Factory as an Electric Power Plant

Yusniati Yusniati; Luthfi Parinduri; Oris Krianto Sulaiman

Track: Electrical Engineering | Session: 1 | Time: 14:10 - 14:20

Abstract. Biomassa found in palm oil mill industryis a by-product such as palm shell, fiber, empty fruit bunches and pome. The material can be used as an alternative fuel for fossil fuel. On PTPN IVpalm oil millDolok Sinumbah with a capacity of 30 tons tbs/hour of palm fruit fiber and palm shells has been utilized as boiler fuel to produce steam to supplyboilers power plant. With this utilization, the use of generators that using fossil fuel can be reduced, this would provide added value for the company. From the analysis, the fiber and shell materials were sufficient to supply 18 tons/hoursteam for the boiler. Shell material even excess as much as 441,5 tons per month. By utilizing the 2 types of biomass that is available alone, the electricity needs of the factory of 734 Kwh can be met. While other materials such as empty bunches and pome can be utilized to increase the added value and profitability for the palm oil mill.

Abstracts

Brain Mapping of Drug Addiction in Witdrawal Condition Based P300 Signals

Arjon Turnip; Dwi Esti Kusumandari; Muhammad Agung; Artha Ivonita Simbolon; Muhammad Ilham Risqywan; Teddy Hidayat

Track: Electrical Engineering | Session: 1 | Time: 14:20 - 14:30

Abstract. Drug abuse for a long time will slowly cause changes in brain structure and performance. These changes tend to occur in the front of the brain which is directly interfere the concentration and the decision-making process. In this study an experiment involving 10 drug users was performed. The process of recording data with EEG system is conducted during craving condition and 1 hour after taking methadone. From brain mapping results obtained that brain activity tend to occur in the upper layer of the brain during craving conditions and tend to be in the middle layer of the brain after one hour of taking methadone.

Developing Business Strategies Using SWOT Analysis in a Color Crackers Business

Irwan Budiman; Uni Pratama Pebrina Tarigan; Anggianika Mardhatillah; A C Sembiring; William Teddy

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 13:00 - 13:10

Abstract. This research was conducted in color crackers business in Asahan, Sumatera Utara Province in Indonesia. Color crackers are traditional crackers colored in red and white and found in many Indonesian traditional foods as an addition. Traditional business strategies used is not appropriate for the market condition in this industrial 4.0 era. The aim of this study is to develop business strategies in this kind of market situation. This research was done by several steps using SWOT Analysis, Give weighting assessment for SWOT questions, Internal Factor Analysis Summary, External Factor Analysis Summary, and Creating SWOT Matrix. Data were collected through interview and questionnaire with several stakeholders. The result of this study is the business is in the first quadrant. This gives the explanation that the traditional strategies used already inappropriate with the current condition. They need to use SO (Strength – Opportunity) strategy or called as the aggressive strategy to win the market competition.

Abstracts

Defect Analysis of Quality Palm Kernel Meal Using Statistical Quality Control in Kernels Factory

Meilita Tryana Sembiring, Novri Jenita Marbun

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 13:10 - 13:20

Abstract. The production quality has an important impact retain the totality of characteristics of a product or service to pay attention to its capabilities to meet the needs that have been established. Quality criteria Palm Kernel Meal (PKM) set Factory kernel is as follows: oil content: max 8.50%, water content: max 12,00% and impurity content: max. 4.00% While the average quality of the oil content of 8.94%, the water content of 5.51%, and 8.45% impurity content. To identify the defective product quality PKM produced, then used a method of analysis using Statistical Quality Control (SQC). PKM Plant Quality Kernel shows the oil content was 0.44% excess of a predetermined maximum value, and 4.50% impurity content. With excessive PKM content of oil and dirt cause disability content of production for oil, amounted to 854.6078 kg PKM and 8643.193 kg impurity content of PKM. Analysis of the results of cause and effect diagram and SQC, the factors that lead to poor quality of PKM is Ampere second press oil expeller and hours second press oil expeller.

Design of Training for Distributors in Improving Total Consumers in Multilevel Marketing Industry

Anggianika Mardhatillah; Irwan Budiman; Uni Pratama Pebrina Tarigan; Anita Kembaren; Hendi Hendi

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 13:20 - 13:30

Abstract. The current development in multilevel marketing industry plays an important role in building the country's economy, but due to unprofessional distributor behaviour and responsible to make the image of multilevel marketing industry to be bad that resulted in the community to distrust multilevel marketing industry so that this resulted in decreased company revenue due to Lack of public interest in multilevel marketing products. Seeing these conditions, the researchers created a training design to improve the competence of distributors in making sales by looking at factors that affect the level of distributor sales. The research analyzes several factors that influence the distributor sales level: presentation skills, questioning ability, adaptability, technical knowledge, self-control, interaction involvement, sales environment, and intrapersonal skills. Through the analysis of these factors with One Sample T-Test and Multiple Linear Regression methods, researchers designed a training program for distributors to increase their sales. The training designed by researchers for distributors is basic training and special training.

Abstracts

Analysis of Optimal Transport Route Determination of Oil Palm Fresh Fruit Bunches from Plantation to Processing Factory

Ukurta Tarigan; Ronald F Sidabutar; Uni Pratama Pebrina Tarigan; Andree Chen

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 13:30 - 13:40

Abstract. Manufacturers engaged in the business, producing CPO and kernels whose raw materials are oil palm fresh fruit bunches taken from their own plantation, generally face problems of transporting from plantation to factory where there is often a change of distance traveled by truck the carrier of FFB is due to non-specific transport instructions. The research was conducted to determine the optimal transportation route in terms of distance, time and route number. The determination of this transport route is solved using Nearest Neighbour and Clarke & Wright Savings methods. Based on the calculations performed then found in area I with method Nearest Neighbours has a distance of 200.78 Km while Clarke & Wright Savings as with a result of 214.09 Km. As for the harvest area, II obtained results with Nearest Neighbour method of 264.37 Km and Clarke & Wright Savings method with a total distance of 264.33 Km. Based on the calculation of the time to do all the activities of transporting FFB juxtaposed with the work time of the driver got the reduction of conveyance from 8 units to 5 units. There is also improvement of fuel efficiency by 0.8%.

Feasibility Study Analysis of Establishing Archery Sports Special Place

Uni Pratama Pebrina Tarigan; Anggianika Mardhatillah; Irwan Budiman; A C Sembiring; M S Ramadhan

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 13:40 - 13:50

Abstract. This study essentially discusses the basic concepts related to the decision and process of selecting a sports archery business project in order to provide economic and social benefits over time. Archery sports is a sport that requires special skills, both accuracy, coordination mental training and improves the physical condition of the prime. In Medan, it's still a bit of practice archery, but many people love this sport. From the data collected, there are three locations where archery in the city of the field of the Sunggal Knights is located at Jl Tunggul Hitam no.1A, Kec. Medan Sunggal, Avros Educational Park Aval address at Avros Street No.60 Medan, and the Knights of Johor Archery Club which is located at Jl. The work of Darma Gg. Ujung Family, Medan Johor. Therefore a feasibility study was undertaken in establishing an archery sports place in the field. The aspects to be considered in making feasibility studies are market and marketing aspects, technical and equipment aspects, management aspects, legal aspects, economic and social aspects, and financial aspects. Financial analysis using own capital got Payback Period 3 years 5,8 months, Net Present Value Rp 11.684.026 and obtained Internal Rate of Return of 17%.

Abstracts

PERFORMANCE ANALYSIS OF SUPPLY CHAIN MANAGEMENT WITH SUPPLY CHAIN OPERATION REFERENCE MODEL (Case Study: PT Shamrock Manufacturing Corpora)

Abdurrozzaq Hasibuan; Mahrani Arfah; Luthfi Parinduri; Tri Hernawati; S Suliawati; Bonar Harahap; Siti Rahmah Sibuea; Adi Purwadi

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 13:50 - 14:00

Abstract.This research was conducted at PT. Shamrock Manufacturing Corpora, the company is required to think creatively to implement competition strategy by producing goods/services that are more qualified, cheaper. Therefore, it is necessary to measure the performance of Supply Chain Management in order to improve the competitiveness and quality standard. This research begins with the creation of initial dimensions based on Supply Chain Management process,key performanceindicator identification becomes a benchmark in performance measurement whereas Snorm De Boer normalization serves to equalize Key Performance Indicator value. Analiytical Hierarchy Process is perform to assist in determining priority criteria. The result of performance analysis using Supply Chain Reference Operation model of Supply Chain Management performance at PT. Shamrock Manufacturing Corpora looks good because its monitoring system between of 50 - 100 is good.

The Improvement of Space Utilization Using Layout Systematic Design in Private Higher Education

Anita Kembaren; Irwan Budiman; Anggianika Mardhatillah; Uni Pratama Pebrina Tarigan; Albert Jawira

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 14:00 - 14:10

Abstract. This research was conducted in one of the higher education in Medan, especially at faculty computer science. The faculty consists of 6 departments and has many students from the departments. As one of the most populated cities in Indonesia, the price of land is so high so effective and efficient space utilization is highly required. Faculty of computer science requires lecturer room to improve the effectiveness of lecturer's performance, big cost to build new room hence done the existing room. Design using Computerized Relationship Layout Planning (CORELAP) algorithm based on the total value of closeness between departments or total closeness rating (TCR), then calculate the rectilinear distance between departments based on the coordinates of the central point of the department. The distance obtained is multiplied by the flow of material from the From - to Chart matrix. The analysis is done by comparing the total distance between the initial layout and the proposed layout and then viewing the activities performed in each room. The total initial layout distance of 1760 m while the total layout proposal of 1753.5 m. The result of CORELAP algorithm processing gives 0.37% efficiency and the minimum classroom activity is converted into lecturer room.

Abstracts

A Framework for Text Mining in Scientometric Study; A Case Study in Biomedicine Publications

V M M Silalahi; Ria Hardiyati; Irene M Nadhiroh; Tri Handayani; Rizka Rahmaida; Mia Amelia

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 14:10 - 14:20

Abstract. The data of Indonesians scholarly publications of research in the domain of biomedicine has been collected to be text mined for the purpose of a scientometric study. The goal is to build a predictive model that provides a classification of documents based on the potency for downstreaming in the context of the readiness level of the results of the research in the direction to commercialization. To this end an effort is described to build a special corpus of research publications in the domain of Indonesian biomedicine, and an investigation is conducted relating to the problems associated with building a corpus and then a framework is proposed to manage the scientometric study, based on text mining.

The Robust Design for Improving Crude Palm Oil Quality in Indonesian Mill

Siti Maretia Benu; Sukaria Sinulingga; Nazaruddin Matondang; Irwan Budiman

Track: Industrial Technology / Industrial Engineering | Session: 1 | Time: 14:20 - 14:30

Abstract. This research was conducted in palm oil mill in Sumatra Utara Province, Indonesia. Currently, the main product of this mill is Crude Palm Oil (CPO) and hasn't met the expected standard quality. CPO is the raw material for many fat derivative products. The generally stipulated quality criteria are dirt count, free fatty acid, and moisture of CPO. The aim of this study is to obtain the optimal setting for factor's affect the quality of CPO. The optimal setting will result in an improvement of product's quality. In this research, Experimental Design with Taguchi Method is used. Steps of this method are identified influence factors, select the orthogonal array, processed data using ANOVA test and signal to noise ratio, and confirmed the research using Quality Loss Function. The result of this study using Taguchi Method is to suggest to set fruit maturity at 75.4-86.9%, digester temperature at 95°C and press at 21 Ampere to reduce quality deviation until 42.42%.

Abstracts

Disaster Mitigation Model using Geofencing Technique : Case Study of Indonesia

Rossi Passarella; Ahmad Rifai; Sarifah Putri Raflesia; Dinda Lestarini; Harumi Veny

Track: Information System & Technology | Session: 1 | Time: 13:00 - 13:10

Abstract. Disaster mitigation is essential to minimize the effects of disasters. Indonesia is one of the disaster prone areas in Asia and the government explores the usage of Information technology (IT) to aid its mitigation efforts. Currently, there are Indonesian websites which hold information regarding the weather monitoring, climate conditions, and geophysics. But, there is no clear indicator of mitigation efforts or things to do during an emergency. Therefore, this research proposed a disaster mitigation model using geofencing technique to detect the location of the users through their mobile devices. This model uses mobile-based disaster mitigation system as a way to disseminate critical information to victims during emergency when they are in disaster zones using virtual fences. This model aims to help the government to reduce the effects of disaster and aid in the mitigation efforts.

SQL Collaborative Learning Framework Based on SOA

Sari Armiati; Rolly Maulana Awangga

Track: Information System & Technology | Session: 1 | Time: 13:10 - 13:20

Abstract. Program Studi Manajemen Informatika Politeknik Pos Indonesia has elements of collaboration in the learning process but has not been formally defined what form of collaboration undertaken. The research is focused on designing collaborative learning-oriented framework fulfillment service in teaching SQL Oracle 10g. Framework built a foundation of academic fulfillment service performed by a layer of the working unit in collaboration with Program Studi Manajemen Informatika. In the design phase defined what form of collaboration models and information technology proposed for Program Studi Manajemen Informatika by using a framework of collaboration inspired by the stages of modeling a Service Oriented Architecture (SOA). Stages begin with analyzing subsystems, this activity is used to determine subsystem involved and reliance as well as workflow between the subsystems. After the service can be identified, the second phase is designing the component specifications, which details the components that are implemented in the service to include the data, rules, services, profiles can be configured, and variations. The third stage is to allocate service, set the service to the subsystems that have been identified, and its components. Implementation framework contributes to the teaching guides and application architecture that can be used as a landing realize an increase in service by applying information technology.

Abstracts

Improving TOGAF ADM 9.1 Migration Planning Phase by ITIL V3 Service Transition

Nisa Hanum Harani; Arry Akhmad Arman; Rolly Maulana Awangga

Track: Information System & Technology | Session: 1 | Time: 13:20 - 13:30

Abstract. Modification planning of business transformation involving technological utilization required a system of transition and migration planning process. Planning of system migration activity is the most important. The migration process is including complex elements such as business re-engineering, transition scheme mapping, data transformation, application development, individual involvement by computer and trial interaction. TOGAF ADM is the framework and method of enterprise architecture implementation. TOGAF ADM provides a manual refer to the architecture and migration planning. The planning includes an implementation solution, in this case, IT solution, but when the solution becomes an IT operational planning, TOGAF could not handle it. This paper presents a new detail transitions process of integration between two frameworks TOGAF and ITIL . We evaluated our models in field study inside a private university.
inside a private university.

Analysis of Investment IT Planning on Logistic Company Using COBIT 5

Syafrial Fachri Pane; Rolly Maulana Awangga; Rd Nuraini Siti Fathonah

Track: Information System & Technology | Session: 1 | Time: 13:30 - 13:40

Abstract. IT Investment planning to review goals business strategy development needs to support IT governance. Planning its investments will be assessed with a framework is issued by ISACA that COBIT 5 focus on domain EDM, APO, BAI, and MEA. Mapping from framework COBIT 5 with Val IT lead nine domain consisting of EDM01, EDM02, APO01, APO02, APO05, APO06, APO07, BAI01, and MEA01. Article search google using RACI diagram generating mapping organization telecoms and authority structures for the review identify respondents from any domain. Under selected area be used to review counting process capability level, and for a discussion of development, priorities make recommendations shall perform in accordance process needs PT.XYZ logistics company. The translating process capability level determined by the company prior currently at on level 4. The capability level domain process in the EDM is level 4, while at domain APO, BAI, and MEA are on level 3 and gap on APO, BAI, and MEA. The company recommendation domain subscription APO, BAI, and MEA to increase the capabilities of the rate review process to achieve the targets that have can determine the company. Keywords: Planning, IT investment, framework, COBIT 5

Sms Security System on Mobile Devices Using Tiny Encryption Algorithm (TEA)

M S Novelan; A M Husein; M Harahap; S Aisyah

Track: Information System & Technology | Session: 1 | Time: 13:40 - 13:50

Abstract. The development of telecommunications technology is so rapid has given such great benefits. With the telecommunication technology, distance and time no longer be a significant obstacle. One of the results of telecommunications technology that is well known is the Short Message Service. By using SMS, users can exchange text messages with other users. In this study developed an application on the mobile phone to modify the SMS message into ciphertext so that the information content of the SMS is not known by others.SMS delivery system for encrypting messages into ciphertext using a key that is entered by the sender then sends to the destination number. SMS reception system to decrypt it to others via SMS without the fear of information from these messages will be known by others. The method used in the system encrypt and decrypt the message is the algorithm Tiny Encryption Algorithm and implemented using the Java programming language. JDK 1.7 as the Java programming language ciphertext into plaintext using the key entered by the receiver and displays the original message to the recipient. This application can be used by someone who wants to send a confidential information and the Java compiler. Eclipse, a Java SDK and the Android SDK as a Java source code editor

INA-RXIV : The Missing Puzzle in Indonesia's Scientific Publishing Workflow

R Rahim; M Zarlis; D E Irawan; N Kurniasih; H Djanggih; S Sallu; D E Indriani; A S Ahmar; Y Yetti; A Hasibuan; A Aswari; D Hartama; R Ratnadewi; D Napitupulu; M Affaf; S Suharto; M Murjainah; A Zulfikar; I Mulyaningsih; R Hardi; T Listyorini; A P Pradana; A Ariyanto; N Qamar; R Hidayat; S Sriadhi; D Siregar; M I Setiawan; J Simarmata; T M Diansyah; D U Sutiksno; M A Prasnowo; R F Nanuru; A A Gde Satia Utama; A Hendrawan; Achmad Daeng; L D Putri; A Najmurrokhman; FSoehardi; D Abdullah; M Ratodi; L Arliman S; E R Gultom; G Ginting; R N Yanti; A Iskandar; I Coryanata; I K Siregar; S S Wahyuni; A Ardiansah; V Amelia; M Mahjudin; H Fajrin R; E Emrizal; S Susiana; D H Saputra; N Setyowati; D Nofriansyah; T Suryanto; KSaddhono; C A Sugianto; H Ahmad; L Abdillah; R Rochmady; AAAP Ardyanti; MBNWajdi; A P U Siahaan; M Mesran; I Saputra; F T Waruwu; S Suginam; E Buulolo; J Abraham

Track: Information System & Technology | Session: 1 | Time: 13:50 - 14:00

Abstract.INA-Rxiv is the first Indonesia preprint server marking the new development initiated by the open science community. This study aimed at describing the development of INA-Rxiv and its conversations. It usedanalyzer of Inarxiv.id, WhatsApp Group Analyzer, and Twitter Analytics as the tools for data analysis complemented with observation.The results showed that INA-Rxiv users are growing because of the numerous discussions in social media, e.g.WhatsApp,as well as some other positive response of writers who have been using INA-Rxiv. The perspective of growth mindset and the implication of INA-Rxiv movement for filling up the gap in accelerating scientific dissemination process are presented at the end of this article.

Abstracts

CariKos, an E-Commerce Web Application Using Weighting Method, K-Means Method, and Back Propagation Method

R. V. Hari Ginardi; Sarwosri; Luwandino Wismar; Rifqi Nur Fadhilah; Astidhita N. Latifah

Track: Information System & Technology | Session: 1 | Time: 14:00 - 14:10

Abstract. CariKos is a web-based e-commerce application that can help people to search for boarding house. It provides a recommendation using a weighting method based on the value of the boarding house. This value is obtained from eight criteria. Each criterion has a percent weight obtained using Analytical Hierarchy Process. The geographic orientation is used when calculating distance in several criteria, therefore, a clustering of boarding houses using KMeans clustering method is proposed to determine the weighting value. A fluctuating prices using Back Propagation method is introduced. This pricing is influenced by the market demand and the value of the boarding house. A K-Means test is done by calculating sum squared error and the result is 0.0003867. The participant's interest testing shows that 93.8% of participants were interested in the recommended boarding house.

Comparison Ahp and Saw to Promotion of Head Major Department Smk Muhammadiyah 04 Medan

Muhardi Saputra; O S Sitompul; P Sihombing

Track: Information System & Technology | Session: 1 | Time: 14:10 - 14:20

Abstract: Every employee wants a position to be promoted to achieve a higher career. According the Chief of Muhammadiyah Medan Branch The criteria used in this Selection of promotion head department are: Loyalty, Job Performance, Responsibility, Obedience, Honesty, Cooperation, Education, and Leadership. The process of selecting Position Promotion in this research, the method used in analyzing data is Analytical Hierarchy Process (AHP) and Simple Additive Weighting (SAW) method, while the data is obtained through teacher's assessment questionnaire by principal and colleagues. The process of completion by the AHP method is to determine the priority order of the criteria, determine the weight value of each candidate, create a matrix with the contents of the priority order of criteria and weight values. The results of ranking using Simple Additive Weighting (SAW) method, with this simple system, the principal can easily take the right decision.

Abstracts

Application of Forward Chaining Method to Diagnosis of Onion Plant Diseases

Delima Sitanggang

Track: Information System & Technology | Session: 1 | Time: 14:20 - 14:30

Abstract. Onion farmers have limitations in identifying diseases that attack their crops. So this disease can cause crop failure against the onion. To solve this problem we designed a useful application to diagnose onion disease. This design begins with making a knowledge base up to input-output design using forward chaining method. The results of this design can assist farmers in identifying their plant diseases. So farmers can provide treatment so that not all their plants are attacked by the disease.

Text Mining of UU-ITE Implementation in Indonesia

Lukmanul Hakim; Tien F Kusumasari; Muharman Lubis

Track: Information System & Technology | Session: 1 | Time: 14:30 - 14:40

Abstract. At present, social media and networks act as one of the main platforms for sharing information, idea, thought and opinions. Many people share their knowledge and express their views on the specific topics or current hot issues that interest them. The social media texts have rich information about the complaints, comments, recommendation and suggestion as the automatic reaction or respond to government initiative or policy in order to overcome certain issues. This study examines the sentiment from netizens as part of citizen who has vocal sound about the implementation of UU ITE as the first cyberlaw in Indonesia as a means to identify the current tendency of citizen perception. To perform text mining techniques, this study used Twitter Rest API while R programming was utilized for the purpose of classification analysis based on hierarchical cluster.

Increasing Prediction the Original Final Year Project of Student Using Genetic Algorithm

Rijois Iboy Erwin Saragih; Mardi Turnip; Delima Sitanggang; Mendarissan Aritonang; Eva Harianja

Track: Information System & Technology | Session: 1 | Time: 14:40 - 14:50

Abstract. Student final year project is a final step of student that studies at University. This final year project is very important to student has to do in order to finish his or her study. Unfortunately, many students are not serious to do his or her final project. Many of them ask someone to do the final year project. This paper proposes a solution by collecting 5 years data behind and mining new information from that data. The goal of these studies is to predict the original final year project of student, especially for computer's student. This research used genetic algorithms to predict the original final year project of student. Genetic algorithm has several operators that are population, selection, crossover, and mutation. The contribution to this research is to predict which student has done final year project by himself, particularly computer's student; it shows that 70% more accurate than previous researched.

Factors Determining Tourist Preferences on Smart Tourism (Case: Vredeburg Fort Museum)

Rima Amanda; Pinsap Santosa; M Nur Rizal

Track: Information System & Technology | Session: 1 | Time: 14:50 - 15:00

Abstract.Smart tourism is an individual tourism support system in the context of a comprehensive and integrated information and technology service. An educational tourist destination such as a museum, is expected to present an informative and interactive atmosphere. Vredeburg Fort Museum as one of the tourist destinations in the city of Yogyakarta become to be less popular. The low awarenessand public interest toward the museum, the assumption of the museum as ancient, lessmaintained and boring placehave been become obstacles in attracting tourists. Through the study of various relevant literature, obtained 16 indicators that become the preferences of tourists to the smart tourism in the Museum Vredeburg Fort. Factor analysis is used to determine the main evaluation item of Smart Tourism. The method used is Principal Component Analysis. In further research these factors can serve as an indicator for quantitative testing..

Abstracts

Analysis of E-Learning Implementation Readiness Based on Integrated ELR Model

Krisna Adiyarta;Darmawan Napitupulu;Robbi Rahim; Dahlan Abdullah; MI Setiawan

Track: Information System & Technology | Session: 2 | Time: 15:15 - 15:25

Abstract. E-learning nowadays has become a requirement for institutions to support their learning activities. To adopt e-learning, an institution requires a large strategy and resources for optimal application. Unfortunately, not all institutions that have used e-learning got the desired results or expectations. This study aims to identify the extent of the level of readiness of e-learning implementation in institution X. The degree of institutional readiness will determine the success of future e-learning utilization. In addition, institutional readiness measurement are needed to evaluate the effectiveness of strategies in e-learning development. The research method used is survey with questionnaire designed based on integration of 8 best practice ELR (e-learning readiness) model. The results showed that from 13 factors of integrated ELR model being measured, there are 3 readiness factors included in the category of not ready and needs a lot of work. They are human resource (2.57), technology skill (2.38) and content factors (2.41). In general, e-learning implementation in institutions is in the category of not ready but needs some of work (3.27). Therefore, the institution should consider which factors or areas of ELR factors are considered still not ready and needs improvement in the future.

Analysis of User Readiness Toward ICT Usage at Small Medium Enterprise in South Tangerang

Darmawan Napitupulu ;Muhammad Syafrullah; Robbi Rahim; Dahlan Abdullah;MI Setiawan

Track: Information System & Technology | Session: 2 | Time: 15:25 - 15:35

Abstract. Utilization of Information and Communication Technology (ICT) is still relatively low in the level of SMEs due to various limitations ranging from access to capital, till the marketing network. ICT is present to provide the ability for SMEs in improving the benefits and competitive advantage of the organization. This study aims to determine the level of readiness of SMEs in utilizing technology, especially ICT. The methodology used is a survey to see the technology readiness of 107 SMEs in South Tangerang selected by purposive sampling. The approach used is TRI (Technology Readiness Index) which is the individual perception of technology based on four criteria that is optimism, innovativeness, discomfort and insecurity. The results showed that the optimism and innovativeness variables significantly positively influence the technology readiness while the variables of discomfort and insecurity also significantly positively influence the readiness of ICT.

Abstracts

Optimization Training Back-Propagation Neural Network Algorithm Using Nguyen-Widrow for Diagnosis of Ludwig Angina

Siti Aisyah; Mawaddah Harahap; Amir Mahmud Husein

Track: Information System & Technology | Session: 2 | Time: 15:35 - 15:45

Abstract.Tooth and mouth disease is a common disease, with a prevalence of more than 40% in children aged 6 years in dairy teeth and over 85% at age over 17 years on permanent teeth. There are 40 symptoms from 18 types of diseases. Backpropagation algorithm allows exponential acquisition of input-output mapping knowledge within multilayer networks. Backpropagation one method that is accurate in helping doctors to analyze, model and understand complex clinical data in various medical fields. In research applied to the diagnosis of oral disease by applying nguyen widrow to optimize training time on the network architecture backpropagation. Nguyen widrow has an average iteration time faster about 0.0624 seconds, while for the pattern sweep accuracy level is still under the backpropagation method that is about 70% of the existing data.

Testing Technology Readiness Index Model Based on Exploratory Factor Analysis Approach

AF Ariani; Darmawan Napitupulu; RK Jati; JA Kadar; M Syafrullah

Track: Information System & Technology | Session: 2 | Time: 15:45 - 15:55

Abstract. SMEs readiness in using ICT will determine the adoption of ICT in the future. This study aims to evaluate the model of technology readiness in order to apply the technology on SMEs. The model is tested to find if TRI model is relevant to measure ICT adoption, especially for SMEs in Indonesia. The research method used in this paper is survey to a group of SMEs in South Tangerang. The survey measures the readiness to adopt ICT based on four variables which is Optimism, Innovativeness, Discomfort, and Insecurity. Each variable contains several indicators to make sure the variable is measured thoroughly. The data collected through survey is analysed using factor analysis methodwith the help of SPSS software. The result of this study shows that TRI model gives more descendants on some indicators and variables. This result can be caused by SMEs owners' knowledge is not homogeneous about either the technology that they are used, knowledge or the type of their business.

Abstracts

E-Business, the Impact of Regional Growth on the Improvement of Information and Communication Development

MI Setiawan; C Hasyim; N Kurniasih; D Abdullah; D Napitupulu; R Rahim; A Sukoco; I Dhaniarti; J Suyono; IN Sudapet; RD Nasihien; DAR Wulandari; Reswanda; SW Mudjanarko; Sugeng; MBN Wajdi

Track: Information System & Technology | Session: 2 | Time: 15:55 - 16:05

Abstract. ICT becomes a key element to improve industrial infrastructure efficiency and sustainable economic productivity. This study aims to analysis the impact of regional improvement on information and communication development in Indonesia. This research is a correlational study. Population of this research include 151 regions in Indonesia. By using a total sampling, there were 151 sample regions. The results show there are the strong impact of regional growth on increasing Gross Regional Domestic Product (GRDP) of information and communication. It can be seen from all regional improvement sub variables that have a high correlation in increasing GRDP of Information and Communication in Indonesia. Only two sub-variables that have low correlation to GRDP of Information and Communication variable i.e. GRDP of Agriculture, Forestry and Fishing (0.01) and GRDP of Mining and Quarrying (-0.04). The correlation coefficient (R) is 0.981, means the variable of information and communication GRDP has a very strong correlation with regional growth variable. Thus the value of Adjusted R Square is 95.8%, means there are impact of regional growth variables in increasing GRDPof Information and Communication, while the increase of 4.2% of Information and Communication GRDP is influenced by other factors aside from regional improvement.

The Effect of Mining Data K-Means Clustering Toward Students Profile Model Drop Out Potential

Windania Purba; Jepronel Saragih; Saut Parsaoran Tamba

Track: Information System & Technology | Session: 2 | Time: 16:05 - 16:15

Abstract. The high of student success and the low of student failure can reflect the quality of a college. One of the factors of student failure is the case of drop out. The application of Mining Data K-Means Method Clustering was used to solve the problem. For example the data of S1 Students Academic Year 2008/2009 and 2009/2010 were taken. The data that was obtained was further subdivided into the overall student condition information. Based on the analysis found that there some reasons why the students dropout. It was caused of unexciting student in learning, lack of parental support factors, confidence and students' behavior and time. The conclusion of this research was found that the potential students of drop out were found in cluster 1. It was caused of the total credit, quality, and grade point average. The lowest score was compared between cluster 2 and 3.

Abstracts

E-Business, the Impact of the Local Government Development (APBD) on the Increase of Information and Communication Development in Indonesia

MI Setiawan; C Hasyim; N Kurniasih; D Abdullah; D Napitupulu; R Rahim; A Sukoco; I Dhaniarti; J Suyono; IN Sudapet; RD Nasihien; DAR Wulandari; Reswanda; SW Mudjanarko; Sugeng; MBN Wajdi

Track: Information System & Technology | Session: 2 | Time: 16:15 - 16:25

Abstract.The decline of development delived from natural resources in several regions in Indonesia requires local governments to make a breakthrough in increasing revenues beyond natural resources, including through increased revenue in the field of information technology. The purpose of this study is to analyze the impact of the regional government development (APBD) on information and communication development in Indonesia. By using correlational research, it is known that all of APBD sub variables have a high correlation in increasing Gross Regional Domestic Product (GRDP) of Information and Communication in Indonesia, only sub-variable of surplus/deficit development, unexpected development sub-variable, sub-variable of development aid to province/regency/city and village government, and sub-variable of development special allocations that have not a significant correlation to increase of GRDP of Information and Communication in Indonesia. There is 86,7% of APBD variable influence the increase of GRDP of Information and Communication, while the increase of 15,3% of Information and Communication GRDP influenced by other factors aside from APBD. It shows the strong impact of APBD on increasing GRDP of Information and Communication.

Problem recording system based on website at Universitas Prima Indonesia

Rico Wijaya Dewantoro; Sumita Wardani; Rudy; Batara Surya Perdana Girsang; Abdi Dharma

Track: Information System & Technology | Session: 2 | Time: 16:25 - 16:35

Abstract. Along with the development of the times, information technology has entered the field of service, where information technology became one of the largest contributors in helping the service. Previous service is done manually where to report any problems encountered in the field must meet directly with the field coordinator. However, currently University of Prima Indonesia has implemented a website based Problem Recording System which is a proof of the development of information technology in the field of service in order to improve the quality, quantity of performance and service facilities and infrastructure at the University of Prima Indonesia. Information technology in the field of service is a clear evidence that emerged from modern technology tools that can improve and accelerate the quality of the service itself.

Abstracts

E-Business, Airport Development and Its Impact on the Increasing of Information of Communication Development in Indonesia

MI Setiawan; C Hasyim; N Kurniasih; D Abdullah; D Napitupulu; R Rahim; A Sukoco; I Dhaniarti; J Suyono; IN Sudapet; RD Nasihien; DAR Wulandari; Reswanda; SW Mudjanarko; Sugeng; MBN Wajdi

Track: Information System & Technology | Session: 2 | Time: 16:35 - 16:45

Abstract.The increasing number of the internet usage by households have an effect on the tourism sector. On the other hand, the aviation industry is growing as one of the development centers. This study aims to analyze the impact of information and communication development to airport performance in Indonesia. This is a correlation research with 151 of airports in Indonesia as a population. The sampling technique was done by using total sampling. The results of correlation (R) indicates the Gross Regional Domestic Product (GRDP) of Information and Communication has a relatively strong relationship with the Airport Performance. Meanwhile the results of Adjusted R test shows that they are other factors in increasing GRDP of Information and Communication besides Airport Performance. It shows the low impact of Information and Communication GRDP to the Airport Performance.

Distribute off -Time Office Internet Bandwidth Using Topology Mesh for Surrounding Neighbour

Niskarto Zendrato; Oloan Sihombing; Yonata Laia; Ernita Sabarita Barus

Track: Information System & Technology | Session: 2 | Time: 16:45 - 16:55

Abstract. The Internet as one of the very rapidly growing information technology can provide data and information with wide world, complete, and up to date. Users can download and upload data such as the application file, multimedia and text through the Internet network. But for the Internet availability is still less equal access because of the lack of availability of adequate infrastructure, therefore the author make the utilization of bandwidth that can be establish Internet balancing although still on a small scale. By this research the authors use bandwidth from PT Deltauli Home Teknikarya that where bandwidth necessity on when time off-time unused office, where the office always pay full for Internet connection even though at the time of the off-time. It's many of the available bandwidth, so that the author is trying to take advantage of the bandwidth at the time of the off-time the office to be used by the community using radio connection link and use the radius server as user management and server to send sms and user and password to the users who want to enjoy free internet connection.

Abstracts

Convenient Synthesis of Mn-doped Zn(O,S) Nanoparticle Photocatalyst for 4-Nitrophenol Reduction

Noto Susanto Gultom; Hairus Abdullah; Dong-Hau Kuo

Track: Mechanical Engineering | Session: 1 | Time: 13:00 - 13:10

Abstract. The conversion of 4-nitrophenol as a toxic and waste pollutant to 4-aminophenol as a non-toxic and useful compound by photocatalytic reduction is highly important. In this work, the solid-solution concept by doping was involved to synthesis earth-abundant and green material of Mn-doped Zn(O,S). Zn(O,S) with different Mn doping contents was easily synthesized at low temperature 90oC for 4-NP reduction without using the reducing agent of NaBH4. The Mn-doped Zn(O,S) catalyst exhibited the enhancements in optical and electrochemical properties compared to un-doped Zn(O,S). It was found that 10% Mn-doped Zn(O,S) had the best properties and it could totally reduce 4-NP after 2h photoreactions under low UV illumination. The hydrogen ion was proposed to involve the 4-NP reduction to 4-AP, which is hydrogen ion and electron replaced the oxygen in amino (NO2) group of 4-NP to form the nitro (NH2) group. We also proposed the incorporation of Mn in Zn site in the Zn(O,S) host lattice could make the oxygen surface bonding weak for easily forming the oxygen vacancy. The more oxygen vacancy for more hydrogen ion would be generated to consume for 4-NP reduction.

Photocatalytic Antibacterial Activity of Copper-Based Nanoparticles Under Visible Light Illumination

Zong-Yan Wu; Hairus Abdullah; Dong-Hau Kuo

Track: Mechanical Engineering | Session: 1 | Time: 13:10 - 13:20

Abstract. Copper oxide and sulfide nanoparticles after annealing treatment at 400 ?Chave been characterized and tested for their bactericidal properties toward Staphylococcus aureus and Escherichia coli under the dark and LED light illuminated conditions. It was found that the nanoparticles with the formation of CuS/Cu2S/CuOnanoheterostructuresexhibited a great capability of killing Staphylococcus aureus and Escherichia coli with or without light illumination. The antibacterial activity of the nanoparticles was demonstrated and simply observed with colony counting method. A mechanism of the antibacterial behaviour had been proposed and elucidated in this work.

Abstracts

Design and Testing of UMM Vertical Ball Mill (UVBM) for Producing Aluminium Powder

Iis Aisyah; Wahyu Caesarendra; Agus Suprihanto

Track: Mechanical Engineering | Session: 1 | Time: 13:20 - 13:30

Abstract. UMM Vertical Ball Mill (UVBM) was intended to be the apparatus to produce metal powder with superior characteristic in production rate while retaining good quality of metal powder. The concept of design was adopting design theory of Phal and Beitz with emphasis on increasing of probability of success in engineering and economy aspects.Since it was designed as vertical ball mill, a new way to produce powder, then it need to be tested for the performance after manufactured. The test on UVBM was carried out by milling of aluminium chip for 5 (five) different milling time of 0.5 hours, 1 hour, 3 hours, 5 hours and 7 hours, and the powder product then be characterized for it morphology and size using Scanning Electron Microscope (SEM) and Sieve.The results of the study were the longer of the milling time, the finer of the powder. From the test results of SEM, the morphology of the powder with 5 variations of milling time were most of the powder in form of flake (flat), small round and angular (irregular). The distribution of powder size was best obtained on the variation of milling time 3 hours, 5 hours, and 7 hours with percentage of 200 mesh in size of 22.14 %, 64 % and 91.25 % respectively.

Effect of the Machined Surfaces of AISI 4337 Steel to Cutting Conditions on Dry Machining Lathe

Robbi Rahim; Suhardi Napid; Abdurrozzaq Hasibuan; Siti Rahmah Sibuea; Y Yusmartato

Track: Mechanical Engineering | Session: 1 | Time: 13:30 - 13:40

Abstract.The objective of the research is to obtain a cutting condition which has a good chance of realizing dry machining concept on AISI 4337 steel material by studying surface roughness, microstructure and hardness of machining surface. The data generated from the experiment were then processed and analyzed using the standard Taguchi method L9 (34) orthogonal array. Testing of dry and wet machining used surface test and microhardness test for each of 27 test specimens. The machining results of the experiments showed that average surface roughness (Raavg) was obtained at optimum cutting conditions when VB 0.1 mm, 0.3 mm and 0.6 mm respectively 1.467 ?m, 2.133 ?m and 2,800 ?m for dry machining while which was carried out by wet machining the results obtained were 1,833 ?m, 2,667 ?m and 3,000 ?m. It can be concluded that dry machining provides better surface quality of machinery results than wet machining. Therefore, dry machining is a good choice that may be realized in the manufacturing and automotive industries.

Comparation Between PCI Girder and Box Girder in Bridges Presstressed Concrete Design

Cut Rahmawati; Z Zainuddin; Syafridal Is; Robbi Rahim

Track: Mechanical Engineering | Session: 1 | Time: 13:40 - 13:50

Abstract. This research is done by comparing both types of prestresed concrete design. The method used is load balance. Previous studies have just discussed the differences in terms of effectiveness and economics. In this study the researchers wanted to know the design process by comparing the working forces, the resulting moment and the loss force of the prestressed. As the case, it is used bridge with the span 31 meters. The tendon pulling system was conducted with post tensioning system. The analysis showed that prestressed of girder box type sustained the greatest moment due to the combination of its own weight, additional dead load, lane load and wind load of 44,029 kNm while at PCI Girder the biggest moment was 7,556.75 KNm. The Girder beam box experiences greater moment and shear force than PCI Girder. This is as the effect of the weight of its own box girder larger than PCI Girder. The loss force of prestressed style of Box Girder Beam was 24.85% while Girder PCI type has the loss force of prestressed was 26.32%. In the calculation of the cost of implementation, it shown that the type of girder box is cheaper, easy and efficient.

The Design of Mechanical Arm the System Sort of Tin Cans

Yulia Resti; Amrifan S Mohruni; Firmansyah Burlian; Irsyadi Yani; Ali Amran

Track: Mechanical Engineering | Session: 1 | Time: 13:50 - 14:00

Abstract. Problems in the automatic sorting system is the separation of objects to be sorted. This research aims to design a mechanical system using a servo motor as a driving force that is associated with the aluminium plate as an arm of the sorter. The program used in this research is the Matlab and microcontroller used is the Arduino UNO. In this research linking between Matlab program and program the Arduino, so that the motor can be controlled with the Matlab program and integrating between the servo motor with the identification of the cans. Testing system of mechanical arm as much as 150 times. The percentage of success of this mechanical arm system is 93%

Abstracts

Identification of Bearing Failure Using Signal Vibrations

Irsyadi Yani; Yulia Resti; Firmansyah Burlian

Track: Mechanical Engineering | Session: 1 | Time: 14:00 - 14:10

Abstract. Vibration analysis can be used to identify damage to mechanical systems such as journal bearings. Identification of failure can be done by observing the resulting vibration spectrum by measuring the vibration signal occurring in a mechanical system. Bearing is one of the engine elements commonly used in mechanical systems. The main purpose of this research is to monitor the bearing condition and to identify bearing failure on a mechanical system by observing the resulting vibration. Data collection techniques based on recordings of sound caused by the vibration of the mechanical system were used in this study, then created a database system based bearing failure due to vibration signal recording sounds on a mechanical system. The next step is to group the bearing damage by type based on the databases obtained. The results show the percentage of success in identifying bearing damage is 98 %

Implementation of Push Recovery Strategy Using Triple Linear Inverted Pendulum Model in "T-FloW" Humanoid Robot

Dimas Pristovani Riananda; Raden Sanggar Dewanto; Dadet Pramadihanto

Track: Mechanical Engineering | Session: 1 | Time: 14:10 - 14:20

Abstract. Push recovery is another behavior of human. Push recovery is astrategy to defend the body from anexternal force in any environment. In these papers describe push recovery strategy from external force using MIMO decoupled control system method. The dynamics system is using aquasi-dynamic system based on triple linear inverted pendulum model (TLIPM). The analysis of TLIPM is using zero moment point (ZMP) calculation from ZMP simplification in last research. By using this simplification of dynamics system, the control design can be simplified into 3 serial SISOwith known and uncertain disturbance models in each inverted pendulum. Each pendulum has different plan to damp the external force effect. In this plan, PID controller (close-loop) will use to arrange the damping characteristic. From the experiment result, the comparison when using push recovery control strategy (close-loop control) is about 85.71% and when using push recovery control strategy (open-loop control) is about 28.57%.

Abstracts

Flex Sensor Based Biofeedback Monitoring Post-Stroke Fingers Myopathy Patients

Y R Garda; Wahyu Caesarendra; Tegoeh Tjahjowidodo; A Turnip; Sri Wahyudati; Lisa Nurhasanah; D Sutopo

Track: Mechanical Engineering | Session: 1 | Time: 14:20 - 14:30

Abstract. Hands are one of the crucial parts of the human body in carrying out daily activities. Accidents on the hands decreasing in motor skills of the hand so that therapy is necessary to restore motor function of the hand. In addition to accidents, hand disabilities can be caused by certain diseases, e.g. stroke. Stroke is a partial destruction of the brain. It occurs if the arteries that drain blood to the brain are blocked, or if torn or leak. The purpose of this study to make biofeedback monitoring equipment for post-stroke hands myopathy patients. Biofeedback is an alternative method of treatment that involves measuring body functions measured subjects such as skin temperature, sweat activity, blood pressure, heart rate and hand paralysis due to stroke. In this study, the sensor used for biofeedback monitoring tool is flex sensor. Flex sensor is a passive resistive device that changes its resistance as the sensor is bent. Flex sensor converts the magnitude of the bend into electrical resistance, the greater the bend the greater the resistance value. The monitoring used in this biofeedback monitoring tool uses Graphical User Interface (GUI) in C# programming language. The motivation of the study is to monitor and record the progressive improvement of the hand therapy. Patients who experienced post-stroke can see the therapy progress quantitatively.

Generate an Optimum Lightweight Legs Structure Design Based on Critical Posture in A-FLoW Humanoid Robot

A Luthfi; K A Subhan; B Eko H; D R Sanggar; Pramadihanto D

Track: Mechanical Engineering | Session: 1 | Time: 14:30 - 14:40

Abstract. Lightweight construction and energy efficiency play an important role in humanoid robot development. The application of computer-aided engineering (CAE) in the development process is one of the possibilities to achieve the appropriate reduction of the weight. This paper describes a method to generate an optimum lightweight legs structure design based on critical posture during walking locomotion in A-FLoW Humanoid robot.The criticalposture can be obtained from the highest forces and moments in each joint of the robot body during walking locomotion. From the finite element analysis (FEA) result can be realized leg structure design of A-FLoW humanoid robot with a maximum displacement value of 0.05 mmand weight reduction about 0.598 Kg from the thigh structure and a maximum displacement value of 0,13 mmand weight reduction about 0.57 kg from the shin structure.

Abstracts

Variational Iteration Solution to the Gravity Wave-Model Equations

Sudi Mungkasi; Leo Hari Wiryanto

Track: Mechanical Engineering | Session: 1 | Time: 14:40 - 14:50

Abstract. The gravity wave-model equations are considered. We solve these equations using the variational iteration method. The variational iteration solutions approximate the exact solution. The main advantage of using the variational iteration method is that we have an explicit function of the time and space variables as an approximate solution to the gravity wave-model problems.

Design of Arm Robot Using Ultrasonic Sensors

Rahayu Sashanti, Hendrik Siagian, Eka Dodi Suryanto, Saut Dohot Siregar, Saut Rodo Simanungkalit

Track: Mechanical Engineering | Session: 1 | Time: 14:50 - 15:00

Abstract. The process of moving goods or objects in the industrial world will not be effectively done manually because it will require a lot of manpower. This research was conducted to design arm robot that can move goods based on distance. This research used Arduino Uno R3 microcontroller module and Ping HC-SR04 sensor. The actuator was used as a joint on every latch of the robotic arm. This arms robot had five joints between the base, shoulders, elbows, wrists, and tongs. The test results showed that the arm robot could perform the movement of picking and moving goods to the point that had been determined. The process of moving goods was done automatically. The distance measurement results were displayed on the 16 x 2 LCD.

Contact

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