Proceeding of 2nd International Conference on Science, Technology and Interdisciplinary Research 2016

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Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM) Universitas Lampung

PREFACE

Dear colleagues and friends,

Greetings from Bandar Lampung!

Following the successful of our inaugural series in 2015, we cordially present The 2nd International Conference on Science, Technology, and Interdisciplinary Research (IC-STAR) 2016 took place in Bandar Lampung, the capital city of Lampung Province, Indonesia, on August 22 till 25, 2016. IC-STAR is an interdisciplinary international conference covering research and technological development in the field of engineering, life and applied sciences, medical and biomedical engineering, and agriculture engineering and food sciences.

This year we received 181 submissions from authors that submitted their work in the conference. The submission was divided into regular full papers, short papers (work in progress), extended abstracts, and posters. After the double blinded peer-review process, the scientific committee of IC-STAR 2016 accepted and hosted 112 original research papers for oral presentation, and 8 posters. Due to inattentive reason, conclusively, the official IC-STAR abstract proceeding included 81 papers and 8 posters.

During the conference, 5 distinguish keynote speakers gave their speech and presentation of their state-of-the art works in the 2 keynote sessions. In addition, 14 parallel sessions were held in order to advance and contribute to specific research areas in the field of arranged sections. The parallel sessions composed into 44 paper contributions and 5 posters in Engineering section, 7 contributions in Agriculture and Food Sciences, 12 contributions in Medical and Biomedical Engineering, 18 contributions in Life and Applied Sciences.

IC-STAR 2016, in its inaugural arrangement, aims at creating a forum for further discussion on interdisciplinary fields of interest between academia, researchers, and their counterparts in government and industrial sectors. The objectives were to disseminate and discuss the advancements in understanding of Science, Technology and Interdisciplinary Research and their innovations. Also to gather stakeholders from academia, research institutes and industries for sharing their innovative and sustainable ideas, collaboration and networking opportunities. Therefore, the call for paper was addressed to scholars and/or professionals in the relevant fields. Furthermore, papers focused on issues of education were also welcomed along with papers regarding the science and engineering as long as the disciplines were intersected each other.

We would like to thanks the Faculty of Engineering, University of Lampung, who hosted the conference, also all members of committees, institutional partners, affiliated journals, sponsors, and ladies and gentlemen of authors and participants who have been contributed in the IC-STAR 2016.

See you again in IC-STAR 2017

Dr. Ing. Ardian Ulvan IC-STAR 2016 Conference Chair

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TENTATIVE SCHEDULE OF IC-STAR 2016

August 22, 2016 (Monday) Pre-conference activity: Workshop on International Publication

Worhshop venue is at Seminar Room Rectorate Building 5th Floor, LPPM University of Lampung,

08:00 - 08:30	Registration, welcome, and practical information by Organiser			
08:30 - 09:30	Session 1: Adjusting research theme for an international audience (by Dr. Dedy H.B. Wicaksono)			
09:30 - 10:00	Coffee Break			
10:00 - 11:00	Session 2: Improving the quality of an International manuscript and targeting a reputable Journal (by Dr. Dedy H.B. Wicaksono)			
11:00 - 12:00	Session 3: Systematic review, tips and tricks in review process and publication ethics (by Prof. Gurumurthy Hedge)			
12:00 - 13:00	Lunch Break			
13:00 - 16:00	Coaching clinics and joint discussion for your manuscript (facilitated by Prof. Dedy H.B. Wicaksono)			
16.00	Closing for pre-conference session			

August 22, 2016 (Monday)

- 12:00 The 7th Hotel Check-in
- 13:30 17:30 Registration for conference participants

08:00 - 09:00	Registration for conference participants				
09:00 - 10:30	Official Opening Ceremony				
	Opening Speech by Dring. Ardian Ulvan - Conference Chair				
	Welcome Speech by Prof. Hasriadi Mat Akin - Rector, University of Lampung				
10:30 - 11:00	Coffee Break				
11:00 - 12:00	Pleanary Keynote Speaker Session I (Grand Ball Room)				
		Session Chair:	Dr. Warsono		
	Prof. Mamoru Kikumoto - Yokohama National University, Japan Water-oil-air Three-phase flow in Porous Media: Land Contamination by Oil				
	Prof. Norma Alias - Universiti Teknologi Malaysia, Malaysia Migration of a Big Data Emerging on Nanotechnology Theory, Model, Simulation and Its Application using Green Computing Platform				
12:00 - 13:00	Lunch Break				
13:00 - 15:00	Parallel Presentation Session I				
	Parallel Room 1 Engineering and Tech. I	Parallel Room 2 Life & Applied Sciences I	Parallel Room 3 Medical & Biomedics	Parallel Room 4 Agriculture & Food Sci. I	
	Session Chair: Dr. A. Saudi Samosir Assistant: M. Igram	Session Chair: Prof. Warsito Assistant: Restu Pratiwi	Session Chair: Dr. Asep Sukohar Assistant: Menachem Christian	Session Chair: Prof. M. Basyuni Assistant: Amelia Virgianti	
	N. Haerudin, Karyanto (#499) Integrated Analysis of Radon and Magnetotelluric Method for Determining Location of Reservoir in the Way Ratai Geothermal Field Lampung Indonesia	Z. Bahri, L. Zakaria, Syamsudhuha (#417) The Scheme of 10th Order Implicit Runge- Kutta Method to Solve the First Order of Initial Value Problems	P. J. Ochieng , T. Djatna, W. A. Kusuma (#389) An Integrated Semi- supervised Clustering Model for Time Course Gene Expression Data	A. Pasaribu, L. A. P. Putri, D. Suryanto (#405) Identication of Variance Moleculer Genotipe Commercial Palm Oil (Elaeis guineensis Jacq.) Base on Random Amplified Polymorpism DNA (RAPD) Markers	

August 23, 2016 (Tuesday) at The 7th Hotel

A.D. Putra, M. Kikumoto (#504) Weathering of Geomaterials and Deformation Behaviour	F. M. Puspita, E. Yuliza, M. Ulfa (#388) The Comparison of Bundle-Pricing Scheme Models Using Quasi- Linear Utility Function	H. Pratomo (#435) Evaluation of The Effect of Pasak Bumi to Increase Androgen Levels	K. Isnugroho, D. C. Birawidha, and M. Amin (#336) The Potentials of Improving Mineral Source Additional Values (non metalic;stone) in Lampung Province – A Prelimanary Study
I. Iskandar, P.A. Utari, M.Y.N. Khakim, D. Setiabudidaya (#408) Observed Intraseasonal Zonal Currents in the Equatorial Indian Ocean	A. Syarif, K. Muludi, R. Adrian, A. Pamungkas (#498) Solving Fuzzy Shortest Path Problem by Genetic Algorithm	B.G.L. Pubiyangga, Suwandi, H.B.D. Kusumaningrum (#426) Using Moore Neighbor Tracing Method in Image Processing For Identification Vocal Cord Conditions	A. Iriany, R. Lestari, F. Nursandi, and M. Chanan (#526) Examining Organic Paper Mulch on the Growth and Yield of Shallot (Allium ascalonicum L.)
Ayomi, Y. Latief, K. Hayati, Wahyumurti (#522) Process of Dispute Resolution in Construction Projects through Arbitration : Literature Study	N.P. Putra, M. H. S. Kurniawan (#330) Survival Analysis to Evaluate the Service Procurement Process in Pupuk Kaltim Inc.	N. Tarigan, I. Supriatna, M.A. Setiadi, R. Affandi (#514) Effect of Vitamin E Fortified in Feed on Gonad Maturation of Common Carp (Osteochilus hasellti)	Suhartono (#448) Characteristics of Vegetable Cooking Oils (VCOs) as Substitutes of Kerosene in a Pressurized Cooking Stove
A. Purba, G. E. Susilo, F. Nakamura (#359) High Speed Rail in Asia and Europe: Lesson Learned for Indonesia	K. Nisa, N. Herawati (#534) Robust Estimation of Generalized Estimating Equation when Data Contain Outliers	S.M. Khoirunnisa, D.A. Perwitasari (#445) The Rheumatoid Arthritis Quality of Life (RAQoL) for Indonesia: translation and pilot test	M.D.P.T. Gunawan- Puteri, B.M. Josopandojo, G.H. Adiyoga, I.S. Kartawiria, D.I. Widiputri (#454) Aqueous Extraction Optimization of C. citratus for Development of Food Ingredients with Alpha Glucosidase Inhibitory Activities
A.P.M. Tarigan, W. Nurzanah (#536) A Study on The Shoreline Retreat and Spatial Analysis Over The Coastal Water of Belawan	K. Nisa, C.C. Kokonendji, A. Saefuddin, A.H. Wigena, I.W. Mangku (#552) On Generalized Variance of Normal- Poisson Model and Poisson Variance Estimation under Gaussianity	S. Siyoto, A. Kamlasi (#425) The Parenting System of Parents and Subjective Norms For East - Nusa Tenggara (NTT) Students to Consume Alcohol in the Tosaren Subdistric	A.H.K. Amrullah, D. Maharani, D.T. Widayati (#447) Determination of the Best Nonlinear Function in order to Estimate Brahman Cattle Growth

			F. Ughi, G.A. Dewanto, A. Abdillah, A. Yuliyanto (#450) Low-cost Simulator for Oscillometric Non- invasive Blood Pressure Measurement	I. Baroh (#535) The Pattern of Consumption and Food Nutrient Quality in the Culture of Zuhud Application on Pesantren Malang
15:00 - 15:30		Coffee E	Break	
15:30 - 17:00		Parallel Presenta	tion Session II	
	Parallel Room 1 Engineering and Tech. II	Parallel Room 2 Engineering and Tech. III	Parallel Room 3 Engineering and Tech. IV	Parallel Room 4 Agriculture & Food Sci. II
	Session Chair: Dr. Helmy Fitriawan Assistant: M. Iqram	Session Chair: Dr. Masdar Helmy Assistant: Restu Pratiwi	Session Chair: Dr. Henry B. Sitorus Assistant: Menachem Christian	Session Chair: Prof. Dermiyati Assistant: Amelia Virgianti
	H. Hasan, Melinda, A. S. Tamsir (#401) Analysis on Impedance Influence on Multifrequency Capacitive Sensor	D. Susanto, Widyarko, Sukisno (#469) Sustainable Material: Used Wood as Building Material	M. Nasucha (#496) Development of a Low-power Step- down DC/DC Converter Module for Electric Cars	S. Hidayati, A.S. Zuidar, W. Satjajaya (#486) Effect of Acetic Adic: Formic Acid Ratio on Characteristics of Pulp From Oil Palm Empty Fruit Bunches (OPEFB)
	J. Nugroho, J. Loekito (#337) Improvement of Visual Field Usig EyeCream Therapy after Right Inferior MCA Stroke	A. Feandri, D. Susanto (#470) Effects of Biophilic- Design on Residentials Study in Jakarta	L. Hakim, A. Munandar, D. Permata, H. Gusmedi, Khairudin, U. Murdika (#546) Overhead Medium Voltage Twisted Insulated Cable (MVTIC) Models for Three-phase Power Flow Analysis	M. Basyuni, A. Nuryawan, Yunasfi, L.A.P Putri (#503) Morphological Character and Biomass in Salt- stressed Mangrove Seedlings Rhizophora apiculata and Ceriops tagal
	D. Loebis, D. Hendriana, P.J. Escamilla Amrossio (#394) Fuzzy Kalman Filter in Autonomous Underwater Vehicle Navigation	R. Amanati, N. Huda (#395) The Existence of Malays House in Air Tiris Kampar Riau in Healthy House Perspective	Khairudin, L. Hakim, Y. Mitani, M. Watanabe (#550) Phasor Measurement Technology based Power System Monitoring and Control	S.I Tarigan, Dadang, I.S. Harahap (#517) Evaluation of Toxicity Effect of Cardamon, cinnamon, nutmeg against Insect Stored Product

H.H. Sinaga, H.B.H. Sitorus (#539) Design of TEM Cell To Test The Electromagnetic Sensor	M. Rijal, Ardiansyah (#366) Analysis of the Costs Construction Work the Wall Adobe Shells as Material Environmentally Friendly in Architecture Green	V. Puspaningrum, Wamiliana, R. Andrian (#459) The implementation of Jackson Network Queue on a prototype hospital Queue	D. Arifiyanto, M. Basyuni, Sumardi, L.A.P. Putri, E.S. Siregar, I. Risnasari, I. Syahputra (#530) Identification and Cluster Analysis of Oil palm (Elaeis guineensis) Fruit Type Using Two- Dimensional Thin Layer Chromatography
R. Estrada, N. Djohan, G.C. Rundupadang, A. Kurniawan, J. Iskandar, M. Dahrul, H. Hardhienata, Irzaman (#344) Electrical Properties Test of Dielectric and Impedance LiTaO3 Thin Film Doped with Ga2O3 (0% and 10%)	I.W. Parwata, A.A.G.O. Wisnumurti, N.W.M. Mustika (#384) Implementation of User Anthropometry Bale "Sakenem" Buildings based on Height Bataran and Height Bale-bale in Singapadu Tengah Village, Gianyar	Wamiliana, Amanto, G.T. Nagari (#457) Counting The Number of Disconnected Labeled Graphs of Order Five Without Paralel Edges	S. Djunaidi, M.D.P.T. Gunawan- Puteri, C.H. Wijaya, and E.K. Prabawati (#453) Physicochemical & Microbial Characterization of Overripe Tempeh
N. Djohan, R. Estrada, F.I.W Sari, A. Kurniawan, J. Iskandar, M. Dahrul, H. Hardhienata, Irzaman (#516) Classification of Undoped and 10% Ga2O3 Doped LiTaO3 Thin Film Based on Electrical Conductivity and Phase Characteristic	Y.N. Lukito, M.A.A. Syahid (#543) Conservation of Kali Pasir Jami' Mosque in Tangerang, Banten	E. Komalasari, H. Gusmedi, Rahmattulloh (#554) The influence of change load against fuel cost in coal-fired power tarahan lampung unit 3 and 4	G. Prayitno, D. Dinanti, W.P. Wijayanti, B. M. R. Farisa (#385) Social Capital and Food Security in Rural Area in Indonesia
S. Aisyah, S.I. Kristine P. (#413) Analysis of Priority Cause of Failure at Production Process Tube 811X Using Multi Attribute Failure Mode Analysis (MAFMA) In Bridgestone Tire Indonesia (BSIN) Company	Fauzan, F.A. Ismail, N. Yanto, I. Faradiza, S. Apriwelni (#523) Retrofitting of Nurul Ilmi Mosque With Concrete Jacketing	A.S. Samosir, A. Trisanto, A. Sadnowo (#555) Development of Dynamic Evolution Control for PV Inverter in Solar Power Plant Application	E. Suroso, W. Satyajaya, T.P. Utomo, and L. Julianti (#465) Financial Feasibility Study Of Liquid Smoke Industry From Palm Oil Empty Fruit Bunch In Mesuji Regency, Lampung Province
M.A. Muda, L. Bigué, H. Sudibyo, A. Foulonneau, D. Sudiana, L. Gendre (#556) Leaves Curl Identifi- cation Using NIR Polarimetric signatures	I.A. Santana, D. Susanto (#468) PET Plastic Bottle Waste with Reuse Approach As Interior Pre-Fabrication Modules for Internal Wall	Diah Permata, Naoto Nagaoka, Akihiro Ametani A Modeling Method of High-impedance Circuit for a Transient Simulation Using Steady	

	Hartono, T.			
	Simanihuruk (#452)			
	Optimization Model of			
	Fuzzy Rule Based			
	Expert System Using			
	Max-Min Composition			
	and Schema Mapping			
	Translation			
17.00		Closing for t	he 1 st day	

August 24, 2016 (Wednesday) at The 7th Hotel

08:00 - 08:30	Registration for conference participants				
08:30 - 10:00	Pleanary Keynote Speaker Session II (Grand Ball Room)				
	Session Chair: Dr. Irza Sukmana				
	Prof. Bustanul Arifin - University of Lampung, Indonesia				
	The Roles of Inter	disciplinary Research in	Developing Knowledge	-based Economy	
	Prof. Gurumurthy Heg	de - BMS R and D Centre,	BMS College of Enginee	ering, Bangalore, India	
	Biowas	te Based Carbon Nanosp	oheres and Their Applic	ations	
	Dr. De Machini	nni Kurniawan - University ng of Bones from Manufa	/ Teknologi Malaysia, Ma acturing Process Point (laysia of View	
10:00 - 10:30		Coffee E	Break		
10:30 - 12:30	Paralle	el Presentation Session II	I and Posters Presentat	tion *)	
	Parallel Room 1	Parallel Room 1	Parallel Room 1	Parallel Room 1	
	Engineering and	Life and Applied	Engineering	Agriculture &	
	Tech. V	Sciences II	and Tech. VI	Food Sci. III	
	Session Chair:	Session Chair:	Session Chair:	Session Chair:	
	Dr. Lukmanul Hakim	Dr. Edwin Azwar	Dr. Joni Agustian	Prof. M. Basyuni	
	Assistant:	Assistant:	Assistant:	Assistant:	
	M. Iqram	Restu Pratiwi	Menachem Christian	Amelia Virgianti	
	H. Wijaya (#378) The Advanced Study of Search Engine Optimization (SEO) Using White Hat SEO Techniques To Increase Website Visibility and Traffic	A.D. Wahyuni, Rinawati, H.I. Qudus, R.P. Usman, Y. Nasy'ah (#439) Profile Polycyclic Aromatic Hydrocarbons (PAHs) in Water of Mangrove Forest, Bandar Lampung	A. Saraswati, R. Nurcahyo (#443) Production Process Time Improvement of Radiator CN-A-121 with Value Stream Mapping Method	L. A. Yanti, Achmad, N. Khumaida (#370) Resistency of White and Red Jabon Seedlings (Anthocephalus spp.) to Botryodiplodia theobromae Pat. Causing Dieback Disease	
	Irwansyah (#384) User Acceptance of Mobile Applications	A. Awaluddina, Nismala, Rieke (#371) Green Degradation of Organic Dyes by Manganese Oxides: Effect of Different Crystal Structures and Temperatures	M.M. Hikmah, R. Nurcahyo (#442) Proposal of Material Issuing Activity Improvement in Radiator Company with Value Stream Mapping Method	V. Ningrum (#373) Engage Youth in Agriculture Through Pluriactivity Strategies	

M. Alwy, F. Fahmi (#451) Interactive Car Display Using Augmented Reality on Smartphone Android	S.D. Yuwono, R.H. Nugroho, I. Sukmana (#564) Low Cost Lactic Acid Production from Cassava Bagasse by Streptococcus Bovis Using Ion Exchange Separation Method	Alfirano, A. Milandia, Suryana (#434) Effect of Heat Treatment and Alloying Elements on Precipitation and Surface Behavior of Biomedical Co-Cr-Mo Alloys	H. Permawati, M. Handayani (#375) Natural Nano Zeolite as Fertilizers for Technology Optimization of Soil Fertility on Swampy Land to Increase Production of Paddy (Oryza Sativa L.) in Indonesia
G.F. Nama and K. Muludi (#414) Implementation of Two-Factors Authentication (2FA) to Enhance the Security of Academic Information System University of Lampung	Romiyati, R. Situmeang (#518) Nanophotocatalyst spinel Ni0.5V0.5Fe2O4 : Preparation and Characterization	Sukanta, and D.A. Sari (#343) Maintenance Proposal of Press Parts Production for Minimize Waste by Lean Manufacturing Method – Value Mapping Stream (VSM)	Fitriani, B. Arifin, W. A. Zakaria, H. Ismono (#376) Coffee Agroforestry Performance in Land Private Ownership: Case in Pulau Panggung District Tanggamus
A. Hendra, Gazali (#438) Support Vector Machine (SVM) For Toddler's Nutritional Classification in Palu City	M. Juandi (#357) 2D Groundwater Depth for Analysis the Zone Unconfined Aquifer	B. Heru Susanto, M. B. Prakasa, M. H. Shahab (#394) Preparation and Characterization of Supported Metal Nanocrystalline using Rapid Heating and Cooling Method for Renewable Diesel Synthesis from Nyamplung Oil (Calophyllum Inophyllum Oil)	S. I. Tarigan, Y. Ratna, W. Yunita (#381) Resurgency Effect of Abamectin Insecticide on Fecundity of Nilaparvata Lugens
B. Arthaya, E. Nathania (#464) Alternative Scheme to Handle Reversely the Waste of Mobile Phone in Bandung, Indonesia	N. Syarif, J. Antonius (#402) Preparation Carbon Nanotube From Sesame Oil and Its Electrochemical Properties	Z. Helwani, Zulfansyah, and M. Shecilia (#412) Torrefaction of Oil Palm Trunk : The Effect of Process Condition Analysis using Response Surface Methodology	I. Indarto, A. Ratnaningsih, and S. Wahyuningsih (#524) Calibration of Six Recursive Digital Filters for Baseflow Separation in East Java
A. Supani (#491) Flood Early Warning System with Informational Technology For Reducing Risk of Loss in Sustainability of City	Erwin, A. Prayitno (#369) Magnetic Exchange Interaction in Cobalt Samarium Thin Films for High Density Magnetic Recording Media	G. A. Ibrahim, S. Harun, A. Hamni (#332) Surface Roughness Values of Magnesium Alloy AZ31 When Turning by Using Rotary Cutting Tool	

	N.C. Basjaruddin, Kuspriyanto, Y. Priyana, E.M. Husni(#478) Overtaking Situation Identification In Connected Vehicles Environment				
	Sutarno, R. Passarella, Abdurahman (#452) System Design of Iris Ring Detection Using Circular Hough Algorithm for Eyestrain Application				
	M.A. Muhammad, Mardiana (#558) Library Automation Systems Integration (case: ELIB and Slims)				
12:30 - 13:30	Lunch Break				
13:30 - 15:30	Parallel Presentation Session IV				
	Parallel Room 1 Engineering and Tech. VII	Parallel Room 1 Engineering and Tech. VIII	Parallel Room 1 Engineering and Tech. IX	Parallel Room 4 Agriculture & Food Sci. IV	
	Session Chair: Dr. Diah Permata Assistant: M. Igram	Session Chair: Dr. Amrizal Assistant: Restu Pratiwi	Session Chair: Dr. Yanuar B. Assistant: Menachem Christian	Session Chair: Dr. Suripto Dwi Y. Assistant: Amelia Virgianti	
	D.A. Iryani, S. Br. Ginting (#547) Preparation, Characterization and Performance of Cellulose Acetace Pervoration Membranes Modified by Using Lampung Natural Zeolite	Irmeilyana, F. M. Puspita, Indrawati, M. Ulfa, (#378) Wireless Single Link Pricing Scheme Under Multi Service Network with Bandwidth QoS Attribute	N. Ansori, T. Novianti, F. Agustina (#509) Designing Ergonomic Participatory Based on Critical Safety Performance Index in Batik Creative Industries	Ichwana, A. Achmad, S. Chairani (#392) Determination of Micro Catchment Model Based on Ecohydrology of the Management at Kreung Peusangan Watershed	
	J. Agustian, L. Hermina (#529) Hydrolysis of Starch Enzymaticaly: Immobilised Amylases on MCF Silica	E. D. Wardihani, S. Pramono, S. Hadwi S, A. Suharjono (#338) Power Constrained Distributed Estimation for Wireless Sensor Networks	H. T. Zuna (#367) Quality of Experience on Toll Roads	L. Nasution, E. Purba, E. Munir, Lisnawita (#393) Biochemical Identification of Bacterial in Polluted Soil from Merdeka Village, Merdeka	

Nasikin, K. MuliaMulyani, Mardiana, Mulyani, Mardiana, R.A.S. Priadi, H.D.Mardiana, T. A. LiberSettasin, R.(#490)R.A.S. Priadi, H.D.(#341)R. KastamanInteraction betweenSeptama, M.A.Spatial Mapping ofEvaluation ofbetaine monohydrate and polyol on deep eutectic mixturesMuhammad, T.ARI (AcuteMilk Quality Ron Total MicrYulianti (#557)Respiratory Infection)on Total MicrformationLampung InternetHaze Disaster AreaQuality ContrTrends and Impact in Campus NetworkEffort of Vigilance on Global Climate Change(SQC)	Fresh Fresh Based Tobe ical rol		
S. Raharjo (#471)H.D. Septama, A.Ulvan, M. Ulvan (#411)Z. Zakaria, S. Ismail Bapdal, R.S. Fahri, N.F. Bapdal, R.Development of garbage bank and 3R waste treatment facility for mitigating(#551)Best Practice of ContractKastaman, A Hendriadi (# Managementgreenhouse gas emissions from waste sector: a case study of Padang City, IndonesiaNetworkApproach Towards Excellent Service 	A. (480) Index f Peatland Ilimantan		
I. Sukmana, S. Savetlana, A.Y. Yuniati, A.Ulvan, G.P. Sinaga (#554)H.N. Ranudinata, I.A. Siregar, T.P.Y. Andriani, Zaqloel, R.HHermanto, N. Jasmawati, Y.Handover Performance in HeterogeneousWisesa (#415)Koestoer, an SuparmokoBurhanudin (#528) Magnesium and Its Alloys asNetworks: PHY Layer AnalysisDesign Using Bamboo Lamination TechnicContributions Watershed E Rice Product Irrigation Ber 	T.Y.M. H. nd M. (#492) S inim in ion hefit and s		
E. Azwar, Darmansyah, Y. Wiratama (#560)M. Pinem, M. Zulfin, P.M. Sihombing (#527)H. Soewardi, G.S. Edhi (#456) Inovative Design of Mattress by Using TRIZ and QFDDelignification as Filler to the Mechanical Properties of Concrete CompositeM. Pinem, M. Zulfin, P.M. Sihombing (#527)H. Soewardi, G.S. Edhi (#456) Inovative Design of Mattress by Using TRIZ and QFD			
15:00 - 16:00 Coffee Break 19:00 - 21:00 Banquet Dinner and Closing Ceremony	Coffee Break Banquet Dinner and Closing Ceremony		

*) POSTER PRESENTERS LIST

T. Nurhayati, A.M. Jacoeb, D. Alviana (#537) Studi of Deteoration of Squid: Autolysis	Nurjanah, M. Nurilmala, E. Anwar, N. Luthfiyana, T. Hidayat (#538) Utilization of Seaweed Porridge Sargassum sp. dan Eucheuma cottonii as a Cosmetic in Protecting the Skin	E. Harahap, I. Sukarsih, G. Gunawan, M.Y. Fajar, D. Darmawan (#553) A Model-based Simulator for Content Delivery Network using SimEvents MATLAB-Simulink	R. Nahrowi, D.A. Iriayani, S.D. Yuwono (#561) The Conversion of α- Cellulose from Palm Oil Empty Fruit Bunch to Carboximethyl Cellulose
M.A. Suyuti, R. Nur (#409) The Effect of Embossing on the Rigidity of Wheel for Agricultural Tractors	P. Muhharam, A. Ulvan, M. Susanto, M. Ulvan (#566) Carrier Aggregation Mechanism on LTE- Advanced 4G Network	F.R. Priyana, L. Hakim, O. Zebua, D. Despa, U. Murdika (#567) Optimal Capacitor Sizing and Placement in Three-phase Distribution System using Mixed Integer Linear Programming	G.P. Sinaga, A. Ulvan, Y. Yuniati (#565) Handover Analysis on Heterogeneous Networks by Received Signal Strength Indicator (RSSI) and Access Rate

August 25, 2016 (Thursday)

One day field trip to Tanjung Putus Island: Swimming, Snorkeling, Diving, including outdoor lunch

SECTION 1 : ENGINEERING

WATER-OIL-AIR THREE-PHASE FLOW IN POROUS MEDIA: LAND CONTAMINATION BY OIL

Prof. Mamoru Kikumoto^{1,a}

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Abstract. In order to simulate contamination of ground by leakage of oil, a rational three-phase characteristic curve model defining the capillary pressure–degree of saturation relationship of water, NAPL and air phase was proposed and transport phenomena of NAPLs in unsaturated ground was simulated in this study. Existing models will be briefly reviewed and their limitations will be pointed out. To overcome issues of these models, a new variable representing the relative magnitude of NAPL pressure to water pressure and air pressure was employed as a parameter that plays a central role in the modeling, and a novel water–NAPL–air three-phase model was formulated. It is revealed through the simulations that the proposed model can consider the transition phenomena between water–NAPL–air three-phase and arbitrary two-phase system through the parameter. The numerical method for water–NAPL–air three phase system was also developed based on the proposed model. The validity of the proposed model was checked by comparing the results calculated by the proposed model with those calculated by an ordinary model and past experimental results. The proposed model is capable of considering the interactions among the water–NAPL–air three-phase, and predicting the actual retention behavior of NAPL in unsaturated ground.

Keywords: oil contamination, napl

INTEGRATION OF A BIG DATA EMERGING ON NANOTECHNOLOGY THEORY, MODEL, SIMULATION AND ITS APPLICATION USING GREEN COMPUTING PLATFORM

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Abstract. A small data solution dealing with a simple analysis, reporting, course-grained visualization with giga-bytes or a few tera-byte data sizes. A single processor and small size of the local memory platform are well be enough to support small scale simulation. Contradictory, a big data integrated solution was not just limited to analyzing and reporting, but high potential for predicting, insights with complex, advance and fine-grained resolution. Multi-structured data type size becomes a significant consideration of peta-, exa- and zetta-bytes data size. Thus, small data size is not well suited for predicting and solving nanotechnology application accurately. A big data associated with nanoscale computing can be generated by sensor data, device data, image processing resolution and grid generation simulation. These emerging opportunities to combine big data integration with nanotechnology theory, multi-scale model and large scale simulation. Furthermore, the nanotechnology theory includes the fundamental nanoscale structures, features and mechanical properties of the nanomaterial. The multi-scale model involving the integration of ordinary differential equation (ODE) and partial differential equation (PDE) with multi-type system and multi-scale features. The discretization techniques for solving the multi-scale mathematical model emphasized on mesh generation strategy of finite difference method (FEM) and finite element method (FEM). Green computing of high performance platform has been used to support the big data environment and large sparse simulation. Green computing includes the implementation of energy-efficient of sustainable IT facilities such as CPUs, GPU, servers and peripherals as well as reducing resource consumption and proper recycle of low cost computer equipments.

Additionally, this paper proposes some conceptual frameworks for big data integration on five nanotechnology applications. First application is the nanoparticle assisted drug delivery process through a blood flow. Second application is the fabrication of silicon nanowire by chemical vapor deposition (CVD) process. Third applicationis the prediction of some depend parameters on multilayer nanoscale device in semiconductor manufacturing. Fourth applicationis molecular abnormal cell growth and the fifth is an image processing for tumor cell classification. Parallel algorithm for the numerical solution emphases on SIMD taxonomy instructions. In order to improve the performance on green computing system, this paper investigates the distributed-shared memory architecture containing multi-core Intel Xeon processors and CPU-GPU platforms. Numerical analysis and parallel performance evaluation (PPE) are the indicators to validate the nanotechnology complex theory, multi-scale model and large scale simulation of the grand challenge applications. Comparison table, graph illustration and 2D visualization are the tools for result presentation.

Keywords: big data, fem, green computing

INTEGRATED ANALYSIS OF RADON AND MAGNETOTELLURIC METHOD FOR DETERMINING LOCATION OF RESERVOIR IN THE WAY RATAI GEOTHERMAL FIELD LAMPUNG INDONESIA

Nandi Haerudin^{1,a}, Karyanto²

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Abstract. Has conducted research using the Radon and Magnetotelluric (MT) methods in the Way Ratai geothermal field of Lampung, Indonesia. The purpose of research is to determine the location of the reservoir based on integrated analysis Radon and MT methods. The Radon method used to determine the high permeability zone, which channels the geothermal fluid from the reservoir to the surface, while the MT method is used to map the rock bedding. Radon Method Using 7 Rad tools produced by Durrigge Ltd., while the MT method uses Metronix by METRONIK geophysics Ltd. The Radon results indicate that the high permeability zones are near the Padok and the Bambu Kuning manifestations that is shown by high radon anomalies amounted to 25 700 Bq/m³. Based on the 2D forward modeling of Radon data and the inverse modeling of MT obtained the depth of Reservoir in the Way Ratai geothermal field is less than 1000 m from surface.

Keywords: high permeability zone, integrated analysis, magnetotelluric, reservoir, the Way Ratai geothermal field.

PROCESS OF DISPUTE RESOLUTION IN CONSTRUCTION PROJECTS THROUGH ARBITRATION : LITERATURE STUDY

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Abstract. The construction industry has a level of complexity and competitive in which participants with different views in talent and knowledge level of the cooperation process of construction. In the construction industry, due to differences in perception between the project participants, conflict is inevitable. If the conflict is not managed properly, they quickly turn into a dispute. Dispute resolution can be done by appointing an arbitrator of the arbitration board. Evaluation process of dispute resolution in construction projects through a risk-based arbitration is performed to improve the performance of the Indonesian National Arbitration Board.

Keywords: Project, construction, risk, performance, process, and arbitration.

FUZZY KALMAN FILTER IN AUTONOMOUS UNDERWATER VEHICLE NAVIGATION

D. Loebis^{1,a}, D. Hendriana^{1,b}, P.J. Escamilla-Ambrosio^{2,c}

¹Swiss German University, EduTown BSD City, Kav II.1, BSD Banten, Indonesia, ²Instituto Politécnico Nacional Centro de Investigación en Computación México, D.F., Mexico. ^adedy.loebis@lecturer.sgu.ac.id, ^bdena.hendriana@sgu.ac.id, ^cpescamilla@cic.ipn.mx

Abstract. This paper highlights the use of fuzzy logic techniques to the adaptation of the initial statistical assumption in both Kalman Filter and Extended Kalman Filter caused by possible changes in sensor noise characteristics to maintain the accuracy of autonomous underwater vehicle navigation system.

Keywords: Autonomous underwater vehicles, navigation, sensor fusion, Kalman filters, extended Kalman filters, fuzzy logic

DESIGN OF TEM CELL TO TEST THE ELECTROMAGNETIC SENSOR

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Abstract. Partial discharge in transformer insulation can be detected by the product produced during the PD event. Electromagnetic signal is one kind of the product that produce by the PD event. By using appropriate sensor, the electromagnetic signal can be captured thus detect the PD event in the transformer insulation. The method capturing the electromagnetic signals to detect PD event in transformer has advantage compare to other PD detection methods. The advantage mainly due the electromagnetic signal prone to the disturbance noise around the transformer. To be able to capture the electromagnetic signals, a sensor with capability to detect the electromagnetic signals is needed. The capability of a sensor can be tested using a TEM cell. In this paper discussed the design of TEM cell (Transverse Electromagnetic cell) which able to test a sensor such the sensor which use to detect the PD event in transformer. The TEM cell is an open cell type and construct using alumina as the material. The TEM cell has length of 1200 mm and height 105 mm. The TEM cell shown has a good capability to test the sensor which designed to detect the PD in transformer.

Keywords: Electromagnetic signals, Log-spiral sensor, TEM cell.

ELECTRICAL PROPERTIES TEST OF DIELECTRIC AND IMPEDANCE LITAO₃ THIN FILM DOPED WITH GA₂O₃ (0% AND 10%)

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Abstract. This study aimed to investigate the dielectric and impedance characteristic of thin films made from LiTaO₃ without (0%) and with doping (10%) Ga₂O₃. The solubility of this study has been regulated at 1 M by using 2-methoxyethanol [(CH₃OCH₂CH₂OH)] as a solvent. The growth of thin films on 7059 Corning glass substrate processed by Chemical Solution Deposition (CSD) method using a spin coater device on speed of 3000 rpm for 30 seconds, then annealed in furnace at temperature of 550°C for 8 hours. Thin films also have been prepared by Metal Organic Chemical Vapor Deposition (MOCVD) technique to creating aluminum contacts. The thin film is measured by LCR meter to get the data in form of inductance, capacitance and resistance values in range frequency from 50 Hz to 5 MHz. The study shows that dielectric and impedance contribute in providing information about ionic phenomenon.

Keywords: dielectric, impedance, thin film, LiTaO₃, Ga₂O₃.

SUSTAINABLE MATERIAL: USED WOOD AS BUILDING MATERIAL

Dalhar. Susanto ^{1,a} ¹Universitas Indonesia ^adalhar3001@yahoo.com

Abstract. Wood consumption as a material and component of a building in Indonesia is still considerably high. This affects forest destruction, in a way that most of the wood production still roots from pure woods from forests. Hence, the demand of these woods better be supplied from other source, one of them is through using used woods. Used wood utilization in building construction is an application from reusing and recycling materials strategy in sustainable material concept. Yet there is still an assumption that used woods have low quality, making the utilization limited. This paper addresses the result of measured research and laboratory test from a range of used wood samples collected from some regions in Jabodetabek, covering: level of water measurement, density and test of pressure, pulling, and bending capability. The research proves that for certain parameters, used woods have strength and sustainability level that are as good as –or even better than- newly produced woods.

Keywords: sustainable, material, wood

EFFECTS OF BIOPHILIC-DESIGN ON RESIDENTIALS STUDY IN JAKARTA

A. Feandri^{1,a}

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Abstract. People in urban area live in the built environment that tend to isolated human from nature. A condition like this deny human's innate tendency to affiliate with life and lifelike processes called biophilia. Biophilia related to human's physical dan psychological health. The act of design to aim a good relationship between human and natural environment is called biophilic-design. There are some finding from researches that the built environment (such as office environment, health facility and children play space) which designed with biophilic-design approach is proven to have positive impact on it's occupant. This paper discuss a result from a research which measure biophilic-design index at four residential type in jakarta and to find what impact biophilic-design does to people's mental well-being on residential space.

Keywords: biophilia, biophilic-design, residential.

THE CONSERVATION OF KALI PASIR JAMI' MOSQUE IN TANGERANG, BANTEN

Yulia Nurliani Lukito^{1,a}, Mushab Abdu Asy Syahid^{1,b}

¹Dept. of Architecture, Faculty of Engineering, University of Indonesia ^ayulianurliani@yahoo.com, ^bmushab.abdu@ui.ac.id

Abstract. The aim of this study is to elaborate the conserving Kali Pasir Jami' Mosque in Tangerang City, Banten Province that includes the participation of local communities. There is an initial conservation program proposed by the local government but it is not yet clear of how should the collaboration between communities who have done practical conservation and local government who slowly plans the conservation program. The lack of historical documentation of the building and unstructured research done by communities imply a potential threat to the conservation effort and loss of historical values of the mosque. This paper is the result of both qualitative and quantitative approaches such as observation and in-depth interviews in analyzing the conservation of the mosque. The finding of the research shows the important role of local communities in the sustainability of the mosque although there is also an urge to involve experts and government to create the right strategy in conserving the mosque.

Keywords: conservation, Kali Pasir Jami' Mosque, preservation.

STRENGTHENING OF NURUL ILMI MOSQUE WITH CONCRETE JACKETING

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Abstract. Nurul Ilmi moesque is one of the places of worship located at the University of Andalas. In 2008 the building of mosques was designed using old earthquake standards SNI 1726: 2002. The construction of the right side of the new mosque was carried out in 2009. Due to the limitation of the budget, the construction of the left side of the mosque was planned to be continued on 2014. However, a new seismic standards SNI 03-1726-2012 was established and the designed mosque should be revised based on the new seismic code. Since the right side of the mosque was designed using old seismic code(SNI 1726: 2002), so it is necessary to evaluate the strength of the structure using the new seismic code SNI 03-1726-2012. Based on the analysis results, it was found that the right side of the building structure is not strong enough to resist the combination loads acting on the structure, especially the earthquake load. Therefore, it is necessary to retrofit the structure of the building before connect it with the left side building. In this study, concrete jacketing was used to the retrofit of the structure. The results show that the jacketing method is effective to increase the capacity of the column and reduce internal forces and displacements that occur in the structure of the mosque, so it can resist the working loads.

Keywords: column, earthquake, structure analysis, strengthening, jacketing.

DEVELOPMENT OF A LOW-POWER STEP-DOWN DC/DC CONVERTER MODULE FOR ELECTRIC CARS

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Abstract. An electric car uses at least two high power DC/DC converters, one applied as the motor speed controller and one applied for the battery charger. It also usually needs another DC/DC converter, a small one, used to down step the battery voltage to a lower voltage for supplying power to non-machine-related devices such as LED lamps, door openers, GPS device, tablet PC, and mobile phone. For the Rinus C1 electric car we built, we needed a small power DC/DC converter that converts 48V battery voltage to 12V gadget-ready voltage. Having gone through requirement definition, reference study, design, assembling and experimental test, the module has been successfully developed –using MC34063A ASIC of Motorola– and is currently in use.

Keywords: DC/DC converter, buck converter, electric car

OVERHEAD MEDIUM VOLTAGE TWISTED INSULATED CABLE (MVTIC) MODELS FOR THREE-PHASE POWER FLOW ANALYSIS

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Abstract. This paper proposes a modified Carson method for modeling 20 kV overhead medium voltage twisted insulated cables (MVTIC) commonly found in the distribution systems in Lampung Province, Indonesia. Different cable sizes are considered in this work. Results are then compared to those obtained from OpenDSS and ETAP (with SPLN library). The sequence impedances obtained from the method are then utilized in the developed three-phase power flow software to analyze a real medium voltage distribution feeder consisting 119 buses and serving rural area.

Keywords: overhead cable, modified carson, distribution system.

PHASOR MEASUREMENT TECHNOLOGY BASED POWER SYSTEM MONITORING AND CONTROL

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Abstract. The concept of phasor measurement and its application in power system monitoring and control are presented. The case example of application of PMU in Japan Campus Wide Area Monitoring System is elaborated. Finally the application of phasor measurement technology in small signal stability monitoring and a wide area control based on phasor measurement data are discussed.

Keywords: PMU, Damping Ratio, WAMS, Oscillation Mode, Small Signal Stability.
INTERACTIVE CAR DISPLAY USING AUGMENTED REALITY ON SMARTPHONE ANDROID

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Abstract. In an exhibition like an automotive show, it is usually not possible to display all the features of products directly to potential customers. Displaying products of cars with varies colors, for example, had challenges due to several limitations. In this study we developed an application for smart phones that can interactively display a product of cars with different features in real-time. Customers can change color of the car and see the animation through an Augmented Reality application. The system we developed provides convenience to customers in obtaining information by displaying an animation of certain product in real time and gives benefits to the owner to promote their products in a unique way.

Keywords: Augmented Reality, Android, product display.

SUPPORT VECTOR MACHINE (SVM) FOR TODDLER'S NUTRITIONAL CLASSIFICATION IN PALU CITY

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Abstract. Toddlers are groups who are vulnerable about the health nutrition problems. Nutritional status of children is one of the indicators that can describes the level of social welfare in the city. Nutritionists are the people that can determined the nutritional status. The problem that arises is the limited number of the nutrition experts in each area, this problem causes the children's malnutrition in the Palu city is detected in very slow condition. The aims of this study is to help the health professionals in the health centers or the hospitals to determine the children's nutritional status computerized, so the malnutrition problem in the Palu city can be detected faster. Besides that, to help the government in policy making about nutrition of the toddlers in Palu city. This study uses a Support Vector Machine (SVM) which implemented in computer-based software application to analyze nutrition of the toddlers.

Keywords: Nutrition, Software, Support Vector Machine (SVM), Toddlers, Palu city.

FLOOD EARLY WARNING SYSTEM WITH INFORMATIONAL TECHNOLOGY FOR REDUCING RISK OF LOSS IN SUSTAINABLITY OF CITY

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Abstract. Flooding in the city of Palembang happens every year, especially in the rainy season. Flooding in the city of Palembang is affected by both rainfall in the rainy season and the water sea tide. Because of floods occur every year in the city of Palembang, it is necessary to countermeasures against flooding. Tackling the flooding that occurred in the city of Palembang has been done by way of rehabilitation of water channels in accordance with the flow, river dredging, creation of retention ponds, demolition of illegal buildings on the banks of the river, the extension services provided to the public about the cleanliness of the river, especially to the people who live around the river. In fact, flooding persists in the city of Palembang in particular residential area that is lower than the surface of the river Musi Musi River with high tide from 0.7 to 2.2 m and high rainfall 101.48 mm / h. Floods still occur when the rain comes despite the flood prevention actions have been done. For that we need to look for other solutions to reduce losses due to flooding, for example by means of early warning of flooding in the community. Early warning of flooding is intended to convey information flood situation earlier to the people and systems that will be made to work automatically detect, measure rainfall and water levels of the river and also include SMS Gateway and determine the certainty of early warning flood with fuzzy logic method before came flooding. The created information system can be used as an early warning of flood situation to the public so that losses will occur can be reduced and even avoided and sustainability of the city against flooding can be achieved.

Keywords: Flood Early Warning System, Sustainability of City, Rainfall, Watersea Tide.

SYSTEM DESIGN OF IRIS RING DETECTION USING CIRCULAR HOUGH ALGORITHM FOR EYESTRAIN APPLICATION

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Abstract. iris is the part of the eye that can expand and shrink depending on the intensity of light entering the eye. Iris can be used as a feature or parameter that can be studied in terms of both health and information technology. Detecting the iris in this paper, are separated into two main stages: preprossesing stage and iris detection stage which uses circular hough transformation (CHT) algorithm), on the preprocessing image frame, the captured image will be cropped first, using ROI(region of interest) then grayscalling will take place on detection in edge detection with Canny operator, this is done in order to optimalize circular hough transformation (CHT) algorithm application in detection of iris, then in the second phase it will implement the results of applying the circular hough transformation (CHT) algorithm with and without the OpenCV library ,system detection can be run optimally, with the percentage of error in four times of the test was 0% with a library and 25% without library in the 4 times test.

Keywords: preprossesing, circular hough transformation(CHT), image ROI(region of interest), OpenCV, grayscalling.

OPTIMIZATION MODEL OF FUZZY RULE BASED EXPERT SYSTEM USING MAX-MIN COMPOSITION AND SCHEMA MAPPING TRANSLATION

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Abstract. Fuzzy Decision Making involves a process of selecting one or more alternatives or solutions from a finite set of alternatives which suits a set of constraints. In the rule-based expert system, the terms following in the decision making is using knowledge based and the IF Statements of the rule are called the premises, while the THEN part of the rule is called conclusion. Membership function and knowledge based determines the performance of fuzzy rule based expert system. Membership function determines the performance of fuzzy set in a computer. Knowledge Based in the other side relates to capturing human cognitive and judgemental processes, such as thinking and reasoning. In this paper, we have proposed a method by using Max-Min Composition combined with Genetic Algorithm for determining membership function of Fuzzy Logic and Schema Mapping Translation for the rules assignment.

Keywords: Fuzzy Decision Making, Rule-Based Expert System, Membership Function, Knowledge Based, Max-Min Composition, Schema Mapping Translation.

PRODUCTION PROCESS TIME IMPROVEMENT OF RADIATOR CN-A-121 WITH VALUE STREAM MAPPING METHOD

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Abstract. Production Division in Radiator Company having reschedule problems reached 34%. 69.23% of the reschedule caused by barriers at the work station. These barriers are identified as a waste that doesn't give value of the product. Observation in this research aims to determine waste of production process. *VSM* and *FMEA* tools are used to solve problems related to waste, which present in the production. The research resulted in the design of production process improvements that can reduce 26.12% of lead time from 1321.18 minutes to 376.15 minutes. Decreased lead time of the processes resulted in the decreased of reschedule in Production Division from 34% to 25.12%, which is 8.88%. Decreased reschedule in Production Division resulted in the decreased of unit radiator rescheduled from 43% to 31.76%, which is 11.24%.

Keywords: Production Process, Production Process Improvement, VSM, FMEA

PROPOSAL OF MATERIAL ISSUING ACTIVITY IN RADIATOR COMPANY WITH VALUE STREAM MAPPING METHOD

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Abstract. This study is conducted at radiator company in Indonesia. One if the major warehouse operational activity is material issuing activity. In contrast, material issuing activity less than effective. It is because the length of time needed for each material issuing activity. This research aims to make a design of material issuing activity improvement in warehouse to increase value added and reduce waste. Value Stream Mapping, Lean Approach, Root Cause Analysis and FMEA are used to solve problems as a proposed improvement. Based on the analysis, there are several proposed improvements reduced the lead time of first warehouse is 23.61%, the second warehouse is 31.22%, and the third warehouse is 48.65%. Decreased of lead time effect on warehouse quality objectives improvement. All of the warehouse reach 100% target set by the company

Keywords: Value Stream Mapping, Material Issuing Activity, Warehouse, FMEA.

EFFECT OF HEAT TREATMENT AND ALLOYING ELEMENTS ON PRECIPITATION AND SURFACE BEHAVIOR OF BIOMEDICAL CO-CR-MO ALLOYS

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Abstract. This research aimed to utilize sorghum as a filler rod using variations of sorghum starch-chitosan formulations-filler with 10 wt% glycerol as a plasticizer. The physical and mechanical characteristics of bioplastics then analyzed by using Low Density Polyethylene (LDPE) as a reference. Variation of sorghum starch-chitosan formulations used were 10:0, 9.5:0.5, 8.5:1.5, 7.5:2.5, 6.5:3.5 and 5.5:4.5 (w/w), variations of the addition of sorghum stem powder filler were 0.25:0.5:1 g with gelatinization temperature on 95, stirring speed of 375 rpm and temperature drying in an oven was 60 for 11 hours. Starch granule was sieved in 63 micron and stirred for 35 minutes. The best conditions obtained by variation of formulation starch: chitosan 7.5:2.5 (g/g) with 0.25 g filler addition and best tensile strength test was13.9957 Kpa.

Keywords: Co-Cr-Mo alloy, precipitate, heat treatment, dissolution, corrosion behavior.

SURFACE ROUGHNESS VALUES OF MAGNESIUM ALLOY AZ31 WHEN TURNING BY USING ROTARY CUTTING TOOL

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Abstract. Magnesium and magnesium alloys is one of materiels that worldwide used on automotive components due to very good strength to weight ratio, resistant to corrosion, lighter compare to steel materials. Other than that magnesium has an avantage in easy to form and good machinability. Nevertheles, magnesium known as metal which is easy to burned because of magnesium has low melting point. To maintant magnesium from burning quickly when proses machining, it needs to use coolant or lubricant to reduce temperature. Using of coolant when maching proses can reduce temperature on cuntting tool and workpice material, while using of lubricant can reduce friction between the cutting tool and workpiece mateial. However, using of coolant and lubricant can harm for the environment and also coolant difficult to destroyed. Therefore, an alternative method to reduce the temperature when machining of magnesium alloy is using the rotary cutting tool system. In the rotary cutting tool system, the cutting tool has a time to experience cooling in the periode time. Other than aspect of temperature, surface roughness values are representative of surface of quality of produced comprents. In this research, surface roughness value of magnesium alloy of AZ31 observed in ranges of workpiece cutting speed of (Vw) 25, 50, 120, 160, 200 m/min, rotary cutting speed of (Vt) 25, 50, 75 m/min, feed rate of (f) 0,05 and 0,10 mm/rev, and depth of cut of 0.2 mm. The turning process was done by using two kinds of diamter of rotary cutting tools are 16 and 20 mm, and without applying of coolant. The results of the research showed that the minimum surface roughness value of machined surrace was 0,62 µm by using insert with diameter of 16 mm, while the maximum surface roughness value of machined surface was 2,86 µm by using insert with diamter of 20 mm. This result stated that the increase in the diameter of rotary cutting tool gives a significat effect on the produced surface roughness velue. Factor of feedrate aslo gives a significant contribution on the surface roughness value of machined magnesium surface. The increase in feedrate generated significantly surface roughness value as long as the trials experiments. The produced surface roughness values inversely propotional to the cutting speed of rotary cutting tool.

Keywords: magnesium, rotary tool, surface roughness, turning.

PREPARATION, CHARACTERIZATION AND PERFORMANCE OF CELLULOSE ACETATE PERVAPORATION MEMBRANES MODIFIED BY USING LAMPUNG NATURAL ZEOLITE

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Abstract. The pervaporation cellulose acetate (CA) membrane modified with natural zeolite was prepared to intensify the separation of the ethanol-water mixture. The experiment consists of several stages, namely, preparation of CA from sugarcane bagasse as a source of cellulose, preparation of natural zeolite (including activation), the manufacture of CA membranes with or without the addition of natural zeolite, characterization, performance test and application of membrane separation as a medium of ethanol-water mixtures by pervaporation experiments and the stability of the membrane test. The characterization test was carried out by Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and X-ray-diffraction (XRD) analysis. The proper interaction of Si and Si-Al from natural zeolite with CA membrane was confirmed by FTIR analysis. The surface of the modified membranes were evaluated through SEM. Furthermore, the changes in the crystallinity of CA were also examined by XRD analysis after adding natural zeolite. Moreover, the tensile strength of the modified membrane was found to be better than that of CA membranes. The performance test such as permeation flux and selectivity are determined by the mechanism of mass transfer through the membrane. The results of experiments showed that the modification with natural zeolite affect the performance of the membrane where permeation flux and selectivity increased on ethanol-water mixture separation by pervaporation. The highest selectivity and total permeation flux of the membrane that can be achieved are 111.080 and 2.819 kg/m2.h obtained by adding 30 wt % zeolite to CA membrane. Hydrophilic properties of CA and the polarity of zeolite membranes has led to a tendency to absorb water molecules compared to ethanol, thus, it is able to increase the ethanol concentration from 95.6 wt% to be 99.27 wt %.

Keywords: cellulose acetate, natural zeolite, pervaporation membrane, permeation flux, selectivity.

INTERACTION BETWEEN BETAINE MONOHYDRATE AND POLYOL ON DEEP EUTECTIC MIXTURES FORMATION

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Abstract. NADES are obtained by mixing a non-toxic quaternary ammonium salt with non-toxic hydrogen bond donor (HBD) to form a eutectic mixture. The stability and strength of interaction between salt and HBD molecules influence on the NADES application. In this work, the betaine monohydrate salt and polyol (glycerol or/and propylene glycol) eutectic mixtures formation was studied in order to understanding the stability and the strength of molecular interaction behavior on these systems. The melting point and fusion enthalpy of the mixtures were measured using DSC. The nature and the strength of the intermolecular interactions were observed by FT-IR and NMR spectroscopy. The betaine monohydrate-propylene glycol-glycerol eutectic mixture has greater stability and strength of molecular interaction than betaine monohydrate-glycerol eutectic mixture has greater stability and strength of molecular interaction than betaine monohydrate-propylene glycol. Moreover, the strength of interactions between molecules at eutectic composition is greater than hyper-eutectic.

Keywords: betaine monohydrate, eutectic mixture, molecular interaction, polyol, spectroscopy.

DEVELOPMENT OF GARBAGE BANK AND 3R WASTE TREATMENT FACILITY FOR MITIGATING GREENHOUSE GAS EMISSIONS FROM WASTE SECTOR: A CASE STUDY OF PADANG CITY, INDONESIA

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Abstract. This paper focuses on developing the role of people participation through garbage bank (GB) and 3R waste treatment facility (*TPS 3R*) for mitigating global warming in Padang City. Current municipal solid waste (MSW) management and 3 improvement scenarios were simulated for the next 20 years to calculate the impact to global warming. Greenhouse gases (GHG) inventory of waste treatment activities was carried out using LCA methodology. Meanwhile, methane emission from solid waste decomposition at landfill was calculated using IPCC software. Current MSW management practices show the recycling achievement accounts for only 2.178 % of total waste generation in 2015. Simulations result also shows that the practices will release GHG emissions of 123.54 Gg CO₂eq in 2035. Scenario #3 suggests to increase the number of GB, *TPS 3R*, integrated waste treatment facility (TPST) and to install methane gas recovery. This improvement increases recycling achievement to around 34 % and reduces GHG emissions by around 57 %.

Keywords: 3R waste treatment facility, garbage bank, global warming, greenhouse gases, MSW management.

A NEW PROPAGATION MODEL FOR THE CALCULATING OF THE PATH LOSSES FROM OUTDOOR TO INDOOR

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Abstract. The propagation modeling from outdoor to indoor has been done in previous researches [1] [2] [3] [4]. It is always developed because the prediction of radio wave transmitter coverage from outdoor to indoor to be very important. This was caused by the users of mobile communication networks are inside the buildings more than outside the building on the urban areas. The accuracy of the prediction of path losses from outdoor to indoor to indoor and the ease of applying of the propagation models are required to determine the position of the new transmitter. Therefore, this paper proposed a new propagation model for the calculating of the path losses from outdoor to indoor which is obtained from the combination of COST231 Walfisch-Ikegami (WI) model and ITU-R model. The calculation results of the path losses are from outdoor to indoor use a proposed model has been compared with the results of the measurement and the calculation of path losses use the Paulsen model. The Paulsen model is one of the models which is used to calculate the path losses from outdoor to indoor that is also used as a comparison against the proposed model. The measurements were carried out in the Antara building on the Medan city, North Sumatra and also applied GSM1800 and 3G systems. Based on the calculations and measurements were obtained that the value of standard deviation and mean error of the proposed model were smaller than the model Paulsen and also the graph of the proposed model was closer to the measurement results.

Keywords: Path losses, propagation models, combination of propagation models, mean error, standard deviation.

PERFORMANCE OF CLOUD BASED IMS CORE NETWORK

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Abstract. The mobile technology is improved by adopt the Internet Protocol (IP) based technology. The IP Multimedia Subsystem or IP Multimedia Core Network Subsystem (IMS) is a technology designed by 3rd Generation Partnership Project (3GPP). This technology used IP to deliver the communication packet and recognized as Next Generation Network (NGN). The emerging IP based technology took a lot of advantages by using IP to deliver a packet. However, some issues i.e availability, security and realibility still need consideration to meet the telecommunication standard. The cloud based computing become buzzword as a technology for cost reduction and hardware efficiencies. This paper conducted the feasibility to setup mobile core network in cloud based environment. The QoS is presented as the results to conluded the feasibilities. The results show that cloud based mobile core network is feasible since the QoS still fullfill the telecommunication standard.

Keywords: mobile core network, IMS, cloud computing, jitter.

INOVATIVE DESIGN OF MATTRESS BY USING TRIZ AND QFD

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Abstract. At this time the need for the design of a product is increased. Mattress is a necessity for every individual to rest. Preliminary studies of the function of the mattress stated that the use of the existing mattress found complaints (too large 72%, less attractive 40%, 80% less flexible, less comfortable 40%). Therefore, multifunctional mattress is needed. The purpose of this study is to propose a multifunctional design for a mattress. TRIZ method is used to determine the inventive principles of each attribute and QFD method is used to determine the design parameters of the mattress. Functions that can be developed from a mattress are that it can be folded, it can be a sofa / seating, into the table, flexible /easily removable and as the ironing board. The results of this study shows that the multifunctional mattress design was satisfied the customer feeling and emotion.

Keywords: Mattress, TRIZ, QFD, Multifaction, Design.

THE IMPLEMENTATION OF JACKSON NETWORK QUEUE ON A PROTOTYPE HOSPITAL QUEUE

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Abstract. To meet the patient's expectation is one of the requirements in health care quality. In order to achieve the healthcare quality, hospitals need to change the paradigm from drug oriented to patient oriented. The main problem in health care quality today is patients waiting a long time for service and it will increase the morbidity risk and socio economic cost. One solution to resolve long service time is to implement a queuing system that can predict the actual queue situation. The goal of this study is to estimate the waiting time of patients using Jackson Network Queue. We adopt Jackson's networks model that integrates four queuing systems. Those four systems are: registration desk, consultation points for the patients, pharmacy's queue, and the last system is the cashier. After finishing at cashier, the consumers leave the whole system. In this method we use First Come First Serve rule for consumers to move from one service facility to another before leaving the system. Through the Jackson Network Queue, each server or node provides independent service that it possible to analyze each node separately.

Keywords: queue, Jackson network queue, hospital

COUNTING THE NUMBER OF DISCONNECTED LABELED GRAPHS OF ORDER FIVE WITHOUT PARALEL EDGES

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Abstract. Given a graph G(V,E) with n vertices and m edges, where every vertex is labeled, there are a lot of possible graphs that can be constructed, either connected graphs or disconnected, simple or not simple. A graph G(V,E) is called as a connected graph if there exists at least one path between every pair of vertices in G, and otherwise, G is disconnected. A graph G is called as a labeled graph if every node/vertex and or every edge is labeled. In this research, we are concerning about a graph where every vertex is labeled. Parallel edges are two edges or more which have the same end points. In this research we found that the number of disconnected labeled graph without parallel edges for n = 5 and m_{\geq1} can be obtained with the following formula: $N(G'_{5,m}) = \binom{m+4}{4} + \{10 \times \binom{m+3}{4}\} + \{45 \times \binom{m+2}{4}\} + \{120 \times \binom{m+1}{4}\} + \{85 \times \binom{m}{4}\} + \{30 \times \binom{m-1}{4}\} + \{5 \times \binom{m+2}{4}\} + \{120 \times \binom{m+1}{4}\} + \{10 \times \binom{m-1}{4}\} + \{5 \times \binom{m+2}{4}\} + \{10 \times \binom{m+3}{4}\} + \{10 \times \binom{m+3}{4}\} + \{10 \times \binom{m+2}{4}\} + \{1$

 $\binom{m-2}{4}$ }. N(G'_{5,m}) is the number of disconnected labeled graph without parallel edges for n = 5 and $m \ge 1$.

Keywords: counting graph, labeled graph, disconnected, parallel edges

HYDROLYSIS OF STARCH ENZYMATICALY: IMMOBILISED AMYLASES ON MCF SILICA

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Abstract. As immobilisation of amylases seems to be the most promising way to obtain more stable and reusable enzymes, a review on the enzymes supports and application of Mesoporous Cellular Foam (MCF) silica as the support are presented here. Glucoamylase and alpha-amylase had been immobilized successfully in/on nanoporous, mesoporous and macroporous supports via adsorption, covalent bonding, cross-linking, entrapment and encapsulation. Factors of temperature, immobilisation time, enzyme concentration, polymer size, pH stability and reusability were studied. In general, the immobilised glucoamylase showed better thermal and pH stability and activity than the free form. Silica nanoparticles had been used to support the alpha-amylase and glucoamylase, which produced better thermal stability and enzymatic activity over its free-form. Immobilisation of the amylases in/onto gave better results than the free enzymes where quantity of the enzymes immobilised increased with the increase of the pores size.

Keywords : Alpha amylase, Gluco-amylase, Nanoporous supports, McF silica.

LIBRARY AUTOMATION SYSTEMS INTEGRATION (CASE: ELIB AND SLIMS)

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Abstract. The Library automation system help reduce much work need to be done by doing monotonous routine jobs with the help of technologies such as Barcode and RFID. Unila Library as the pioneer of RFID technology implementation in Lampung province face challenge in migration. Unila Library used Slims Library Automation System to manage collections, which use mainly barcode to identify collection. Using RFID allow collections to scanned using a gate and warn librarian. Unfortunately, Slims doesn't support SIP2 protocol which is needed by RFID devices (gate, kiosk) to function properly. Therefore, a solution must be made which address the migration of data and support SIP2 protocol. ELIB is a library automation software which support SIP2 protocol. So, library automation systems integration which syncronize both database in ELIB and Slims keeping up to date data and allow support for SIP2 protocol must be made in the form of middleware. Some of difficulties arise in integration was the development of both library automation systems which require fine tuning everytime update occurs and both systems in active use. Benchmarking is done to find anomaly and disreparancies of data. And, because the integration system is build as middleware, it remain flexible and open to future development. It can be concluded, Library automation systems integration require vigilance and keen observations into minuscule level especially because both systems are so different.

Keywords : library, RFID, ELIB, SLIMS, SIP2, middleware

LEAVES CURL IDENTIFICATION USING NIR POLARIMETRIC SIGNATURES

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Abstract. We consider passive polarimetric near infra-red imaging systems that measure the three first elements of the Stokes vector and deduce from them the degree of linear polarization and the angle of polarization in near infra-red spectrum for analyzing plant leaves. By using the variance of the angel of polarization from each sample leaf, we identify the curl of the leaf surface and compare it to other sample leaves. Experimental results are provided.

Keywords : leaf curl, NIR-polarimetric imaging, remote sensing, small format sensor.

THE UNIVERSITY OF LAMPUNG INTERNET TRAFFIC MEASUREMENT: TRENDS AND IMPACT IN CAMPUS NETWORK

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Abstract. University of Lampung (Unila) is an Institution of Higher Education located in Bandar Lampung. Since 2016, Unila has deployed Internet Access Management (IAM) to guarantee the healthiness of the campus network, as well as to enhance the effectiveness of the bandwidth usage. This study focused on internet traffic measurement, conducted in Unila's campus network during February 1 until February 29, 2016. Overall, this study shows user behavior on their application. The trend data of monthly most popular URL Categories accessed by users was; 1st Computers & Technology with 30032328 hits or 39.1%, the 2nd was Search Engines & Portals with 14214611 hits or 18.5%. There were around 30-40 % of internet traffic was use for Streaming Media activity, it proves that the existence of Streaming Media Activity in Campus Network which contribute to network congestion. During a month doing internet measurement, we identify the most active device/user that are the 1st was Aruba Wireless Controller with total traffic flow 40.45%, the 2nd was CCR-1 with 26.2%, the 3rd was CCR-2 with 16.9%, and the 4th was Digital Library Server with total flow was 61041.35 GB. We made a recommendation to Unila management for implementing traffic provisioning especially on streaming media activity specific on access to Google Global Cache (GGC), to overcome network congestion during peak time period on working hours.

Keywords: internet access management; internet traffic measurement; traffic trend

OBSERVED INTRASEASONAL ZONAL CURRENTS IN THE EQUATORIAL INDIAN OCEAN

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Abstract. This study evaluates the dynamics of intraseasonal zonal currents using data obtained from two Acoustic Doppler Current Profilers (ADCPs) moored at 80.5°E and 90°E along the equatorial Indian Ocean. A wavelet analysis was applied to explore the coherent between the observed zonal current and the wind forcing. The analysis shows intraseasonal variations at period of 20 - 120 days at both mooring locations. Similarly, the zonal wind stresses along the equatorial Indian Ocean also reveal intraseasonal variations with period of 20 - 120 days. Furthermore, correlation analysis between the observed zonal currents and the wind stress along the equator indicate significant correlation (r > 0.5). This result suggests that the intraseasonal zonal currents along the equatorial Indian Ocean are forced by the intraseasonal wind stress. Moreover, the correlation analysis between the intraseasonal zonal currents observed at 80.5°E and those observed 90°E shows that the former leads the later by about 3 days, indicating an eastward propagating signal with pahse speed of about 3 m/s. It is concluded that the intraseasonal zonal currents along the equatorial Indian Ocean are wind-forced variability associated with oceanic Kelvin waves having phase speed of about 3 m/s.

Keywords: equatorial Indian Ocean, intraseasonal variations, Kelvin waves, zonal current, wind forcing.

BEST PRACTICES OF CONTRACT MANAGEMENT APPROACH TOWARDS EXCELLENT SERVICE CULTURE IN CONSTRUCTION PROJECT

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Abstract. The effective contract management is an important aspect of the governance of public sector organizations of excellence. Through efficient contract management, the organization is also able to maintain the excellent quality of service to stakeholders. This paper aims to evaluate the best practices of successful construction projects from the contract management perspective rather than the project management perspective, which is defined as a certified statement of contract administration procedures were effective through systematic excellent service culture, where an on-time and within-budget construction is a major criterion of project success and client satisfaction as a whole. Via comprehensive literature review, this paper materializes its objectives of reviewing the contract management in construction projects and assessing the formal process carried out by the contracting parties in successfully the construction project. This paper reveal the basic concepts of contract management of construction projects, the principles of legality and accountability as well as the provisions of the laws and regulations that must be followed. Furthermore, the strategies that can be implemented by organizations in enhancing the effectiveness of contract management aspects are discussed. Ten key strategies presented, namely; manage contracts based on strategic goals of the organization; develop standards, procedures and guidelines; implement standards and benchmarking; improve financial management training; utilizing technological capabilities; zero financial mismanagement (ZFM); dealing with misconduct and fraud; establish key performance indicators (KPI); implementing risk management; and the application of values and ethics. This paper is very significant in achieving the excellent service culture in construction project hence without neglecting the substantial principles of project management that drive the project towards ultimate success.

Keywords: Best practices, contract management, excellent service culture, construction project.

TORREFACTION OF OIL PALM TRUNK : THE EFFECT OF PROCESS CONDITION ANALYSIS USING RESPONSE SURFACE METHODOLOGY

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Abstract. Oil palm trunk can be used as alternative energy source by torrefaction process. Torrefaction is a treatment process of biomass into solid fuel by heating within temperature range of 200-300°C in an inert environment. This research aims to result solid fuel through torrefaction and to study the effect of process variable interaction. Torrefaction of oil palm trunk was using fixed bed horizontal reactor with operation condition of temperature (225-275 °C), time (15-45 minutes) and nitrogen flow rate (50-150 ml/min). Responses resulted were calorific value and proximate (moisture, ash, volatile matter and fixed carbon). Analysis result was processed by using Design Expert v7.0.0. Result obtained for calorific value was 17,908-21,800 kJ/kg and for the proximate were moisture range of 3.08-9.72%; ash range of 0.98-7.92%; volatile matter of 48.59-63.50% and fixed carbon of 26.04-39.91%. The most affecting factor significantly towards the responses was temperature then followed by time and nitrogen flow rate.

Keywords : calorific value, oil palm trunk, proximate, solid fuel, torrefaction.

POWER CONSTRAINED DISTRIBUTED ESTIMATION FOR WIRELESS SENSOR NETWORKS

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Abstract. The focus of this paper is power constrained in wireless sensor networks. We purpose an adaptive transmit power levels based on sensors noise variance and channel conditions. We also investigate its impact on energy saving. First, the measurement results of the sensors are quantized into discrete messages. Se cond, the quantized data are transmitted to the fusion center where a final estimate is generated. The optimal transmit power levels for each sensor is determined by the sensor noise levels and channels conditions from sensor to the fusion center. The goal is minimized the total transmitting power, while ensuring a given Mean Squared Error (MSE) performance. The sensor will be active when the measurement results of the sensors have low noises variances and the condition of the channel between the sensor and the FC is good and if the conditions are otherwise the sensor is not active with the aim of saving power. For the remaining active sensors, their optimal transmit power levels are determined jointly by individual channels gain, local observation noise variance sensor and the targeted MSE performance. Numerical examples show that an adaptive power levels achieves significantly smaller MSE than uniform power levels for the same average power consumption.

Keywords: adaptive quantization, uniform quantization, distributed estimation, wireless sensor networks.

SPATIAL MAPPING OF ARI (ACUTE RESPIRATORY INFECTION) CASE ON HAZE DISASTER AREA AS IMPROVEMENT EFFORT OF VIGILANCE ON GLOBAL CLIMATE CHANGE

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Abstract. Acute Respiratory Infection (ARI) was still a major problem in Indonesia. Global climate change, especially temperature, humidity, rainfall, disaster haze due to forest fires, the exhaust gas means transportation and air pollution in the home was a double burden of disease in the eradication of ARI. Palembang was a city in south Sumatra with increased number of patients with ARI. This study has been done in September 2014 -September 2015 at Palembang. This research was observational analytic study using ecological study design. Correlation test results by using test persons correlation between climate (temperature, humidity, wind speed, and duration of irradiation) the number of ARI cases showed that the variable wind speed has a value of r =0.608 and p = 0.036, which means that there was a significant correlation between wind speed with the number of cases of ARI and direction of correlation showed a positive correlation direction which has a strong power of influence. This shows that the higher the wind speed the higher the ARI case. Mapping of the overlay wind speed with the distribution of ARI cases in Palembang 2014 showed that the distribution of ARI cases with wind speeds still clustered in the downtown area and high mobility, among other districts Ilir Timur II, Kemuning, Seberang Ulu I, Ilir Barat I, Sukarami, Kalidoni, Ilir Timur I. A geographical information system ARI can be used to support decision making in knowing the condition last risk populations of ARI and infected trends. In the end result of this mapping will be a contribution to thinking in policy-makers in the field of Communicable Disease Control for the government of South Sumatra Province, particularly the Health Department of Palembang city. So that awareness of the negative impacts of climate change can be minimized. Thus, the increase in the degree of public health can be realized as high as for the efforts undertaken by all components of the nation.

Keywords: ARI, Systems, Information, Geography.

MAINTENANCE PROPOSAL OF PRESS PARTS PRODUCTION FOR MINIMIZE WASTE BY LEAN MANUFACTURING METHOD – VALUE MAPPING STREAM (VSM)

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Abstract. Higher competition in businesslike field demanded each company acted as a value creator with progressive fixing performance. One of effort in increasing productivity was reducing waste. Enterprise T have seven type of extravagance were over production, transportation, inventory, over processing, motion waiting and defect. Minimize waste have bond with production time which could increase efficiency on using electricity and decreased lead time. Production process in this company showed non-value added time such as excessively material transportation in picking area and so the workers too much waited for the next schedule activity. This condition caused higher product lead time. Lean manufacturing idea necessary was implemented with using tool Value Stream Mapping – VSM. This strategy would resumed for the company maintenance and the result showed that lacking as much 26,45% of lead time could be a problem solution. Reducing lead time could be higher if the company have applied and played continuous improvement.

Keywords: lead time, lean manufacturing, value stream mapping.

HIGH SPEED RAIL IN ASIA AND EUROPE: LESSON LEARNED FOR INDONESIA

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Abstract. China's offer to build the Jakarta-Bandung high speed rail line (HSR) without requiring loan neither guarantee nor funding. This paper examines the prospects for HSR in Indonesia, since building HSR has its proponents and its critics. How HSR operates around the world and to determine whether a HSR system could actually succeed are explored.

Keywords: HSR, Indonesia, factor, density, disperse.

QUALITY OF EXPERIENCE ON TOLL ROADS

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Abstract. Toll roads are alternatives for road users, which offers better services such as shorter travel time, more comfortable journey, safe and secure journey, and better facilities. Therefore toll road users must pay for toll tariffs, and they immediately have expectations on toll road service quality.

In toll road operation, toll road operators must meet the Minimum Service Standard (MSS) for toll road regulated by Indonesian Government. The MSS for toll road sets rules for some toll road attributes, namely smoothness of road surface (IRI), minimum vehicle speed, emergency units, information boards, and road accessories. These standards are set to keep toll roads performance and toll road users satisfaction high. Zuna et al (2015) did a research about toll road service quality attributes and found that smoothness of road surface (IRI) is one of important toll road service quality attributes.

There is a new paradigm about goods and service, where user's perspective and satisfaction is considered important. The overall impression of the end-user about a particular service perceived subjectively, and it includes every aspects that matter to the end-user, is called Quality of Experience (QoE).

This paper aims to define Quality of Experience (QoE) of toll road, using smoothness of road surface as the attribute representing toll road service. There are two types of data used in this paper. The first one is toll road user's satisfaction survey on smoothness of toll road surface (1-5 likert scale). The survey was conducted on 11 operating Indonesian toll roads. The average value of user's assessments in each toll road is called Mean Opinion Score (MOS). Second, International Roughness Index (IRI) of each toll road is used as observed data.

IRI represents the actual condition of the smoothness of each toll road. Based on MSS for toll road, IRI for each toll road must be below four (4). Moreover, MOS represents user's point of view of toll road performance. Both should have strong inverse relationship, because higher IRI means rougher road, that leads to user's dissatisfaction. Regression analysis is used in this paper to model relationship between IRI and MOS.

Each toll road's IRI and MOS are compared through scatter plot diagrams. Based on those scatter plot diagrams, three trend lines are made and three regression curves are formed. Those curves are linear, polynomial, and logarithmic. Each curve has an equation that generally shows inverse relationship between IRI and MOS. From those results, it is concluded that higher IRI makes less users satisfied, as predicted. If those three equations are compared, polynomial has the highest R2 of 0.4717, showing that polynomial is the most suitable equation to describe IRI and MOS relationship. This result supported the characteristic of QoE for being non-linear.

Keywords: IRI, toll road, users satisfaction, quality of experience.

A STUDY ON THE SHORELINE RETREAT AND SPATIAL ANALYSIS OVER THE COASTAL WATER OF BELAWAN

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Abstract. An examination of shoreline retreat is conducted over the muddy coast in the vicinities of the port of Belawan. The related sea level rise is estimated using the well-known Bruun Rule based on the characteristics of mud profile prevalent along the eastern coast of North Sumatera Province. The spatial analysis involved is done utilizing the concept and procedure of GIS. The shoreline retreat over the hot spot area of erosion, i.e. 5-8 m per year, implies that the rate of sea level rise is in the range of 10 to 14 mm per year, indicating a severe rise rate. In addition, three other cases of simple GIS applications related to coastal water of the port are spatially demonstrated.

Keywords: coastal water, coastal erosion, sea level rise, and GIS.

WIRELESS SINGLE LINK PRICING SCHEME UNDER MULTI SERVICE NETWORK WITH BANDWIDTH QOS ATTRIBUTE

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Abstract. In this paper, pricing schemes were set up on wireless internet of multi service network to the improved models as Internet service providers (ISPs) require new pricing schemes to maximize revenue and provide high quality of service to end users. The model was formed by improving the original model together with the model of multi- service network by setting the base price (α) and premium quality (β)as variables and constants. The models aresolved by the program Lingo 11.0 to get the optimal solution. The results show that the improved models yield maximum revenuefor ISP .ISP' maximum income is obtained by applying the improved model by setting up a variable α and β as constant as well as by increasing the cost of all the changes in $QoS(PQ_ik)$ and QoS(x).

Keywords: Wireless Pricing Scheme, Multi Service Network, Bandwidth QoS Atributte, optimal solution.

USER ACCEPTANCE OF MOBILE APPLICATIONS

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Abstract. Mobile communication technology including smart phone use increase significantly. Since mobile app user is living in the first-tier cities and inadequate behavioral research on them, it makes limited understanding about the user's acceptance on mobile application. This study focused on the psychological motives behind user's acceptance of mobile applications expect. This study also tries to construct and test a conceptual model to predict user's attitude toward mobile apps, intent to use and actual use. The study examines behavioral variables behind user's acceptance of mobile apps by using theory of planned behavior/theory of reason action and technology acceptance model. This study adheres a quantitative approach and the online survey as research method. By using partial least square structural equation model, the finding showed all hypothesis are supported. The findings show that attitude, subjective norms, perceived (behavioral control, usefulness, and ease of use) are significant determinants of behavioral intention to use and actual system use toward mobile apps in Indonesia. This study supported an application of the Theory of Planned Behavior/Theory of Reason Action, and Technology Acceptance Model to mobile apps. This study was also success to integrate the constructs of theories.

Keywords: Mobile applications, planned behavior, reason actions, technology acceptance, user acceptance.

THE EFFECT OF BAGASSE DELIGNIFICATION AS FILLER TO THE MECHANICAL PROPERTIES OF CONCRETE COMPOSITE

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Abstract. The concrete composite with selullose and hamicelullose has the same quality standard as the normal concrete, but has lower density and more light. Composites concrete mixed with delignified bagasse were made to find the its mechanical strength. This research aims to produce a high quqlity of concrete composite with delignified baggase. The methode were done by heating celullose with Natrium Hidroxide solution 100°C with 10%, 20%, 30% concentration. The analysis was caaried out by chesson methode to see lignin reduction. The delignified bagasee used as fillerto the concrete composite as the aolunt of 1%, 0,75%, 0,5%. The results showed the filler with 0,25% has its density accordingly 2218.45kg/m³, 2242.04kg/m³, 2256.19kg/m³, dan 2283.56kg/m³, in the meanwhile the salmples without the filler its highest density 2326.96kg/m³, it showed the higher the filler, the lower its density.

Keywords: concrete composite, hamicelullose, lignin, cellulose.

SLAKING PHENOMENON UNDER 1D COMPRESSION TEST

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Abstract. This paper investigates the slaking behavior of several kinds of mudstone and the mechanical consequences using a comprehensive set of experimental data obtained through accelerated slaking tests and newly developed one-dimensional compression slaking tests. These data confirm that slaking in crushed mudstone is accompanied by a variation in the particle size distribution during wetting and drying cycles, and a variation in grading results in an irreversible change in mechanical characteristics, such as the reference packing density. Significant compression is also found to occur without any change in effective confining stress. The results of XRD (X-ray diffraction) analysis and scanning electron microscopy (SEM) are also used to elucidate the effects of mineralogy and particle texture on the slaking characteristics of crushed mudstone. Finally, it is also mentioned that constitutive modelling can take slaking into consideration by describing the evolution of an appropriate grading index due to slaking, and then linking this to reference packing density.

Keywords: compressibility, particle size distribution, accelerated-slaking, microscopy, mineralogy, mudstones.

ANALYSIS ON IMPEDANCE INFLUENCE ON MULTIFREQUENCY CAPACITIVE SENSOR

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Abstract. Electrochemical Impedance Spectroscopy has been a well known method that popularly used in creating a high sensitivity sensor. This method of detection uses a multi-spectral approach, complex data analysis, a relatively fast and accurate measurements. This study will describe a method of sensing using a "Multi-frequency Capacitive Sensor" (MCS) which has a basis of EIS. An analysis was done in a 150 datas that has been taken from pure water using MCS. The Ouput of this sensor is shown in a 3D (Dimension) image which is known as HHF (High High Fluctuation) and also amplitude fluctuation in a noise spectral frequency. In this study, we manage to define the effect of impedance in the sensor system to the output with a qualitative and quantitative observation. There are two Varian of impedance are used, which are 3.3 Kohm, dan 8.2 Mohm. Thus, the result will reveal high impedance that will create an output. So, it is easier to observe because the fluctuation can be easier to be distinguished.

Keywords: EIS, MCS, HHF, Impedance, VMR

IMPROVEMENT OF VISUAL FIELD USING EYECREAM THERAPY AFTER RIGHT INFERIOR MCA STROKE

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Abstract. After Inferior Middle Cerebral Artery (MCA) Stroke there are several brain function deficit. One of those deficits is visual field defect. There are several therapies to improve this defect which each own characteristics. This study present the therapy effect using computer program named EyeCream along with several instruction and procedure to extend the visual field size after right inferior MCA stroke. One case study presented here by using experiment methodology and observation. Around two month of EyeCream Therapy was conducted. The result of EyeCream program therapy shows improvement $+10.7^{\circ}$ of Visual Field and improvement of +27.35% of detection rate. The result also compared with previous studies. Comparing with previous studies, the result of EyeCream Therapy considered has same high as previous study of other therapy while this therapy has additional advantage on convenience and low budget.

Keywords: EyeCream, Right inferior MCA stroke, Visual Field, Visual Restitution Therapy, Lubeck Reaction Perimeter
CLASSIFICATION OF UNDOPED AND 10% GA₂O₃ DOPED LITAO₃ THIN FILM BASED ON ELECTRICAL CONDUCTIVITY AND PHASE CHARACTERISTIC

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Abstract. This experiment aims to investigate the electrical conductivity and the resonance frequency of thin films. The materials of thin film made from 7059 Corning glass substrate, lithium acetate, tantalum pentoxide, gallium oxide and also using 2-methoxyethanol as a solvent. The growth of thin film is done using the tool of spin coater at 7059 Corning glass substrate with dimension 1×1 cm² and annealed in furnace. Thin films also have been prepared by Metal Organic Chemical Vapor Deposition (MOCVD) technique to creating contact at 7059 Corning glass substrate and thin film layer with dimension 2×2 mm² using aluminum material. The thin film is measured using LCR meter to found the data of conductance and phase in range frequency at 50Hz - 5MHz.The results of electrical conductivity curve shows in range $10^{-8} - 10^{-6}$ and LiTaO₃ with doping (10%) Ga₂O₃ shows increasing the number of resonance frequency.

Keywords: thin film, semiconductor, LiTaO₃, Ga₂O₃, the electrical conductivity.

ANALYSIS OF PRIORITY CAUSE OF FAILURE AT PRODUCTION PROCESS TUBE 811X USING MULTI ATTRIBUTE FAILURE MODE ANALYSIS (MAFMA) IN BRIDGESTONE TIRE INDONESIA (BSIN) COMPANY

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Abstract. Fulfillment of customer expectations for the product or service quality is the key for the companies to remain competitive in the industry. BSIN is a "joint venture" company between Indonesia and Japanese private company that was established to meet the needs of product tire, tube and flap of the high quality to our customers in Indonesia and overseas. Along the way the company is faced with the problem of defective tube 811X, which often crosses the tolerance level of the company, amounting to 1% of total production. Therefore, it is necessary to identify potential failure modes and their causes and determine priorities. The method used to solve the problems is MAFMA with Fuzzy AHP Approach. The result of data processing shows there are six potential causes of failure, i.e. over pressing (Cause A), there is no replacement schedule of rubber lettering so that rubber lettering replaced when it is damaged (Cause B), abnormal vacuum machine (Cause C), replacement schedule of rubber jig tool less effective (Cause D), worn piston seal (Cause E), and there are no tools that help operators create green tube folds radius (Cause F). The weighting results show that the criteria of severity weight of 0,354, criteria of occurrence weight of 0,152, criteria of detection weight of 0,195, and criteria of expected cost weight of 0,287. The order of priority the cause of the failure are Cause D, Cause A, Cause E, Cause F, Cause C, and Cause B, each with a wieght 0,214, 0,198, 0,177, 0,165, 0,138, dan 0,105. The proposed improvement is given to overcome Cause D by changing the rubber jig tool replacement schedule to every 3,5 years. The results of the sensitivity analysis shows that Cause D is robust and election Cause D as a priority the cause of failure can be received with a good level of confidence.

Keywords: FMEA, MAFMA, Fuzzy AHP, Weight, Priority

PET PLASTIC BOTTLE WASTE WITH REUSE APPROACH AS INTERIOR PRE-FABRICATION MODULES FOR INTERIOR WALL

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Abstract. PET plastic bottle is one of the main source of waste in big cities. This research aims to find out the possibility of reusing PET bottle as pre fabrication wall module material. The pre fabrication concept were offered so that in the construction phase, the instalation of this material will be fast, efficient, and able to minimalize the waste potential. The method to decided the PET bottle specimen was by surveying some sample location in Jakarta to found out the type and capacity of PET bottle waste. Bottle waste that has the highest volume, was selected to be the speciment for further experiment as pre fabrication modul. To determine the strength capacity of this material, some module variation were designed for compressive and flexural strength test. This research is a preliminary experiment to understanding the basic potential of PET bottle as building material. This research expected to support the use of PET bottle waste for other uses in building construction.

Keywords: reuse, PET bottle, pre-fabrication module.

THE EXISTENCE OF MALAYS HOUSE IN AIR TIRIS KAMPAR RIAU IN HEALTHY HOUSE PERSPECTIVE

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Abstract. House is basic need for humans. Form and its conditions have a great influence on health's inhabitant. Any criteria as healthy standard for houses, that is ventilation as air circulation, lighting, thermal, and humidity and density. Malays people have specific house form that design adapted the local conditions as the local wisdom. As the thriving of climate and life style, is still Malays houses can be fulfill the healthy standard for dwelling? This research aims to reveal the healthy standard to be fulfilled on Malays house in Air Tiris Kampar Riau at now. Descriptive quantitative was employed to explain result of the survey with the analysis to standard healthy fulfilled as qualitative. Result of this research show that healthy standard of Malays house in here is less to dwelling. So that suggested to inhabitant people of Malays house to control their behavior that tends to keep up newly house style. The consequence of this behavior is to decrease the local wisdom of Malays house.

Keywords: Malays house, Healthy standard, Air Tiris.

MAGNESIUM AND ITS ALLOYS AS BIODEGRADABLE BONE SCREW APPLICATIONS: CURRENT STATUS AND FUTURE CHALLENGES

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Abstract. Interest in the application of biodegradable bone screw is driven by the increasing knowledge on biomedical materials and tissue engineering field. Currently, various polymeric- as well as metallic-based materials have been used as degradable bone screw. Biodegradable material is a desirable feature for bone screw since the goal is that it uses as a temporary structure holding a growing bone tissues until the bone fracture has sufficiently healed. Among others, magnesium and its alloys have a potential chance to serve as biodegradable bone screw applications, as it has mechanical properties similar to natural bone, lightweight, and biocompatible approved. This article aims to report current development and future potential use of magnesium-based metal for bone screw application. Techniques on manufacturing process, mechanical performance, and biocompatibility assessment of magnesium and its alloys are highlighted.

Keywords: magnesium, bone screw, manufacturing process, biocompatibility assessment

THE INFLUENCE OF CHANGE LOAD AGAINST FUEL COST IN COAL-FIRED POWER TARAHAN LAMPUNG UNIT 3 AND 4

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Abstract. The operation of a power plant depends on fuel where fuel costs are incurred on a generating unit is a function of the plant load. The ability power plant carry the load determine the reliability of an electrical system , hence the power raised always be done equal to needs in side load all the time. Fluctuations demand of electrical power in side load will cause fluctuations change fuel cost. In this paper, the correlation both commonly called input-output characteristics of the power plant needs to be determined. One way to achieve this goal is to match polynomial regression on the data using a second order polynomial. This model allows the study of the incremental fuel cost resulting from a change load in a coal-fired power plant.

Keywords: Economic dispatch, incremental cost characteristics, input-output characteristics, second order polynomial regression.

DEVELOPMENT OF DYNAMIC EVOLUTION CONTROL FOR PV INVERTER IN SOLAR POWER PLANT APPLICATION

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Abstract. Power inverter is used to convert a dc voltage source to an ac output voltage. In solar power plant application, PV inverter converts the dc input voltage from battery to the ac output voltage that required by ac load. The main purpose of this paper is to design and develop a dynamic evolution control (DEC) for a PV Inverter in solar power plant application. The analysis and design of the DEC control technique are provided. The performance of the PV inverter controller is verified through MATLAB Simulink. To validate the simulation results, an experimental prototype of PV inverter is developed. The controller of the PV inverter system was implemented based on dynamic evolution control. The performance of the proposed dynamic evolution control is tested through simulation and experiment.

Keywords: dynamic evolution control, PV inverter controller, PV inverter, solar power plant.

DESIGNING ERGONOMIC PARTICIPATORY BASED ON CRITICAL SAFETY PERFORMANCE INDEX IN BATIK CREATIVE INDUSTRIES

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Abstract. Batik Creative Industries have potentially brought the significant economic contribution to Indonesia. Unfortunately, the key parameters of its contribution currently just focus on the financial aspect, consequently, the element of workers productivity such a safety behavior is neglected. This research aimed to design the ergonomic participatory in which both of workers and owners of small and medium sized enterprise of Batik have mutually beneficial involvement in order to execute production processes by conforming to safety action and safety condition. The indicators of design obtained from safety performance index (SPI) which have been evaluated from four different areas using a critical behavior checklist of behavior based safety method. The results show that the safety programs of participatory engagement which critically indicated by SPI accounting for less than 50% are reciprocal control between worker and owner, personal protective equipment in proper use, waste water treatment, knowledge and experience for preventive action, attitude and perception of better quality of life.

Keywords: ergonomic participatory, safety performance, behavior based, creative industry

OVERTAKING SITUATION IDENTIFICATION IN CONNECTED VEHICLES ENVIRONMENT

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Abstract. Vehicle to vehicle (V2V) communications technology allows the development of Cooperative Overtaking Assistant System (COAS) and Cooperative Automatic Overtaking System (CAOS). The cooperation ability of vehicles can overcome the limitations of the sensors such as camera, lidar, and radar, so that the level of vehicle safety can be improved. The first phase of the operation of COAS and CAOS is determining the situation of overtaking. In the connected vehicles environment the identification of a overtaking situation can be determined based on vehicle data are distributed through the V2V communication devices such as Wireless Access in Vehicular Environment (WAVE). This study discusses the identification of a overtaking situation in connected vehicles environment by utilizing Vehicles in Neighborhood Table (VNT) and Vehicles in Maneuver Table (VMT). The test result prove that the algorithm can work according to design and the execution time of algorithm below data rate of WAVE (20 ms)..

Keywords: overtaking, connected vehicles, overtaking intention.

IMPLEMENTATION OF USER ANTHROPOMETRY BALE "SAKENEM" BUILDINGS IN SINGAPADU TENGAH VILLAGE, GIANYAR

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Abstract. Bale Sakenem Building is one of the buildings that were in the order of Traditional Bali House. This study identified Bale Sakenem building located in the Central Singapadu Village and that is observational research by using cross sectional design. This research was done by means of retrospective observational that is considered the factor that can affect Bale Sakenem Building Anthropometry. From the data analyze of research identification, 30% high bataran not in accordance with the average size of an ideal high bataran and 20% high bale-bale also not in accordance with the average of the ideal high bale-bale in Bale Sakenem building in the Central Singapadu Gianyar have not yet undertaken anthropometry users and more dominant to follow measurements that based on the size of Undagi, as a consequence there was uncomfortableness. High bataran and high bale-bale is based on the tolerance of anthropometry using the 95 percentile and 5 percentile for tolerance limit.

Keywords: Anthropometry, Balinese Architecture, Culture, Percentile, User Comfort.

ANALYSIS OF THE COSTS CONSTRUCTION WORK THE WALL ADOBE SHELLS AS MATERIAL ENVIRONMENTALLY FRIENDLY IN ARCHITECTURE GREEN

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Abstract. Adobe shells is adobe from the formulation light concrete charcoal shells palm. Adobe shells is adobe class iii that could be used as construction the wall in building. In its implementation, material of the environmentally friendly has not yet received response the broad of industry construction, especially the building the state. The purpose of this research is analyze construction execution costs for a job pairs of the wall adobe shells. A method of approach research on principle is qualitative, where the results of the analysis charge of the work construction the wall adobe shells understood in perspective architecture green as material environmentally friendly. The result of this research showed that in construction work the wall adobe shells can recommended as a standard analysis of the costs construction work if is an important part of in a building construction who apply the concept of architecture green.

Keywords: analysis of construction cost, adobe shells, architecture green.

ERGONOMIC CHAIR DESIGN USING BAMBOO LAMINATION TECHNIC

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Abstract. The use of bamboo for furniture in Indonesia like chairs uses bamboo that is still in its cylindrical form, which are then put together into the form of a chair. This results in a design that is masiff and square, uncomfortable and unergonomic.Furniture products design must be designed with an ergonomic aproach so that it may be comfortable for the end users, one of the alternative to this is by using lamination technic in the process. This technic can be applied in the manufacturing of a more ergonomic and anatomically correct for the end user. It can also result in a more aesthetically pleasing and more inovative design.

Keywords: Bamboo, Furniture, Ergonomicl, Design.

HANDOVER PERFORMANCE IN HETEROGENEOUS NETWORKS: PHY LAYER ANALYSIS

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Abstract. Heterogeneous Network (HetNet) is a telecommunications network system that is growing rapidly these days both of architecture and plathform used . The level of human mobility of the higher cause difficult to get a network connection so that it takes the process of handover between networks plathform . The handover process that occurs is by comparing the RSSI value and the initial network access rate to the target tissue in order to get the throughput, latency and delay time. The handover process taken place RSSI measurement and network access rate for GSM, CDMA, LTE and WIFI. To get the best results, this study uses 12 scenario that is a combination of all four networks. The results of research conducted that the handover occurs only in scenarios WIFI--GSM and WIFI—LTE. The best Performance analysis committed against the value of throughput 25%, latency 25ms and delay 35,07ms produce in scenarios GSM--WIFI and WIFI--GSM.

Keywords: HetNet, handover, RSSI, access rate, throughput, latency, delay.

THE ADVANCED STUDY OF SEARCH ENGINE OPTIMIZATION (SEO) USING WHITE HAT SEO TECHNIQUES TO INCREASE WEBSITE VISIBILITY AND TRAFFIC

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Abstract. In recent years, the use of search engines to look for and find a wide variety of information on the internet is increasing very rapidly. It is also in line with the many choices of search engines that can be used by internet users in different parts of the world. The search engine has become first choice for Internet users, especially for corporate users as a media to market the products and services, besides that the search engine is also used to increase the popularity of the existence of a website. Globally, the number of websites that are very much made the admin of the website and make the best efforts as much as possible they can develop a website to make it better in order to attract and increase the number of visitors as much as possible. Some ways are mostly done by the owner of the website is to promote and create traditional advertising, the use of social media and also the use of SEO techniques. Research in this paper aims is to continue the previous research that the use of the real effect of the use of the technique white SEO, especially the use of on-site optimization methods and also important factors that influence the success of the use of SEO techniques on a website. In addition, this study also describes the important role of selecting the right keywords, use the link (external links, back links, forward links and inbound links) on the web page and also the content to be displayed on web pages.

Keywords: search engine, SEO, on-site optimization, website, links.

ALTERNATIVE SCHEME TO HANDLE REVERSELY THE WASTE OF MOBILE PHONE IN BANDUNG, INDONESIA

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Abstract. Waste and other second-hand goods management in Indonesia is still not properly considered, while used products still have their economic value. One of waste and other second-hand goods that are not handled properly is the E-waste. E-waste is defined as the rubbish of electronic products. Mobile phone is one of the electronic products that are almost used by most of Indonesian people, ranging from people who have low income to people who have very high income. The influence of lifestyle also makes mobile phone lifespan is very short. The high level of consumption and short life time make mobile phones are not used accordingly and become waste. If mobile phone waste is not managed properly then the waste will accumulate and can damage our nature, because almost all mobile phone components are un-organic materials. Used mobile phone still have economic value and some of their components can be recycled or reused. Therefore this study will design reverse handling management of the mobile phones that are not used anymore from the hands of consumers in Indonesia. The main strategy is in-lined with Reverse Logistics concept where value recovery and proper disposal become the main consideration. In this design, a focused strategy will be discussed throughout the stakeholders who will be involved in the return process so the process can run effectively and efficiently. It is considered very important because most of the components of a mobile phone can be recycled or reused and it can reduce the retrieval of raw materials from nature. Just imagine what would happen if our universe is constantly exploited. Besides, these problems will certainly have an impact on our natural resources balance. If this strategy is successfully implemented then we will certainly take part in the preservation of nature.

Keywords: economic value, e-waste, , recycle and reuse, reverse logistic, used product

IMPLEMENTATION OF TWO-FACTORS AUTHENTICATION (2FA) TO ENHANCE THE SECURITY OF ACADEMIC INFORMATION SYSTEM UNIVERSITY OF LAMPUNG

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Abstract. Academic Information Systems strives to serve the information technology needs of the academic programs at University of Lampung, it plays an important role to process academic information services, these system are usually implemented on Higher Education in order to provide a valid and reliable academic data. University of Lampung (Unila) has a long history in development of Academic Information System (Siakad), starting with manual systems, semi-online and fully online. To Enhance the Security level of Siakad application furthermore in this paper describe design and implementation process of two-factor authentication (2FA), that was already integrated within Siakad application and running since 2014 as well, it use the knowledge (username/password) and also possession (security token on users mobile phone) factors. Both of these factors are implemented for user authentication, it proven that the security becomes much more complex and making it more difficult to bypass and minimize the possibility of unauthorized access. Data retrieval of sms gateway usage statistic conducted since April 2014 until April 2016, from the system report shown there were total 29.483 time OTP code sent to user's mobile phone, usually January or July on each year, there will be an increase number of OTP code sent by server, because on January is the end of even semester and on July is the end of odd semester. The most popular cellular provider used by user was TELKOMSEL with total 819 registered number, INDOSAT with 197 number used, XL with 35 number registered, and TRI with total 16 number registered, with this various number of cellular number usage, we analyzed that mean time the OTP code delivery is 22.87 seconds, this mean time value is still within the threshold of tolerance accepted by user, that indicated the SMS Gateway system is work as well. .

Keywords: Two-Factor Authentication; 2FA; OTP Code; Academic Information System Security; SMS Gateway; Siakad Unila

PREPARATION AND CHARACTERIZATION OF SUPPORTED METAL NANOCRYSTALLINE USING RAPID HEATING AND COOLING METHOD FOR RENEWABLE DIESEL SYNTHESIS FROM NYAMPLUNG OIL (*CALOPHYLLUM INOPHYLLUM OIL*)

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Abstract. Indonesia's needs of diesel each year are increasing and getting urge. That problems are not supported by the amount of oil production that still low and also influenced by the fact of oil reserve is reduced. So the government prefer to import than fulfill the needs of diesel. To anticipate it, development of diesel fuel based on renewable feedstock is started. Renewable diesel is hydrocarbon derivative from hydrodeoxygenation reaction of non-edible vegetable oil which uses nyamplung oil (Calophyllum Inophyllum Oil). It has many oleic acids and seed productivities for renewable diesel synthesis. To obtain desired renewable diesel product, use of catalyst that has high selectivity with hydrodeoxygenation reaction is important. One of suitable support catalyst is activated carbon. Activated carbon has many advantages which are high crystallization, high surface area, and has very abundant availability in Indonesia. Active site which supported with activated carbon in this research is nickel molybdenum. The synthesis of metal nanocrystalline was conducted by modification preparation from simple heating method which heating and cooling process run rapidly. By using activated carbon catalyst which has surface area of 263,2047m²/gram, has 31,7715 nm crystalline size, and good morphology of material, obtained catalyst with high activity, selectivity, and stability. After catalyst activated, synthesis of renewable diesel performed in hydrogenation reactor at 375°C, 12 bar, and 800 rpm. The result of conversion was 95 % and selectivity was 82 %. Meanwhile also obtained the cetane number of renewable diesel was 81,9 with other characteristics fulfill the petroleum diesel.

Keywords: Metal Nanocrystalline, Nyamplung Oil, Rapid Heating and Cooling, Renewable Diesel, Zeolite.

A MODELING METHOD OF HIGH-IMPEDANCE CIRCUIT FOR A TRANSIENT SIMULATION USING STEADY-STATE MEASUREMENT

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Abstract. A configuration of electrodes implanted into wood reveals a high-impedance circuit. A screw is used as an electrode, which simulates a bolt for mounting an insulator on a wooden cross arm. This paper investigates a modeling method of the circuit. An impedance-measuring instrument is used to measure the impedance between electrodes and the stray impedance between the wood and the earth. The measurement using an impedance analyzer is a steady-state measurement. A lumped-parameter equivalent circuit of the impedance is presented by a pi-type circuit. The model consists of a branch impedance between electrodes and a stray impedance. Its impedance agrees well with the measured result up to 10 MHz, which is sufficient for a transient calculation of power system including a lightning surge analysis.

Keywords: electrode, high-impedance, pi-type circuit, steady-state measurement, transient simulation

SECTION 2 : LIFE AND APPLIED SCIENCES

BIOWASTE BASED CARBON NANOSPHERES AND THEIR APPLICATION

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Abstract. Biowaste materials are becoming more popular due to the unconventional burning which might cause environmental pollutions. To over come this many researchers tried several ways to utilise these biowaste materials in to useful products in the area of nanotechnology [1, 2]. Converting biowaste materials in to spherical shaped nano particles is the state of the art research where with controlled pyrolysis technique without adding any catalyst, one can able to tune them in to perfect shape [3]. Here in this talk, we are going to show biowaste based carbon nanospheres which are well characterized using several techniques (with size ranging from 50-100nm) and then electrochemical analysis were conducted. Our studies revealed that, these materials are potential to use as supercapacitors, treatment of water, antimicrobial nature and also cancer cell imaging.

Keywords: biowaste, carbon nanospheres

SOLVING FUZZY SHORTEST PATH PROBLEM BY GENETIC ALGORITHM

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Abstract. Shortest Path Problem (SPP) is known as one of well-studied fields in the area Operations Research and Mathematical Optimization. It has been applied for many engineering and management designs. The objective is usually to determine path(s) in the network with minimum total cost or time. For some specific real world applications, however, it is often difficult to determine the cost value properly. One way of handling such uncertainty in decision making is by introducing fuzzy approach. With this situation, the problem will be difficult to be solved optimally. In this paper, we consider a new SPP model called fuzzy SPP. The cost values of this problem are represented as Triangular Fuzzy Number (TFN). Here, the decision makers can determine the range of objective value based on his/her degree of optimism. This would be very important for decision support system in the real world applications. As a solution method, we develop a GA-based technique that adopts the concept of ranking fuzzy numbers. Numerical experiments are done by using several modified test problems given in the literature. Our study shows that GA is capable attaining a good solution for the problem with different degree of optimism.

Keywords: Shortest Path Problem, Network Design Problem, Genetic Algorithm, Fuzzy number, Decision support system.

PROFILE POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) IN WATER OF MANGROVE FOREST, BANDAR LAMPUNG

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Abstract. PAH compounds in Mangrove Forest of Bandar Lampung water samples were extracted by means of headspace SPME and identified using GC-MS. PAH compounds that have been identified are Phe, Anth, Fluo, Pyr, Chry, and BaA. Abundance (k counts) PAH compounds in the samples far underneath the standard (ranging in ppb unit). It is known furthermore that SPME is an successful green analytical chemistry technique for the willpower of PAH. The results are also compared with supplementary locations roughly the mangrove forest, and it is known that exposure to PAH in Mangrove Forests of Bandar Lampung < a densely populated residential districts Bumi Waras < Port of Panjang.

Keywords: green analytical chemistry, solid-phase microextraction, polycyclic aromatic hydrocarbons.

NANOPHOTOCATALYST SPINEL NI0.5V0.5FE2O4 : PREPARATION AND CHARACTERIZATION

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Abstract. Ni_{0.5}V_{0.5}Fe₂O₄ nanophotocatalyst have been prepared using a sol – gel method. Preparation of material was carried out by dissolving nitrate salts of iron and nickel, and ammonium vanadate in pectin solution and then the sample was stirred throughly using magnetic stirrer while adjusting pH to 11. After freeze – drying process, the sample was subjected to calcination treatment and subsequently characterized using the techniques of X-ray diffraction (XRD) and Scherrer calculation Method, FTIR, and TEM analysis. The results of XRD characterization indicated that material consist of a majority crystalline phase of spinel Ni_{0.5}V_{0.5}Fe₂O₄. Then, TEM analysis proved that the grain size of this spinel is in the range of 20 nm. Crystalite size calculation using Scherrer equation, proved that the size is 34.06 nm and FTIR analysis implied that the prominent acid sites is Lewis acid.

Keywords: Nanophotocatalyst, BrØnsted – Lowry and Lewis acid sites, spinel structure, sol-gel.

2D GROUNDWATER DEPTH FOR ANALYSIS THE ZONE UNCONFINED AQUIFER

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Abstract. A damage over water resources occur due to land degradation, population pressure and industrialy. The purpose of this study was to analyze the damage to groundwater resources based on the results of the mapping and cross section of the unconfined aquifer. The study area is limetted at Pekanbaru in Riau province. The method used is a field survey to measure the coordinates of the point of the sample and measure the depth of the unconfined aquifer of dug wells and drilled wells. Grid method was a model kriging 17×17 by using surfer version 11 being input data $h_{i,j}^k$ (baseline 2015) subsequently used to predict the depth of the unconfined aquifer in 2016 up to 2020 ($h_{i,j}^{k+1}$) of using numerical finite difference method. The results showed that the cross-section of the U-S showed that the total area of the zoning secure 2016 and 2020 respectively were 169.05 km2; 3.76 km2; 3.76 km2; 3.76 km2; 3.76 km2. The cause damage to water resources were due to changes in land use, population pressure and industrialy.

Keywords: Mapping, section, unconfined aquifer, numerical methods.

ROBUST ESTIMATION OF GENERALIZED ESTIMATING EQUATION WHEN DATA CONTAIN OUTLIERS

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Abstract. In this paper, a robust procedure for estimating parameters of regression model when generalized estimating equation (GEE) applied to longitudinal data that contains outliers is proposed. The method is called 'iterated reweighted least trimmed square' (IRLTS) which is a combination of the iterated reweighted least square (IRLS) and least trimmed square (LTS) methods. To assess the proposed method a simulation study was conducted and the result shows that the method is robust against outliers.

Keywords: GEE, IRLS, LTS, longitudinal data, regression model.

SURVIVAL ANALYSIS TO EVALUATE THE SERVICE PROCUREMENT PROCESS IN PUPUK KALTIM INC.

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Abstract. Nowadays competition between coorporations in global factory, demand the corporation to have some competitive advantage. As time goes on, the service procurement departement not only demand to fulfil the service needed but also to give high quality service to increase quality of corporation so that can compete in industrial world globally. The high quality service can be measured by the duration of process. Therefore, we collect the duration data until process is over. Based on the case study section, we can conclude that the director board should approve the service procurement in the expected time as soon as possible to improve the quality of service procurement.

Keywords: Survival Analysis, Service Procurement Time, Kaplan Meier.

MAGNETIC EXCHANGE INTERACTION IN COBALT SAMARIUM THIN FILMS FOR HIGH DENSITY MAGNETIC RECORDING MEDIA

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Abstract. The effect of samarium content on magnetic interaction intensity of as deposited cobalt samarium alloys in the form of thin films deposited on silicon (100) substrates fabricated using dc magnetron sputtering technique were examined. It was found that the magnitude of exchange interaction between magnetic grains in the films was reduced as samarium content increased. It was also showed that the coercivity of the films increases and reaches a maximum value at around 19 - 22 at. % Sm, followed by a decrease with further increase in Sm concentration. Moreover, the degree of crystallinity decreases as Sm concentration is increased. Thus the increase of coercivity in this range can be qualitatively understood in terms of the combined effect of initial increase in size of relatively tightly coupled grains followed by the increase in grain separation, which ultimately reduces exchange coupling between weakly coupled grains or clusters and uniformly sized grains.

Keywords: interaction effect, coercivity, magnetic thin films and storage media.

GREEN DEGRADATION OF ORGANIC DYES BY MANGANESE OXIDES: EFFECT OF DIFFERENT CRYSTAL STRUCTURES AND TEMPERATURES

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Abstract. Organic dye pollution in water has become a major source of environmental pollution. The most effective method available for removal the dyes to date is to use so-called advanced oxidation process. In this research Fenton based process, which is one of the advanced oxidation processes, is applied for the degradation of methylene blue dye using two manganese oxide catalysts with different structure, cryptomelane and manganoside. The oxides were synthesized by sol-gel approach using KMnO4 as oxidant and citric as as reductant for cryptomelane, whereas glucose is used as reductant instead of citric acid for manganoside synthesis. The crystal structures of as-prepared oxides are determined by XRD, while SEM and BET are used for determination of morphology and surface areas of oxides. The oxides prepared using citric acid produces cryptomelane-type manganese oxide with irregular cotton dot-like appearances , while those synthesized using glucose result in manganoside-type manganese oxide with regular cotton dot-like appearances. The as-prepared oxides are used for the study of green degradation of methylene blue using H2O2 as oxidant. The results indicated that the manganoside-type manganese oxides is more effective for the degradation of methylene blue than cryptomelane-type manganese oxide. At higher temperature, the manganoside also decomposes methylene blue more than cryptomelane.

Keywords: Advanced Oxidation Process, Cryptomelane, Manganoside, Methylene blue.

THE COMPARISON OF BUNDLE-PRICING SCHEME MODELS USING QUASI-LINEAR UTILITY FUNCTION

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Abstract. In this paper, we will formulate bundle-pricing modified models involving pricing scheme based on Quasi-Linear utility function as one of internet service provider (ISP) main goal is to maximize their profit. The model formed by setting cost of creating bundle and total reservation price of customer i's. LINGO 11.0 is used to solve the models to obtain the optimal solution. The solver result for each case either from original model and modified model are compared to obtain the optimal solution. The result showed that for each case based on 3-pricing scheme which is flat fee, usage based and two-part tariff, ISPs gain the same profit with the original model but ISPs save more time in terms of resources rather than the original model. ISP's may use this model as consideration for setting cost of creating a bundle and total reservation price of customer in maximizing profits and also to provide better service quality for customers with their preferences exactly.

Keywords: bundle pricing, utility function, pricing strategies, optimal solution.

THE SCHEME OF 10TH ORDER IMPLICIT RUNGE-KUTTA METHOD TO SOLVE THE FIRST ORDER OF INITIAL VALUE PROBLEMS

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Abstract. In the second author's paper was described a numerical technique to obtain the 8th order scheme of Implicit Runge-Kutta (IRK) methods. The technique simulated some values of ci coefficients in Butcher's conditions and satisfied consistency in the Runge-Kutta methods to obtain a scheme of IRK method. In this article, we present a way to get the 10th order IRK scheme. In the last section of the article, we also demonstrate applying the 10th order IRK scheme to solve the Hénon-Heiles system.

Keywords: ODES, 10th order IRK method, numerical technique, Hénon-Heiles system.

ON GENERALIZED VARIANCE OF NORMAL-POISSON MODEL AND POISSON VARIANCE ESTIMATION UNDER GAUSSIANITY

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Abstract. As an alternative to full Gaussianity, multivariate normal-Poisson model has been recently introduced. The model is composed by a univariate Poisson variable, and there maining random variables given the Poisson one are real independent Gaussian variables with the same variance equal to the Poisson component. Under the statistical aspect of the generalized variance of normal-Poisson model, the parameter of the unobserved Poisson variable is estimated through a standardized generalized variance of the observations from the normal components. The proposed estimation is successfully evaluated through simulation study.

Keywords: Covariance matrix, determinant, exponential family, generalized variance, infinitely divisible measure.

PREPARATION CARBON NANOTUBE FROM SESAME OIL AND ITS ELECTROCHEMICAL PROPERTIES

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Abstract. The research of the development of carbon nanotube electrodes based on sesame oil soot and their application in electrochemical double layer capacitors has been conducted. Carbon nanotube was prepared by plasma pyrolysis of sesame oil with or without hydrothermally - catalytic treatment. XRD showed the existence of carbon crystal in $2\Theta = 24^{\circ}$ and 45° . FTIR patterns showed that O – H, C = O and C = C groups existed on the surface of the carbon. Carbon pore structure measurement showed the pore surface area was 592,3 m2g-1 which was dominated by micropore. The conductivity was 0.1 - 1 S.cm-1. The existence of carbon nanotube was confirmed by SEM image with percentage of C and O were respectively 88.82 % dan 11.18 %. The electrochemical properties were tested in 3-electrode system with H2SO4, KOH dan NaNO3 as electrolytes. Cyclic voltammetry showed that the highest capacitance was 0,0251Fg-1.

Keywords: EDX, potentiostat, voltammetry, hydrothermal, soot.

SECTION 3 : MEDICAL SCIENCE AND BIOMEDICAL ENGINEERING

MACHINING OF BONES FROM MANUFACTURING PROCESS POINT OF VIEW

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Abstract. Has conducted research using the Radon and Magnetotelluric (MT) methods in the Way Ratai geothermal field of Lampung, Indonesia. The purpose of research is to determine the location of the reservoir based on integrated analysis Radon and MT methods. The Radon method used to determine the high permeability zone, which channels the geothermal fluid from the reservoir to the surface, while the MT method is used to map the rock bedding. Radon Method Using 7 Rad tools produced by Durrigge Ltd., while the MT method uses Metronix by METRONIK geophysics Ltd. The Radon results indicate that the high permeability zones are near the Padok and the Bambu Kuning manifestations that is shown by high radon anomalies amounted to 25 700 Bq/m³. Based on the 2D forward modeling of Radon data and the inverse modeling of MT obtained the depth of Reservoir in the Way Ratai geothermal field is less than 1000 m from surface.

Keywords: high permeability zone, integrated analysis, magnetotelluric, reservoir, the Way Ratai geothermal field.

AN INTEGRATED SEMI-SUPERVISED CLUSTERING MODEL FOR TIME COURSE GENE EXPRESSION DATA

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Abstract. Clustering gene expression according to their pattern is critical when associating expression profile with an important physiological function. Time course gene expression data are periodically expressed thereby clustering big data for time course gene expression using basic probabilistic clustering that utilize an EM algorithm is very costly and the error prone during the EM Steps involved in the update and likelihood maximization for overall clustering of gene expression profile thus making the algorithm unstable. Therefore, to stabilize and minimize the computational cost of the algorithm we implemented autocorrelation mixed random effect model to minimize clustering error associated with overlapping data and Rejection Controlled EM to set membership threshold for gene-to-cluster membership probabilities. Simulated yeast dataset showed higher accuracy for the proposed integrated semi-supervised clustering model in addition, when genetic profiles are compared with the basic HMRF Kmeans our model provided a more reliable and robust clustering result for gene expression profiles.

Keywords: Gene expression, RECM, AR(1), Fourier

EVALUATION OF THE EFFECT OF PASAK BUMI TO INCREASE ANDROGEN LEVELS

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Abstract. Background: The ability of reproductive disorders in men and experimental male rat is characterized among other things by a decrease in androgen such as testosterone levels. Materials of pasak bumi root (Eurycoma longifolia Jack) increased libido behavior of experimental male rat. Libido associated with higher levels of testosterone, it is therefore necessary to evaluate the effect of pasak bumi on androgen levels such as testosterone. Methods: Male rats at 9.00 am treated controls and pasak bumi, then at 14.00 pm tempted with estrus female rats 10 minutes. Then, both control and pasak bumi blood samples were collected from male rat heart on day 1st and day 3rd at 14.15 pm. Measurement of testosterone levels were calculated using radioimmunoassay (RIA). Results: An increase in serum testosterone levels in the blood on day-3rd administration pasak bumi boiled water 18 mg/200 g dose significantly different than the control within day 1st to 3rd. The average levels of testosterone administration control (boiled water of aquades) day 1st = 0.50 ng/ml, day 3rd = 2.46 ng / ml, increased markedly on pasak bumi treatment day 1st = 4.00 ng / ml and day 3 = 9.73 ng / ml, (Duncan test, α =0.05). Conclusions: Testosterone levels can be increased markedly after the consumption of the pasak bumi boiled water for 3 days.

Keywords: pasak bumi, a dose of 18 mg/200 g body weight, testosterone
USING MOORE NEIGHBOR TRACING METHOD IN IMAGE PROCESSING FOR IDENTIFICATION VOCAL CORD CONDITIONS

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Abstract. Vocal cord disorders can be observed through a hoarseness or the conditions of the vocal cords directly. Stroboscopy and laryngoscopy are common tools used by doctors to observe the conditions of the vocal cords directly. The vocal cords with a disorder can be characterized by the presence of nodules, swelling and paralysis thus changing the shape of glottis contour on the vocal cords. Using digital image processing, the vocal cords image from stroboscopy and laryngoscopy would be analyzed whether the normal or disorders. In this study moore neighbor tracing method was used for extracting glottis contour then the vocal cords condition can be analyzed. The difference between normal vocal cords and disorders are deviation standard, angle on the left and right of the glottis contour. The results of the study can extract the glottis contour and decision algorithm. The result also found the identification rate overall was 86.67%.

Keywords: Contour Tracing, Image Proccessing, Moore Neighbor Tracing, Vocal Cords.

THE EFFECT OF VITAMIN E FORTIFIED IN FEED ON GONAD MATURATION OF COMMON CARP (OSTEOCHILUS HASELLTI)

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Abstract. The effect of vitamin E fortified in feed on gonad maturation of Nilem fish were studied. This research aimed to determine best dose of vitamin E for improving gonad maturation in Nilem fish. The result showed that at 375 mg kg-1 were the best doses for improving gonad maturation. The percentage of gonad maturity level IV, GSI, HSI, fecundity, diameter of egg, and percentage of mature eggs were 100%, 11.50%, 0.34%, 23.48 egg/individual, 0.31 mm, 64.44% respectively. These results supported the potentially of feed additives such as vitamin E plays a critical role in enhancing gonad maturation in Nilem fish thereby methods to improve fish production both in quality and quantity.

Keywords: Common carp, fecundity, egg diameter.

THE RHEUMATOID ARTHRITIS QUALITY OF LIFE (RAQOL) FOR INDONESIA: TRANSLATION AND PILOT TEST

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Abstract: To produce and evaluate the official Indonesian language version of the Rheumatoid Arthritis Quality of Life instrument (RAQoL). The UK RAQoL was translated into Indonesian by a forward-backward translation. A separate lay panel was conducted to consider the appropriateness and comprehensibility of the items in Indonesian. The translated version of the RAQoL was pilot tested to determine whether the questionnaire RAQoL could be well understood and well accepted. Pilot test was conducted by interviews with 20 subjects, which 10 healthy Indonesia people and 10 rheumatoid arthritis patients who were recruited from X hospital in Yogyakarta, Indonesia. Items on the two response format questionnaire used in pilot study were scored one for a 'yes' response and zero for a 'no' response. The overall score was the sum of the individual item scores with a high score indicating poor QoL. The data were analysed using the Statistical Package for the Social Sciences. Few difficulties arose in the translation process and the new language version was well received by the lay panel and field-test participants. Most patients were able to fill out the translated questionnaires in Indonesian by themselves, but there were several numbers that needed an explanation about the meaning of the quality of life in the less formal language style. Statistical analysis was conducted to determine the difference of completion time between healthy subjects and RA patients, and the total score of the questionnaire answers between healthy subjects and patients. From the analysis has founded that the average of questionnaires completion time by healthy subjects was 3.9 minutes (SD = 1.66), while the completion time by the patients was 4.9 minutes (SD = 0.74). The results T test showed that the difference in the average of RAQoL questionnaire completion time between healthy and patients was significantly difference (p < 0.05). The average total score of responses to questionnaires on the healthy subject and patients by T test was significantly different (p < 0.05). The official Indonesian RAQoL was well received by RA patients. The psychometric quality of the translated questionnaire means that it is suitable for validity and reliability of the questionnaire towards patients with RA.

Keywords: Rheumatoid Arthritis, RAQoL, translation, Indonesia

LOW-COST SIMULATOR FOR OSCILLOMETRIC NON-INVASIVE BLOOD PRESSURE MEASUREMENT

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Abstract. For medical vital sign parameter, such as blood pressure, reference value from human body is unlikely to be used as the reference value for calibration since the value is relative fluctuates. Therefore vital signs simulator is usually used as the reference value. The objective of this project is to develop low-cost simulator for automatic non-invasive blood pressure measurement which uses oscillometric method. Direct current motor based micropump is used to simulate the oscillation that corresponding with the heart rate. The oscillation characteristic is based on an existing device at BPFK Jakarta. The micropump generates oscillation which the magnitude depends on the pressure detected by a pressure sensor to determine the Mean Arterial Pressure (MAP). A prototype successfully developed to simulate systole/diastole at 120/80 mmHg with the generated MAP is 98.429 ± 2.6804 mmHg. Prototype's development cost for the hardware is around 2.5 million rupiah.

Keywords: Blood pressure, oscillometric, precision, simulator, mean arterial pressure.

THE PARENTING SYSTEM OF PARENTS AND SUBJECTIVE NORMS FOR EAST – NUSA TENGGARA (NTT) STUDENTS TO CONSUME ALCOHOL IN THE TOSAREN SUBDISTRICT OF THE PESANTREN DISTRICT OF KEDIRI CITY

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Abstract. The Parenting system of parents strongly influences children's attitudes in the following day. It is not separated from subjective norm that potentially affect it. The willingness of students to act is certainly a reflection of parental education and social pressures in a student residence located. The purpose of this study was to determine how the parenting system of parents and subjective norms for East Nusa Tenggara Timur (NTT) student who consume alcoholic beverages in the Tosaren Sub-district Kediri.

The research design uses descriptive qualitative. NTT population is all students who consume alcoholic beverages in the Tosaren Sub-district Kediri. By using snowball sampling, it was obtained 15 people respondents with the depth interview. Identification of research variables is the parenting system of parents and subjective norms on NTT students who consume alcoholic beverages.

The result showed that the act of consuming alcoholic beverages by informant was influenced by the patterns of the parenting system of parents who were authoritarian and harsh upbringing and the influence of subjective norms.

Harsh Education on the parents will have an impact on the attitudes and actions of children later in life, such as being unhappy, frightened, not trained to take the initiative, always tense, his bad problem solving ability, his poor communication skills, underdeveloped social sense, not creative signage and prowess to take a decision or initiative, likes to oppose, like violating norms, weak and introvert personality.

The harder parents educate, the poorer attitude of the child will be in the future because the child will feel pressured and at some time the child will seek inner peace through an wrong association by consuming alcoholic beverages. It is expected that parents educating well and right always put children's rights as their character development accordance with perfect control.

Keywords: Parenting system of Parents, Subjective Norms, Students, alcoholic beverages

SECTION 4 : AGRICULTURE ENGINEERING AND FOOD SCIENCE

THE ROLES OF INTERDISCIPLINARY RESEARCH IN DEVELOPING KNOWLEDGE-BASED ECONOMY

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Abstract. This paper examines the roles of interdisciplinary research in developing knowledge-based economy, taking the case mostly on the Indonesian economy. The pathway towards the knowledge-based economy that has been established during the previous government administration seems to deviate a bit further as the global economy downturn significantly affects the Indonesian economy. Major macroeconomic indicators have show some declines in recent years as the global price decline of important commodities have affected the Indonesian economy and the regional economy relied on natural resources. The Indonesian performance of innovation and competitiveness has declined seriously in the last two years, mostly due to lack of direction in and consistency in developing the strategy of knowledge-based economy. In this paper, the knowledge-based economy (KBE) is defined as the economy that has effective systems of education and skills, information and communication technology (ICT) and data technology (DT), research and development (R&D) and innovation, and economic and institutional regimes conducive for knowledge. Interdisciplinary roles play important and strategic roles in integrating these four major components of the knowledge-based economy, from the very beginning of ideas development, stability and adaptation of research results in the real world conditions to the adoption and application level in the economy. The development and continuous improvement of knowledge creation, knowledge as a source of value and the sustainability of knowledge-based economy should be conducted both at micro and industrial scales and at macro and policy level.

The paper strongly recommends that interdisciplinary research (and trans-disciplinary) should start from campus before being applied to private sectors and public institutions. The government and universities could establish centers of excellence to strengthen coordination between research and development (R&D) in public institutions and private industries. Indonesia is really in needs of increasing budget allocation for R&D and R-for-D at least 1 percent of the gross domestic product (GDP), from the public funds, state-owned enterprises (SOEs) and private sectors, and empowering innovation networks, involving academics, business, government and civil society (ABGC). Therefore, Indonesia needs continuous improvement and capacity building of researchers and research institutes and strengthening the institutions of extension system in the country. Finally, new and futuristic policies are needed to remove key barriers to establishing, developing and financing creative industries and creative economy that would shape the future of knowledge-based economy in Indonesia.

Keywords: knowledge-based economy

IDENTICATION OF VARIANCE MOLECULER GENOTIPE COMMERCIAL PALM OIL (*ELAEIS GUINEENSIS* JACQ.) BASE ON RANDOM AMPLIFIED POLYMORPISM DNA (RAPD) MARKERS

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Abstract. Commercial oil palm is one of plant genotipe have inbreeding so that it will be genetic depression. Genetic depression can cause difficulties to identification of genetic trait in palm oil so that identification of moleculer variance is necessary to know the genetic potential of commercial palm oil to obtain initial information about genetic diversity. The objectives of this study was to find genetic diversity in commercial oil palm (E. guineensis Jacq.) by using five RAPD primers (OPC-12, OPH-12, OPC-7, OPI-20 and OPD-16). The results of this study showed that Polymorpism Information Content (PIC) was 0.338. PCoA analysis showed that the moleculer varian was 43,72% and according to profil radial neighbour joining tree (NJtree) showed that three main groups.

Keywords: Genetic Variation, Oil Palm, RAPD.

THE POTENTIALS OF IMPROVING MINERAL SOURCE ADDITIONAL VALUES (NON METALIC;STONE) IN LAMPUNG PROVINCE – A PRELIMANARY STUDY

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Abstract. An initial research on non-metal mineral potential was conducted; stones in Lampung province. Surveys were conducted to some districts/towns in Lampung to take sample materials. Non-metal mineral chemical composition content analysis of stones was conducted with X-RF method. Lampung had mineral potentials of feldspar, zeolite, kaolin, and basalt of 400,500,000m3; 18,945,000m3; 9,750,000m³; 419,071,833m³ respectively. These mineral source potentials were distributed in eight districts in Lampung. Processing was required to improve additional values for these mineral sources, including crushing, grinding, classifying, and concentration process. Concentration improvements were required for feldspar and kaolin minerals. Wet high intensity magnetic separator process followed by froth flotation process became solutions to reduce high oxide iron content. Feldspar and kaolin could be used for such industries of ceramic, glass, paper, and refractory. Meanwhile, the zeolite mineral from Lampung could be used for agriculture, plantation, and fishery. Basalt stone would have additional values when this was processed into cast basalt, fiber, and ceramic composite.

Keywords: feldspar, kaolin, basalt, zeolite, Lampung.

CHARACTERISTICS OF VEGETABLE COOKING OILS (VCOS) AS SUBSTITUTES OF KEROSENE IN A PRESSURIZED COOKING STOVE

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Abstract. This paper focuses upon the possibility to burn vegetable cooking oils (VCOs) and used vegetable cooking oils (UCOs) as fuels for household cooking application. Properties of these oils and fuel/pressurized combination were characterized in this experiment. The auto-ignition point for the several oils were determined to be as follows: UCO: 460°C, crude VCO: 406°C, fresh VCO: 405°C and the peanut cooking oil did not auto-ignite. Crude VCO gave the shorter auto-ignition time than other oils within 30s. The efficiency of the pressurized stove using UCO, crude VCO and fresh VCO as fuel were observed 23,65%, 25,99% and 31,57%, respectively. The highest flame temperature of 942°C in these experiments was achieved by burning fresh VCO as fuel in this modified pressurized cooking stove. The VCOs burnt produce transparent a yellow-blue flame. UCOs tended to produce luminous flames.

Keywords:

AQUEOUS EXTRACTION OPTIMIZATION OF C. CITRATUS FOR DEVELOPMENT OF FOOD INGREDIENTS WITH ALPHA GLUCOSIDASE INHIBITORY ACTIVITIES

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Abstract. Aqueous extracts of three Indonesian local plant species Cymbopogon citratus, Musa paradisiaca, Allium cepa L. var. aggregatum, were shown to inhibit >75% activity of sucrase at 500 μ g/ ml concentration with C. citratus shown to have least citotoxicity in Brine Shrimp Lethality Test. Further temperature challenges treatment to the species using hot extraction temperature on 60 °C, 70 °C, and 80 °C with 10, 20, and 30 minutes of extraction time, resulted in the finding of C. citratus as species with most heat-stable activity. Further processing with spray drying required certain amount of minimum total soluble solid, and therefore, extraction optimization guided by TSS as desired yield were done to test the impact of ratio, method and time. Extraction method selected was aqueous extraction 700C, 40 min and using stirrer with ratio material water 3:10, that resulted in 2.0% of TSS. Optimized aqueous extract of C. citratus showed relatively high inhibition against sucrase and amylase activity at concentration 0.3g/ml (100% inhibition sucrase and 82% inhibition amylase).

Keywords: Alpha Glucosidase Inhibitor; extraction, optimization.

DETERMINATION OF THE BEST NONLINEAR FUNCTION IN ORDER TO ESTIMATE BRAHMAN CATTLE GROWTH

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Abstract. Growth can be described by using a mathematical model. The appropriate mathematical model which is biologically and analytically easy to interpret is the nonlinear model. This research aimed to evaluate the nonlinear mathematical model in predicting Brahman female cattle growth. Data used in this research were the body weight recording of seven hundred and thirty-eight (738) Brahman female cattle, with age ranging from early birth (< 1 month) to mature (60 months), collected by Balai Pembibitan Ternak Unggul dan Hijauan Pakan Ternak (BPTUHPT) Sembawa from 2012 to 2015. Data were analyzed using four nonlinear mathematical model: Brody, Bertalanfy, Logistic, dan Gompertz. Resuts showed that the degree of goodness fit of the four models classify high in category (R2 > 0,84). Brody model were most appropriate in describing Brahman female cattle growth curve. Logistic and Gompertz models were most appropriate in predicting Brahman female cattle mature weight.

Keywords: mature weight, growth curve, nonlinear, breeding.

EXAMINING ORGANIC PAPER MULCH ON THE GROWTH AND YIELD OF SHALLOT (*ALLIUM ASCALONICUM L.*)

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Abstract. Shallot is a vegetable commodity with a high economic value, as a source of farmers' income and foreign exchange. National productivity of shallot in East Java continues to decrease. In the year of 2010 the production reached 9.98 tonnes/ha, and it declined to 9.34 tonnes/ha in 2013 (Ministry of Agriculture, 2012). One of the obstacles of shallot production is uncertain climate condition. Mulching is one of the efforts to control the microclimate around the plant. Organic mulch engineering into organic paper mulch is expected to overcome the above problem. The basic principle refers to the process of manufacturing synthetic paper. The research was conducted at the Experimental Farm of Faculty of Agriculture, University of Muhammadiyah Malang. The study used simple-randomized block design to test the treatment of organic material composition which consists of 6 treatments, and each treatment is repeated three times. The treatment is basic material composition of water hyacinth plants as fine fibers, straw as rough fiber materials and leather waste as decomposing fiber material and flexibility. Observed variables include the growth and yield of shallot and climate. Each data is analyzed by F test and comparison test (Honest Significant Difference or HSD 5%). Based on comparative tests on the diameter of tuber, the number of tuber, fresh weight and dry weight it indicates that the use of organic paper mulch on treatment A where hyacinth plants: Straw: Waste Leather (5: 3: 2) and B where hyacinth plants: Straw: Waste Leather (5: 2: 3) is significantly different compared with other treatments, whereas the effect of organic paper mulch on vegetative phase of shallot is not significant.

Keywords: Mulch, Organic Mulch, Shallots.

EFFECT OF ACETIC ACID: FORMIC ACID RATIO ON CHARACTERISTICS OF PULP FROM OIL PALM EMPTY FRUIT BUNCHES (OPEFB)

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Abstract. Oil palm empty fruit bunches (OPEFB) is one of the solid waste can be used as raw material for pulp. The objective this research was to determine the effect of acetic acid: formic acid ratio on the characteristics of EFBOP pulp. The results showed that the increasing of the amount of formic acid can reduce levels of cellulose, hemicellulose, lignin and pulp yield. The best results was achieved on the treatment of acetic acid ratio: 85:15 formic acid which produced 73,75% cellulose, 7.78% hemicellulose, 1.61% lignin and 32.57% yield

Keywords: acetic acid, formic acid, OPEFB, pulp.

IDENTIFICATION AND CLUSTER ANALYSIS OF OIL PALM (ELAEIS GUINEENSIS) FRUIT TYPE USING TWO-DIMENSIONAL THIN LAYER CHROMATOGRAPHY

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Abstract. The problems that have been faced by oil palm breeders are the length of time and high costs. It takes at least 5-8 years to ensure the type of oil palm fruit before used as a seed parent. It is therefore not effectively coupled with maintenance costs and higly the production. This study tried to use two-dimensional thin layer chromatography (2D-TLC) to identify differences chain-length of polyisoprenoid alcohol among the fruit types, namely Dura, Pisifera and Tenera. Samples of leaves and fruit on each fruit type that has been identified through direct determination, the plant nurseries, commercial seed and unkwon type of palm oil. The results showed that two-plate TLC chromatograms of hexane extracts of polyisoprenoids easily identified the fruit type of Dura compared to Tenera and Pisifera because Dura had no long chain poliprenol of C90 and more. While Pisifera and Tenera was distinguished based on the composition of the carbon chain-length of dolichol and poliprenol. In Pisifera there were no poliprenol molecules of C60 and C105 and dolichol of C110, which those compound belongs to Tenera. To confirm our finding, cluster analysis was drawn using UPGMA method. Dendrogram showed that the three types of oil palm are grouped by each of fruit type, suggested that palm fruit of polyisoprenoid are chemotaxomic significant.

Keywords: Chromatography, Oil Palm, Isoprenoid, Tenera, Dolichol.

MORPHOLOGICAL CHARACTER AND BIOMASS IN SALT-STRESSED MANGROVE SEEDLINGS RHIZOPHORA APICULATA AND CERIOPS TAGAL

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Abstract. The present study describes the effect of long-term salinity on morphological character and biomass content of two non-secretors mangrove plants Rhizophora apiculata and Ceriops tagal. Two mangrove seedlings were grown for six months in 0%, 0.5%, 1.5%, 2.0% and 3.0% salt concentration. The growth of R. apiculata was significantly enhanced by salt with maximal stimulation at 1.5% (equal to 50% natural seawater) and this increase appeared to be attenuated by increasing the salinity concentration above 1.5%. By contrast, the growth of C. tagal thrived up to 0.5% salt concentration. Our findings therefore suggested that within the range of treatments used, 1.5% and 0.5%, respectively were the optimal salinity of R. apiculata and C. tagal for growth. The highest leaf area of C. tagal was obtained at 1.5% salinity concentrations and, on the other hand, R. apiculata showed much greater extent. The wet and dry weight of the two seedlings was changed in the same manner as the height of plants upon salt treatment. Our results indicated that R. apiculata was more salt tolerant than C. tagal, which may provide important information for mangrove rehabilitation in North Sumatra, Indonesia.

Keywords: Ceriops tagal, Mangrove plant, Morphological character, Rhizophora apiculata, Salinity.

EVALUATION OF TOXICITY EFFECT OF CARDAMOM, CINNAMON, AND NUTMEG AGAINST INSECT STORED PRODUCTS

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Abstract. One of the most efficient ways to preserve food safe storage from insect infestations, many methods have been applied in storage facilities to control insect pest such as surface spraying and fumigation using phosphine fumigant. However, the use of phosphine for longer periods has proved to trigger development of resistance to some stored products insects. Thus, there is urging to develop alternative fumigant for resistance pest management in warehouse. Potential option is to replace the phosphine as a fumigant with botanical fumigants. Therefore the objective of this to explore the potential of essential oil (cardamom, cinnamon, and nutmeg) as a fumigant against insect stored product. The results showed that the essential oil of cinnamon more effective against adult, larvae and eggs of C. maculatus (LC₅₀=0.186%, 0.109%, 0.109%) and T. castaneum (LC₅₀=1.239%, 0.109%, 1.051%) compared with cardamom and nutmeg oil. Nonetheless, third essential oils have the potential in controlling T. castaneum and C. maculatus.

Keywords: LC₅₀, fumigation, essential oil.

PHYSICOCHEMICAL & MICROBIAL CHARACTERIZATION OF OVERRIPE TEMPEH

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Abstract. Recent research showed potencies of overripe tempeh for development as condiment, and therefore, requirement of guiding parameters related to sensory properties. In this study, four samples of overripe tempeh from single source of soybean with different processing method were observed. All samples were characterized with comparable brown color (L* 52.96, a* 6.84, and b* 18.52), and total number of lactic acid bacteria (8.30 – 8.46 log CFU/g). All samples also have similar trends of protein and soluble amino acid content (50.32 – 61.77 mg BSA eq/g dry base, 357.39 - 418.78 mg tyrosine eq/g dry base) compared to fresh tempeh (62.43 mg BSA eq/g dry base, 71.70 mg tyrosine eq/g dry base). The findings indicated suitability of above parameters as guidance in target overripe tempeh for condiment ingredients. Observation of total microbial and total yeast and mould showed that these parameters were affected with production method of overripe tempeh.

Keywords: Overripe tempeh, guiding parameters

EVALUATION OF FRESH MILK QUALITY BASED ON TOTAL MICROBE USING STATISTICAL QUALITY CONTROL (SQC)

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Abstract. Milk is a perishable food product due to microbial contamination. Potential contamination begins from the milking process. Fresh milk quality is determined by the total microbes in milk. In Indonesia, the standard of milk quality standards should be meet Indonesian National Standard (SNI) No. 01-3141-2011. Total microbe of the milk affects the price of fresh milk. The objective of this study was to determine the quality index of fresh milk produced by dairy farmers, member of KPSBU Lembang, West Java. Data obtained by measuring the total microbe of fresh milk by using TPC and processed using Statistical Quality Control (SQC). Fresh milk quality index based on the total microbe expected to help farmers and stakeholders to determine the price of milk and milk utilization further.

Keywords: milk, quality, SQC.

SUSTAINABLE INDEX AND STATUS OF FARMING ON DEGRADATED PEATLAND IN CENTRAL KALIMANTAN

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Abstract. Degradated peatlands can be formed by natural disasters, anthropogenic or their combination. Modification and degradation of the natural functions of peatland cause the loss of benefits for the environment. Degradated peatlands can be convert into agriculural area increase its value and sustainable economic benefits for the community. This reasearch carried out in Kabupaten Pulang Pisau Central Kalimantan. Rapid Appraisal for Agriculture in degredated Peatland (Rap-Agripeat) were being used to analys the index and sustainability status of farming. Rap-Agripeat is a modification method of the Rapid Appraisal for Fisheries (Rapfish). The analysis was performed through the steps: 1) determination of the attributes or descriptions of aquaculture on sustainable peatland includes five dimensions (ecological, economic, technological, social and institutional); 2) an assessment of the attributes in ordinal scale based on the sustainable criteria of every dimension, using multidimensional scaling (MDS); 3) analysis of the sustainability index ordinance. The results of the analysis of the ordinance, the sustainability index ranges: from 40.51 to 89.72. The dimensions of ecology, economy and technology determine the value of sustainability. On the othe hand, social and institutional dimensions has less impact on the value of sustainable farming on degradated peatlands. The results of the Rap-agripeat analysis on 50 attributes shows 9-sensitive attributes that affect the sustainability of farming

Keywords: degradated peatland, sustainable index and status, farming.

CONTRIBUTIONS WATERSHED ENIM IN RICE PRODUCTION IRRIGATION BENEFIT AND COST ANALYSIS

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Abstract. Population growth impacts on subsistence. Generally, the basic needs of the people of Indonesia are eating rice daily. The rice is derived from rice field, its availability must be maintained so that its can meet the basic needs of the people of Indonesia. For that need rice crop management in order to generate more production. Irrigation is one way to increase rice production. Irrigation plays an important role in the success of rice production. Researchers will assess the economic value of irrigation for rice production. This study aimed to quantify the economic value of watersheds to irrigate rice fields. Calculations performed using the economic value of benefit cost analysis on the use of irrigation Enim watershed in the village of Cahaya Alam regency Muara Enim in South Sumatra

Keywords: Enim watershed, irrigation, analysis of benefits and costs

CALIBRATION OF SIX RECURSIVE DIGITAL FILTERS FOR BASEFLOW SEPARATION IN EAST JAVA

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Abstract. This paper shows the calibration process of baseflow separation methods. Six (6) baseflow separation methods are used for this study. The main input for this research is discharge data from 54 watersheds in East Java. Firstly, each method was calibrate using daily discharge data for each year (annually) to separate baseflow. Then, optimal parameter values are obtained by averaging the annual values. Calibration process produce optimal parameters value for each watershed. Furthermore, validation are performed using optimal parameter values from watershed having complete discharge data to other watersheds. The results show that optimal parameter values from calibrated watershed can be used to separate baseflow in other watersheds. The research also show the spatial characteristics of baseflow and baseflow index on the region.

Keywords: Baseflow, separation, calibration, recursive digital filter.

THE PATTERN OF CONSUMPTION AND FOOD NUTRIENT QUALITY IN THE CULTURE OF ZUHUD APPLICATION ON PESANTREN MALANG

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Abstract. The aim of this research is for analyse of food nutrient quality in the culture of zuhud (simplicity) application at the pesantren (modern n traditional) on Malang. Research area selected by purposive, respondents are selected by Random Sampling. The ages of respondents are more than 12 years old, the periode of stay are 6 month in average. The result was indicated by respondents eat the food 2x for a day in average with the prime menu is cooked rice. Both of levels the food nutrient quality are under standard. This condition was influenced by low level of knowledge of food management education about: kind of food for source of carbohydrate, fat, protein, vitamine, mineral and water; standard of total nutrient necessary; low level of knowledge of students about the concept of zuhud; habits, respect to the ustadz/ustadzah; low of fund and isolated location of pesantren.

Keywords: Food Nutrient, Food Nutrient Quality, Pesantren Modern/Traditional, Ustadz/Ustadzah, Zuhud.

RESISTENCY OF WHITE AND RED JABON SEEDLINGS (ANTHOCEPHALUS SPP.) TO BOTRYODIPLODIA THEOBROMAE PAT. CAUSING DIEBACK DISEASE

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Abstract. White and red jabon seedlings are very popular to nurserier, because of the benefits and can improve the economic. The main problem in nurseries are insects and diseases attack. One of the diseases is dieback disease. Dieback disease is caused by B. theobromae, that can make the seedlings death. These pathogens can attack passively and actively. Every plant has a mechanism of resistance to pathogen attack, either structural or biochemical, before and after attacked.

This research aimed: (1) to study the structural resistance of jabons to B. theobromae attacked; (2) to study the interaction between the species of jabons and stem infection methods in jabons to the structural resistance of jabon seedlings; (3) to obtain the most resistance species of jabons to B. theobromae attacked.

This research used factorial completely randomized design that combined the species of jabons and stem infection methods in seedling. The structural resistance was done with studying the microscopy of infected and non infected jabon used scanning electron microscope.

The white jabon seedlings just had the necrotic resistance as the structural resistance after pathogen attacked. Before and after pathogen attacked of red jabon seedlings, structural resistance were showed with found the structure of trychomaes on the epidermis and the necrotic resistance. The incidency and the severity of disease in jabons with wounded stem infection methods were wider and worse than jabons with non wounded stem infection methods.

Keywords: disease incidency, disease severity, stem infection methods, structural resistance.

ENGAGE YOUTH IN AGRICULTURE THROUGH PLURIACTIVITY STRATEGIES

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Abstract. The main problem in food agriculture at the village has undergone aging population with an average age of farmers over 52 years. This phenomenon causes the village to experience a shortage of young labor. Amid youth crisis in agriculture, author still found some young people who are involved in agrifood. They use pluriactivity strategy that combines gainful activities, whether on-or off-farm for a survival in farming and treated as a way to secure farmer's income. The paper analyzes the pluriactivity strategy of youth farmer in three rice-growing villages in central java. The data obtained through 150 interviews using questionnaire and focus group discussion with rural youth. Finding shows that 10% farmer aged 35 years and below. Whereas the 90% of the young farmer surveyed were pluriactive, i.e. conducted both farm and non-farm activities. In this group, and the 67% of the young farmer also as fabric worker or shop assistant. Then the rest (33%) as civil servants, the small traders, bricklayers, or builders. Youth farmer keeping both activities in farming and non-farming at the same time to survive and earn a higher income. Building economics activities in the rural area are needed in order to open up access for creating innovative young farmers and diverse jobs.

Keywords: Pluriactivity, Youth, Agriculture.

NATURAL NANO ZEOLITE AS FERTILIZERS FOR TECHNOLOGY OPTIMIZATION OF SOIL FERTILITY ON SWAMPY LAND TO INCREASE PRODUCTION OF PADDY (*ORYZA SATIVA* L.) IN INDONESIA

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Abstract. Indonesia has the largest population, ranks fourth in the world. The high numbers of population, poses various problems public. One of the big problems is the subject of rice needs. Rice production in ndonesia is still low, while rice consumption continues to increase each year. Government's efforts in dealing with this case including conducting import rice and promote a diversified program of rice. However, these efforts are still not optimal. Thus a more appropriate solution is necessary and relevant to address these problems. Efforts that can be done is to divert rice cultivation to land a suboptimal. Land land is suboptimal amount pretty much in Indonesia and still untapped land intensively due to having a low soil fertility and other limiting factor. In swamp land management the main problem is the relatively low soil fertility. The problem can be overcome by the addition of amelioran in a cheap, renewable and available. Application of nano-zeolite fertilizer is a technological innovation that can be applied to improve the fertility of the soil in the swamp land. Nano-zeolite fertilizer is able to react faster (reactive in properties) and eco-friendly. Creation of Nano natural zeolites using the Planetary Ball Mill and the chemically activated using chemically with HCL and warming temperatures are 500°C. based on Muttaqin Saragih (2013) and stated that the results of the milling Zeolites containing Nano chemical compositions namely oxygen (42.66%), Aluminium (-%), Silicon (43,75%), potassium (3.31%) and iron (6,39%). The method of writing done with the study of the literature of various relevant literature and the results of the discussion with the Supervising Lecturer is then written in the form of scientific papers. Benefits of scientific papers is to provide knowledge about the prospect of nano-zeolite natural fertilizer that can be used as a solution in an effort to improve and optimize the fertility of the soil in the swamp land. The success of the management of the swamp land will be able to increase rice production and support the movement of national food security.

Keywords: rice, swamp, nano-zeolite, eco-friendly.

COFFEE AGROFORESTRY PERFORMANCE IN LAND PRIVATE OWNERSHIP: CASE IN PULAU PANGGUNG DISTRICT TANGGAMUS

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Abstract. Coffee production system in Tanggamus mostly taken placed araound forest and Sekampung watersheds. Upstream Sekampung watersheds had treathen by land degradation and deforestration. Trade off have revealed between coffee production and ecological services in water cathment area. Enhancing the coffee productivity must be concern with environtment conditions. Coffee agroforestry is well known as a great solution to improve the land productivity. Environment services form natural resources will be assertion and sustainable. This study is concern to explore how the coffee agroforestry in land private ownership perform. Study taken place in Pulau Panggung subdistrict, Tanggamus. Respondent was sampling randomly, with the total 408 coffee farmers. Statistic descriptive used to tabulate and compile the coffee agroforesty perform criteria. Then the relationship between land ownership and coffee agroforesty criteria related with farmer incomes, labor availability, level of education, and experiences in coffee production analized by multiple regression. Based on the analysis was revealed that coffee plant density amount 1.774 coffee trees.ha-1 while growth with shade tress (MPTS) attain to 182 trees.ha-1. MPTS based on wood represented by 8 kind of tress, while MPTS based on non wood trees 5 type of trees. Multicroping plants also appear such as pepper, cocoa, banana, and rubber. Adoption of Coffee agroforestry in Pulau Panggung subdistrict is well performed. Farmer income was noted amount IDR 14.449.854,-.year-1 or IDR 1.204.155,-.year-1. The coffee farmer income was significantly influenced by land area, coffee trees, and MPTS.

Keywords: coffee agroforestry, MPTS, land ownership.

RESURGENCY EFFECT OF ABAMECT IN INSECTICIDE ON FECUNDITY OF NILAPARVATA LUGENS

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Abstract. Abamect in is one of the commonly used insecticide for controlling *Nilaparvata lugens* and *Scriphopaga incertulas* in rice. Most studies have shown that it can be used to control brown plant hopper. However, FAO has recommended its ban for active use in rice since Abamectin encourage resurgence in *N. lugens*. Thus the aim of study is to analyze the resurgence effect of Abamectin on fecundity of *N. lugens*. For analysis, four treatments was performed with three replications each. On the first application rice seedling was soacked once and feed to insects at intervals of two days and second application the insect were feed thrice. Duncan's Multiple Range Test was used for analysis of pre-oviposition, oviposition, femalematurity, fecundity and egg viability. The results of three application showed that Abamectin reduced preoviposition while it increased oviposition and female egg maturity consequently, increasing fecundity and egg viability of *N.lugens* therefore triggering resurgence.

Keywords: Fecundity, Nilaparvata lugens, insecticide abamectin.

SOCIAL CAPITAL AND FOOD SECURITY IN RURAL AREA IN INDONESIA

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Abstract In Indonesia, 87 million people are presently vulnerable to food insecurity. Thus, the United Nations Development Programme's primary millennium development goal for Indonesia is to halve the number of people who suffer from hunger by 2015, but this goal did not reached last year. It is clear that food security at the household level is crucial to achieving this target. The households' perceptions of their food security status were captured by asking the household head the following question: "How do you perceive your household's food security status during the last month"? Respondents could select from the following options: insecure, somewhat insecure, somewhat secure, secure and highly secure. Here, the household head's answer is regarded as the household's subjective food security status (SFSS). From this answer we want to measure the relation with social capital level in this village. We assume that social capital level has relationship with the capacity of the communities to solve this problem together (the problem is food security). To achieve this study we proposed hypothesis that the higher the level of social capital the more secure of food the inhabitants. The aim of this study is to investigate between social capital level and food security level. The definition of social capital is derived from the concepts of networking, bonding and bridging ties that we design in the question in the questionaire survey. Using data from household respondents, this study constucts three factors through principal component analysis: sense of community, sense of place, and neighboring. This three factors plus some demographic attributes are used as explanatory variables for modeling the relation between social capital and food security using structural equation modeling (SEM).

Keywords: structural equation modeling

BIOCHEMICAL IDENTIFICATION OF BACTERIA IN POLLUTED SOIL FROM MERDEKA VILLAGE, MERDEKA DISTRICT, KARO REGENCY

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Abstract. Dichloro Diphenyl Trichloroethane residue are lipophiliec, they tent to accumulate in the fatty tissues of in gesting organisms along the food chain through consumption of agricultural products grown on contaminated soils. DDT residue in soil concern as their uptake can lead to accumulation in primary products. The removal residue of DDT from soil is therefore a priority. In this study the bacteria from DDT residue soil was isolated in top soil about 0-20 cm from merdeka village, merdeka district, karo regency. DDT residue soil sample was extracted using QuEChERS method and determination of insecticide residue was carried out by gas chromatography mass spectrometry (GC-MS). Two isolated bacteria identified for their activity in residued soil. Aerob bacteria was culture in blood agar plate and anaerob bacteria cultured in biological safety cabinet. Biochemical chart report from microbiology laboratory of H.Adam Malik hospital showed to have genus of *Bacillus sp* and *Clostridium subterminale*.

Keywords: Biochemical, identification, dichloro diphenyl trichloroethane, bacteria, polluted soil.

DETERMINATION OF MICRO CATCHMENT MODEL BASED ON ECOHYDROLOGY FOR THE MANAGEMENT AT KRUENG PEUSANGAN WATERSHED

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Abstract. Sustainable development is directed at the management and utilization of natural resources, forests, land and water for the benefit of present generations and also guaranteed availability and utilization for future generations. But right now, activities of natural resource management is often viewed within the boundaries of administrative areas. While natural processes such as floods, landslides, environmental degradation do not recognize administrative boundaries but follow the boundaries of watersheds. The integration between sectors and regions in the management of natural resources and the environment watershed depends also the sectoral ego and the ego of regionalism. This becomes very complex in a river basin district and inter-provincial traffic. So as to assess the soil, water management and conservation in a comprehensive manner in a watershed, it needs the right approach. Krueng Peusangan watershed the restored watershed that need handling in two decades. This study aims to identify the biophysical environment, water resources, social and institutional conditions of the people in Krueng Peusangan watersheds. Determining the micro watershed models based on the concept ecohydrology according to the site conditions of the watershed. Development plans in the micro watershed models at Krueng Peusangan watershed. The results obtained are Krueng Peusangan form watershed management in an integrated manner through the development of micro watershed model based ecohydrology by considering aspects of social, economic, cultural and institutional capacities in and around the basin. So that damage/critical natural resource in Krueng Peusangan can be minimized once corrected for the sake of maintaining a sustainable watershed conditions. Micro watershed location selected by the variable physical, economic and social in Krueng Peusangan based on the highest score is the subzone Lut Tawar, Sub Krueng Ceulala, Krueng Simpo subzone, subzone Teupin Mane. Elected district that is the District Bintang, District Ceulala, District Lut Tawar, District Pinto Rime Gayo, District Timang Gajah and District Peudada.

Keywords: Micro watershed models, social, economic, cultural and concepts ecohydrology.

FINANCIAL FEASIBILITY STUDY OF LIQUID SMOKE INDUSTRY FROM PALM OIL EMPTY FRUIT BUNCH IN MESUJI REGENCY, LAMPUNG PROVINCE

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Abstract. The results of financial feasibility study show that the development of liquid smoke industry from EFB were feasible to be developed with eligibility criteria Rp. 991,486,765 of NPV ; 2.50 of Net B/C; 36.59 % of IRR ; and 2.83 years of PBP. The results of sensitivity analysis showed that the liquid smoke industry from EFB more sensitive for liquid smoke price decerasing than raw material and other inputs price increasing

Keywords: Financial Feasibility, Liquid Smoke, EFB.

POSTER

STUDI OF DETERIORATION OF SQUID: AUTOLYSIS

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Abstract. The squidi is one of the important fishery products which have high economic value and has the Latin name Loligo sp. However squid, as well as other aquatic commodities, able to decay (highly perishable food). Autolysis is one of the mechanisms that occur during the process of deterioration of quality. The result is the occurrence of decomposition and softening squid meat. One of the proteolytic enzymes responsible for autolysis process is an cathepsin enzymes. It is therefore important to study these enzymes work during the autolysis process. The purpose of this research is to study the process of quality deterioration, especially that caused by autolysis process. As the object of this study was squid (Loligo sp) which has a body length of 8.30 ± 0.58 cm and has a weight of 30.4 ± 6.61 g. The squid was given two treatments, weeded (the proportion of meat 89.96%) and without weeded, then each stored at chilling temperature ($\pm 4 \circ C$). Analyses were performed every 3 days beginning with the day to zero for 13 days. The results of organoleptic tests showed impaired organoleptic squid to 60 on a 3-day storage. These values continue to decline in subsequent storage. Along with the decline in quality, an increase in enzyme activity cathepsin until the 6th day of storage, and further decreased enzyme activity. Based on these data we can conclude that the maximum autolysis process occurs on a 6 day storage.

Keywords: autolysis, cathepsin enzymes, highly perishable food, organoleptic.

UTILIZATION OF SEAWEED PORRIDGE SARGASSUM SP. DAN EUCHEUMA COTTONII AS A COSMETIC IN PROTECTING THE SKIN

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Abstract. The squidi is one of the important fishery products which have high economic value and has the Latin name Loligo sp. However squid, as well as other aquatic commodities, able to decay (highly perishable food). Autolysis is one of the mechanisms that occur during the process of deterioration of quality. The result is the occurrence of decomposition and softening squid meat. One of the proteolytic enzymes responsible for autolysis process is an cathepsin enzymes. It is therefore important to study these enzymes work during the autolysis process. The purpose of this research is to study the process of quality deterioration, especially that caused by autolysis process. As the object of this study was squid (Loligo sp) which has a body length of 8.30 ± 0.58 cm and has a weight of 30.4 ± 6.61 g. The squid was given two treatments, weeded (the proportion of meat 89.96%) and without weeded, then each stored at chilling temperature ($\pm 4 \circ C$). Analyses were performed every 3 days beginning with the day to zero for 13 days. The results of organoleptic tests showed impaired organoleptic squid to 60 on a 3-day storage. These values continue to decline in subsequent storage. Along with the decline in quality, an increase in enzyme activity cathepsin until the 6th day of storage, and further decreased enzyme activity. Based on these data we can conclude that the maximum autolysis process occurs on a 6 day storage.

Keywords: autolysis, cathepsin enzymes, highly perishable food, organoleptic.

HANDOVER ANALYSIS ON HETEROGENEOUS NETWORKS BY RECEIVED SIGNAL STRENGTH INDICATOR (RSSI) AND ACCESS RATE

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Abstract. Heterogeneous Network (Hetnet) is evolving rapidly nowadays either from the architecture or the technologycal platform. Human mobility level is getting higher means to get network connection is difficult, therefore we need the capability of inter network handover. Handover is occured by comparing the RSSI and access rate at the serving network toward the target. Several parameters such as throughput, latency, and delay were measured and examinet. In this work the measurements of RSSI and access rate where condukted on GSM, CDMA, LTE, and WIFI network, however the handover process is limited only to WIFI-GSM and WIFI-LTE scenarios out of 12 scenarios has planed. Based on measurement analysis it can be conclude that the GSM-WIFI and WIFI-GSM scenario are the best scenarios.

Keywords: HetNet, handover, RSSI, access rate, throughput, latency, delay.
CARRIER AGGREGATION MECHANISM ON LTE-ADVANCED 4G NETWORK

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Abstract. Cellular operators in Indonesia are starting to roll out 4G LTE services. The obstacles arise when there is no single operator who meets the minimum requirement to run LTE-Advanced 4G service that set by 3gpp release-10, which is the minimum bandwidth of 20 MHz. Carrier aggregation (CA) is present as an alternative solution so that the operator can keep running the LTE-Advanced 4G service. Carrier aggregation itself is a virtual carrier merging technique to get a larger bandwidth. This paper conducted the performance test of carrier aggregation technique and compare it with non-carrier aggregation technique. The test conducted by a simulation using the simulator in 4 districts which are classified as urban areas in the city of Bandar Lampung. The number of sites that used in this simulation are based on the calculation planing by capacity, as many as 15 sites for Carrier aggregation interband non-contigous and non-carrier aggregation. The performance test parameters in this paper are the coverage of signal level, connected user, and throughput. The result of simulation shows that the performance of carrier aggregation is not much different from the performance of non-carrier aggregation technique.

Keywords: 4G LTE-Advanced, Carrier Aggregation interband non-contigous, performances.

OPTIMAL CAPACITOR SIZING AND PLACEMENT IN THREE-PHASE DISTRIBUTION SYSTEM USING MIXED INTEGER LINEAR PROGRAMMING

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Abstract. The three-phase distribution system with long feeder line oftenly causes high power losses and voltage drop beyond the $\pm 5\%$ limits. To improve the voltage profile, capacitor can be placed on medium voltage feeders by operator of electrical system. This paper proposes the use of Mixed Integer Linear Programming (MILP) to determine capacity and the optimum point of bus capacitor placement on three-phase distribution system. Mathematical model of capacitor bank using MILP method was tested on 11 node feeders , katu 119 node feeders of Menggala substation and 34 node feeders. The result showed that voltage profile has improved as expected. In addition, the optimization results were also verified with Newton Raphson power flow method.

Keywords: optimal reactive power, capacitor bank allocation, three-phase power distribution system, mixed integer linear programming

THE EFFECT OF EMBOSSING ON THE RIGIDITY OF WHEEL FOR AGRICULTURAL TRACTORS

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Abstract. The fin wheel of agricultural tractors, as the essential part of the hand tractor, was frequently damaged during operation because the rigidity of fin wheel cannot able to hold the soil resistance. The experiments were conducted to determine the effect of embossing on pressure load, deflection, and the rigidity of fin wheel of hand tractor. The carbon steel plate (Ultimate strength of 42 kg/mm2) was used as material of fin wheel. The type of embossing has 2 pieces with the different high (i.e. 4 mm, 5 mm, and 6 mm). The experiments were started from designing the punch and dies, preparing plates as raw of fin wheel, forming plates to be fin wheel, testing with pressure loading until due to deflection. The result of experiments was presented that increasing of embossing high and embossing quantity will be increase the pressure load as well as the rigidity of fin was increase.

Keywords: Embossing, Deflection, Fin wheel, Pressure Load, Rigidity, Soil resistance.

A MODEL-BASED SIMULATOR FOR CONTENT DELIVERY NETWORK USING SIMEVENTS MATLAB-SIMULINK

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Abstract. Simulation methodology has become popular among network researchers due to the availability of various sophisticated and the flexibility of simulation packages in model construction and the result's validation. The objective of our research is to introduce a discrete simulator tools known as SimEvents toolbox that runs on MATLAB-Simulink with the advantages of graphical user interface (GUI) system and a total customized simulator design. In this paper, we design a model-based network simulator named as "CDNlink". CDNlink is designed based on a queueing model and functioned to study the content delivery networks (CDN). As result, we have designed the simulator for Client, Router, DNS, and Server. Moreover, we simulate the CDN system for packet round trip time (RTT) and server's queue length.

Keywords: simulink, content delivery network, model-based simulation, simevents, cdnlink.

THE CONVERSION OF α -CELLULOSE FROM PALM OIL EMPTY FRUIT BUNCH TO CARBOXIMETHYL CELLULOSE

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Abstract. The conversion of the α -cellulose to carboxymethyl cellulose (CMC) was performed by alkalization and etherification methods. The variation of sodium hydroxide concentrations were used 15, 20, 25 and 30%. The analysis of CMC was conducted using FTIR, SEM, as well as the degree of substitution. The values of substitution degree for each sodium hydroxide concentrations were 0.17 0.12 0.25 and 0.12 respectively. The optimum degree of substitution value was 0,25 which obtained at sodium hydroxide concentration. The fourier transform infrared spectrum at 1604 cm-1 indicated that the carbonyl group attached at α -cellulose. Based on the scanning electron microscopy, the CMC had tenuous morphological surface.

Keywords: Palm oil Empty Fruit Bunch, α-Cellulose, Carboxymethyl Cellulose.





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