

The 3rd FIRST 2019 INTERNATIONAL CONFERENCE FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY OCTOBER 09-10, 2019

Palembang, Province of South Sumatera Indonesia



PREFACE

The 3rd FIRST 2019 (Forum in Research, Science, and Technology) International Conference was initiated and organized by State Polytechnic of Sriwijaya in collaboration with Management and Science, University (MSU), Malaysia and National Chin-Yi University of Technology, Taiwan. The theme of the conference was "Integration of Advanced Technology to Enhance Social Welfare". The 3rd FIRST 2019 International Conference facilitated the participants from all over the world to meet face to face to open chances in establishing connection and collaboration among them. It was not only for the researchers in academics, but also in industries and governments. This conference became an effective media to link the researchers from many parts of the world conference, for exchanging, sharing, following up and discussing the results of the latest research, industry's needs, and government regulatory policies. The 3rd FIRST 2019 International Conference became worthwhile platform for researchers to present their finding in the areas on multidisciplinary of Engineering and Science (Track 1), Computer Science and ICT (Track 2), and Social Science (Track 3). It has also provided an opportunity for the professionals and researchers to learn and share about the latest development and research in those 3 tracks.

The 3rd FIRST 2019 International Conference attracted so many authors not only from Indonesia but also from other countries, such as Japan, Taiwan, and Malaysia. There were 180 papers were accepted in the 3rd FIRST 2019 International Conference, including 89 papers for Track 1 (Engineering and Science), 46 papers for Track 2 (Computer Science and ICT), and 45 papers for Track 3 (Social Science). In The 3rd FIRST 2019 International Conference, there were 4 keynote speakers and 2 invited speakers. As the keynote speakers, there were Prof. Yasushi Kiyoki, Ph. D from KEIO University, Japan, Prof. Nurul Taufiqu Rochman, M. Eng, Ph. D, From LIPI, Indonesia, Prof. Tjiptohadi Sawarjuwono, M. Ec., Ph. D., Ak, from Universitas Airlangga, Indonesia, and Prof. Win-Jet Luo, from National Chin-Yi University of Technology, Taiwan. As the invited speakers, there were Dr. R. Wisnu Nurcahyo, DVM from Universitas Gadjah Mada, Indonesia, and Assoc. Prof. Dr. Intan Zaurah binti Mat Darus from Universiti Teknologi, Malaysia. The 3rd FIRST 2019 International Conference committee would like to say thank you very much for all the participants and their respected institutions that have supported for the success of the 3rd FIRST 2019 International Conference, and also forall of the guess and sponsors of the 3rd FIRST 2019 International Conference.

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Authors

Affandi, Muhammad Irfan

Marketing Efficiency of Organic Rice in Lampung Province

Afrizawati

The Effect of Organization Climate on Performance with Job Satisfaction as an Intervening Variable

Akbar, Muhamad

E-Government Policy, Leadership Commitment, Apparatus Resources Development, and Their Implications on Public Service Performance

Aladin

Industrial Clusterization to Improve the Competitiveness of Small and Medium Industries in the City of Palembang

Alhadi, Esya

Impact of Customer Orientation and Quality of Service on Trust and Customer Loyalty

Alhamdari, Lailita

Analysis Method Economic Value Added of Cosmetics Companies Listed on Indonesia Stock Exchange

Amalia, Rizki Fitri

Political Connection, Profitability, and Capital Intensity Against Tax Avoidance in Coal Companies on the Indonesia Stock Exchange

Amran, Ali

Relationship Between GPA, Length of Study, and Competency with the Length of Time to Get a Job

Amri, Darul

Determinant of Development Strategies and Leadership Styles on Organizational Commitment and Their Implications for MSMEs Performance in Palembang

Andriani, Titi

Impact of Customer Orientation and Quality of Service on Trust and Customer Loyalty

Anshari, Muhammad

Human Resource Role and Online Strategy

Aprianti, Siska

The Effect of Capital Readiness and E-Commerce Utilization on the Competitiveness of Micro, Small, and Medium Enterprises Woven, Palembang

Ardiani, Susi

The Effect of Hospital Image and Service Quality on Customer Loyalty Through Customer Satisfaction

Arifin, Kiagus Zainal

Determinants of Village Financial Management Accountability

Armaini, Rosy

The Impact of Village Fund Program Implementation Toward Society Welfare in Indonesia

Aryani, Yuli Antina

Industrial Clusterization to Improve the Competitiveness of Small and Medium Industries in the City of Palembang

Badri, Markoni

The Environmental Compliance Management of Palm Oil Plantation in Ogan Komering Ilir Regency, Sumatera Selatan, Indonesia

Bustan, Jusmawi

Analysis Method Economic Value Added of Cosmetics Companies Listed on Indonesia Stock Exchange

Bustan, Jusmawi

The Effect of Culinary Knowledge and Culinary Experience on Local Culinary Attractiveness

Carlos, RS

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Choiruddin

Determinants of Village Financial Management Accountability

Darfin, Deri

The Public Service Quality of Library Service at the Library Unit Polytechnic State of Sriwijaya

Darlies, Meivi

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Darmaliana

The Development of Teaching Material Speaking 2 Based on Communicative Approach

Desiani, Anita

Relationship Between GPA, Length of Study, and Competency with the Length of Time to Get a Job

Dewata, Evada

Industrial Clusterization to Improve the Competitiveness of Small and Medium Industries in the City of Palembang

Divianto

The Effect of Organization Climate on Performance with Job Satisfaction as an Intervening Variable

Djumrianti, Desloehal

Online Transportation Technology and Women's Driver Communication Skills

Dwitayanti, Yevi

The Impact of Village Fund Program Implementation Toward Society Welfare in Indonesia

Effendi, Ridwan

The Public Service Quality of Library Service at the Library Unit Polytechnic State of Sriwijaya

Elisa

Evaluation of Sales Price Within Calculation Cost of Good Production SMEs Pempek Ilir Barat I and Bukit Kecil District, Palembang

Ermatita

The Clustering of Paddy Fields Using Machine Learning Algorithms in the Province of South Sumatera

Erwin, Muhamad

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Evawati, Nian Masna

Language Experience Approach in Teaching Reading Comprehension to the Engineering Students

Fadila, Dewi

Impact of Learning, Socialization, and Financial Lifestyle of Students' Intention to Invest in Capital Market

Faridah

The Effect of Taxpayer Awareness and Tax Sanctions on Compliance in Paying Land and Building Taxes

Firdaus, Yusnizal

The Environmental Compliance Management of Palm Oil Plantation in Ogan Komering Ilir Regency, Sumatera Selatan, Indonesia

Fithri. Eka Jumarni

Determinants of the Quality Regional Financial Statement

Frimansyah

Determinant of Development Strategies and Leadership Styles on Organizational Commitment and Their Implications for MSMEs Performance in Palembang

Gustiani, Sri

The Effectiveness of Blended Learning Approach on Essay Writing Subject Hamid, Abd.

The Effect of Culinary Knowledge and Culinary Experience on Local Culinary Attractiveness

Handayani, Sri

Marketing Efficiency of Organic Rice in Lampung Province

Handayani, Sri

Comparison Analysis of Added Value of Organic Rice and Inorganic Rice

Hanifati

Online Transportation Technology and Women's Driver Communication Skills Hardivansyah, Hardivansyah

E-Government Policy, Leadership Commitment, Apparatus Resources Development, and Their Implications on Public Service Performance

Hartati, Sukmini

Dimension of Village Expenditure in Development Sector

Hartaty, Sri

Determinants of the Quality Regional Financial Statement

Herawati, Yusleli

Evaluation of Sales Price Within Calculation Cost of Good Production SMEs Pempek Ilir Barat I and Bukit Kecil District, Palembang

Herman

The Effect of Directed Reading—Thinking Activity on Students' Critical Thinking Abilities

Husori, Al

The Environmental Compliance Management of Palm Oil Plantation in Ogan Komering Ilir Regency, Sumatera Selatan, Indonesia

Indriasari, Desi

Determinants of Village Financial Management Accountability

Irmeilyana

Relationship Between GPA, Length of Study, and Competency with the Length of Time to Get a Job

Jauhari, Hadi

Human Resource Role and Online Strategy

Koesharijadi, Koesharijadi

E-Government Policy, Leadership Commitment, Apparatus Resources Development, and Their Implications on Public Service Performance

Koryati

Language Experience Approach in Teaching Reading Comprehension to the Engineering Students

Kusmartini, Sri Endah

The Development of Teaching Material Speaking 2 Based on Communicative Approach

Lisnini

Model of Empowerment as Strategies for Women SMEs Entrepreneurs Competitiveness in Palembang

Lupikawaty, Marieska

Analysis Method Economic Value Added of Cosmetics Companies Listed on Indonesia Stock Exchange

Lupikawaty, Marieska

Evaluation of Sales Price Within Calculation Cost of Good Production SMEs Pempek Ilir Barat I and Bukit Kecil District, Palembang

Mahendrati, Hermina Agustina

Individual Readiness for Change and Affective Commitment to Change: The Mediation Effect of Technology Readiness on Public Sector

Mandiangan, Pridson

Online Transportation Technology and Women's Driver Communication Skills

Mangundjaya, Wustari

Testing the Role of Charismatic Leadership, Psychological Climate, and Organizational Citizenship Behavior on Resilience

Mangundjaya, Wustari L.

Leader-Member Exchange and Affective Commitment to Change: Mediating Role of Change Self-Efficacy

Mangundjaya, Wustari

Testing the Impact of Organizational Justice on Affective Commitment to Change with Work Engagement as Mediator

Mangundjaya, Wustari

Individual Readiness for Change and Affective Commitment to Change: The Mediation Effect of Technology Readiness on Public Sector

Mangundjaya, Wustari L.

Testing Mediation of Psychological Empowerment, Work Engagement to Affective Commitment to Change

Maretha, Fetty

Model of Empowerment as Strategies for Women SMEs Entrepreneurs Competitiveness in Palembang

Maria

The Impact of Village Fund Program Implementation Toward Society Welfare in Indonesia

Mariskha, Z

Impact of Learning, Socialization, and Financial Lifestyle of Students' Intention to Invest in Capital Market

Martini, Rita

Dimension of Village Expenditure in Development Sector

Marwa, Taufiq

Exploring Linkage Among Experiential Value, Image of Destination, and Intention to Revisit in Nature Tourism

Masnila, Nelly

The Effect of Taxpayer Awareness and Tax Sanctions on Compliance in Paying Land and Building Taxes

Maulana, Riska

Impact of Learning, Socialization, and Financial Lifestyle of Students' Intention to Invest in Capital Market

Miskiyah, Neneng

Human Resource Role and Online Strategy

Mubarok, Muhammad Husni

The Effect of Taxpayer Awareness and Tax Sanctions on Compliance in Paying Land and Building Taxes

Nadjmuddin, Muhammad

The Effect of Directed Reading—Thinking Activity on Students' Critical Thinking Abilities

Natoen, Ardivan

The Influence of Commitment on State Civil Apparatus in the Governor Office of South Sumatera

Nirmagustina, Dwi Eva

Comparison Analysis of Added Value of Organic Rice and Inorganic Rice

Nurhasanah

The Impact of Village Fund Program Implementation Toward Society Welfare in Indonesia

Oktarian, Rido Prawira

Relationship Between GPA, Length of Study, and Competency with the Length of Time to Get a Job

Oktarida, Anggeraini

Determinants of the Quality Regional Financial Statement

Paisal

The Effect of Organization Climate on Performance with Job Satisfaction as an Intervening Variable

Pangestu, Bramntyo Muhamad

The Effect of Capital Readiness and E-Commerce Utilization on the Competitiveness of Micro, Small, and Medium Enterprises Woven, Palembang

Pebrianti, Yulia

Model of Empowerment as Strategies for Women SMEs Entrepreneurs Competitiveness in Palembang

Periansya

The Influence of Commitment on State Civil Apparatus in the Governor Office of South Sumatera

Purwati

Evaluation of Sales Price Within Calculation Cost of Good Production SMEs Pempek Ilir Barat I and Bukit Kecil District, Palembang

Puspitasari, Dwi Andriani

Leader-Member Exchange and Affective Commitment to Change: Mediating Role of Change Self-Efficacy

Rahma, Munaja

Students' Perception of English Blended-Learning in State Polytechnic of Sriwijaya

Riama, Lambok Vera

Determinants of the Quality Regional Financial Statement

Ridho, Sari Lestari Zainal

Human Resource Role and Online Strategy

Ridhwan, Moehammad

Students' Perception of English Blended-Learning in State Polytechnic of Sriwijaya

Rini

Model of Empowerment as Strategies for Women SMEs Entrepreneurs Competitiveness in Palembang

Risa

The Development of Teaching Material Speaking 2 Based on Communicative Approach

Risnawati

The Development of Teaching Material Speaking 2 Based on Communicative Approach

Robinson

The Public Service Quality of Library Service at the Library Unit Polytechnic State of Sriwijaya

Rusnadi, Irawan

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Sandrayati

The Effect of Hospital Image and Service Quality on Customer Loyalty Through Customer Satisfaction

Sanmorino, Ahmad

The Clustering of Paddy Fields Using Machine Learning Algorithms in the Province of South Sumatera

Sari, Evi Agustina

The Effectiveness of Blended Learning Approach on Essay Writing Subject

Sari, Yuliana

Industrial Clusterization to Improve the Competitiveness of Small and Medium Industries in the City of Palembang

Sari, Kartika Rachma

Determinants of Village Financial Management Accountability

Sarikadarwati

The Effect of Hospital Image and Service Quality on Customer Loyalty Through Customer Satisfaction

Sastrawinata, Hendra

Impact of Learning, Socialization, and Financial Lifestyle of Students' Intention to Invest in Capital Market

Satriawan, Indra

The Influence of Commitment on State Civil Apparatus in the Governor Office of South Sumatera

Seprianto, Dicky

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Setiawan, Heri

The Effect of Culinary Knowledge and Culinary Experience on Local Culinary Attractiveness

Setiawan, Heri

Exploring Linkage Among Experiential Value, Image of Destination, and Intention to Revisit in Nature Tourism

Shihab, Muchsin Sagaf

Exploring Linkage Among Experiential Value, Image of Destination, and Intention to Revisit in Nature Tourism

Simanjuntak, Tiur

The Effectiveness of Blended Learning Approach on Essay Writing Subject

Sopian, A.R.

The Influence of Commitment on State Civil Apparatus in the Governor Office of South Sumatera

Sulaiman

The Effect of Capital Readiness and E-Commerce Utilization on the Competitiveness of Micro, Small, and Medium Enterprises Woven, Palembang

Sunani

The Effect of Directed Reading—Thinking Activity on Students' Critical Thinking Abilities

Suryati

The Clustering of Paddy Fields Using Machine Learning Algorithms in the Province of South Sumatera

Susilo

Testing Mediation of Psychological Empowerment, Work Engagement to Affective Commitment to Change

Thoyib, M.

Determinant of Development Strategies and Leadership Styles on Organizational Commitment and Their Implications for MSMEs Performance in Palembang

Tompunu, Alan Novi

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Ummasyroh

The Effect of Culinary Knowledge and Culinary Experience on Local Culinary Attractiveness

Wahab, Zakaria

Exploring Linkage Among Experiential Value, Image of Destination, and Intention to Revisit in Nature Tourism

Wahyudi, Riza

Determinant of Development Strategies and Leadership Styles on Organizational Commitment and Their Implications for MSMEs Performance in Palembang

Widyastuti, Endah

Dimension of Village Expenditure in Development Sector

Windarti, Gst Ayu Oka

Impact of Customer Orientation and Quality of Service on Trust and Customer Loyalty

Yahya

The Effect of Organization Climate on Performance with Job Satisfaction as an Intervening Variable

Yeny, Eli

The Effect of Directed Reading—Thinking Activity on Students' Critical Thinking Abilities

Yulina, Bainil

The Effect of Capital Readiness and E-Commerce Utilization on the Competitiveness of Micro, Small, and Medium Enterprises Woven, Palembang

Yulsiati, Henny

The Effect of Hospital Image and Service Quality on Customer Loyalty Through Customer Satisfaction

Yurnalis

Testing the Impact of Organizational Justice on Affective Commitment to Change with Work Engagement as Mediator

Yusri

The Effectiveness of Blended Learning Approach on Essay Writing Subject

Yusuf, M.

The Environmental Compliance Management of Palm Oil Plantation in Ogan Komering Ilir Regency, Sumatera Selatan, Indonesia

Zahara, Elvia

Impact of Customer Orientation and Quality of Service on Trust and Customer Loyalty

Zakaria

Students' Perception of English Blended-Learning in State Polytechnic of Sriwijaya

Zamheri, Ahmad

Criminal Law Policy on the Crime of Abuse to the Orang Rimba in the Bukit Duabelas National Park

Zulkarnaini

The Public Service Quality of Library Service at the Library Unit Polytechnic State of Sriwijaya

Zulkifli

Language Experience Approach in Teaching Reading Comprehension to the Engineering Students

Zulkifli, Zulkifli

Dimension of Village Expenditure in Development Sector





TABLE OF CONTENTS

TRACK 1	1
ELECTRICAL ENGINEERING	1
A GLOBAL KNOWLEDGE SHARING AND SEMANTIC COMPUTING SYSTEM WITH 5-DIMENSIONAL WORLD-MAPFOR NATURAL AND SOCIAL ENVIRONMENT-ANALYSIS AND VISUALIZATION	1
5G Channel Model for 28 GHZ Frequency in Palembang	2
B Alfaresi , Z Nawawi , R F Malik, K Anwar	2
Wireless Sensor Network Data Communication and Information System to Regulate Water Volume and Turbine Rotation	
Suzan Zefi ¹⁾ , Eka Susanti ²⁾ , R.A Halimahtussa'diyah ³⁾ , Sholihin ⁴⁾	3
Tomato Harvesting Arm Robot Manipulator; a Pilot Project	4
Yurni Oktarina ¹ ,Tresna Dewi ¹ , Pola Risma ¹ , and Muhammad Nawawi ¹	4
Performance Evaluation Solar Charge Controller on Solar Power System Home-Based SPV Amorphous 80 Watt-Peak	5
Armin Sofijan ¹ , Zainuddin Nawawi ² , Bhakti Yudho Suprapto ³ , Riman Sipahutar ⁴ , Irwin Bizzy ⁵	5
The Implementation of YateBTS Based GSM Using Raspberry PI	6
Sopian Soim ¹⁾ , Suroso ²⁾ , Ade Silvia Handayani ³⁾ , Ahmad Taqwa ⁴⁾ , Nur Shadrina ⁵⁾	6
Optimization of Own Electricity Usage with Electricity Supply from Solar Cells at Darajat Geotherm Power Plant	
Brendy Chandra Supian Atmodjo¹ and Rinaldy Dalimi¹	7
Ultrasonic Sensor Application as a Performance Enhancement of Robot Two Wheels	8
Yeni Irdayanti ⁽¹⁾ , Rd. Kusumanto ⁽²⁾ , Masayu Anisah ⁽³⁾ , Niksen Alfarizal ⁽⁴⁾ , Zarmariesyah Erman ⁽⁵⁾	8
Operation 3 Phase Induction Motor 1 KW Star Delta System Using HP (Smart Phone)	9
Nofiansah ¹ , M. Noer ² , Nurhaida ³ , M. Hafidz Aulia ⁴	9
PLC Omron CJ1M CPU-21 Control Modification for Drill Oil Hole Machine in an Automotive Compa	ıny
	.10



The 3rd FIRST 2019 (FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY) International Conference



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Lin Prasetyani 1, Bayu Ramadhan1 , Tresna Dewi2 , William Sarfat1	10
Characteristics of Battery Use in Electric Car	11
Yessi Marniati*, Andri Suyadi, Herman Yani, Sutan Marsus**	11
Learning Module of Analog Electronics Practice	12
Sabilal Rasyad, Evelina, Amperawan, Dewi Permata Sari, Nyayu Latifah Husni	12
DIFFERENT METRIC DISTANCES ON THE K-MEANS METHOD IN BUILDING A CANS WASTE CLASSIFICATION SYSTEM USING THE CMYK COLOR MODEL	13
Implementation of Facial Feature Extraction Using Viola-Jones Method for Mobile Robot System	ı14
Ahmad Zarkasi ^{1,2} , Siti Nurmaini, Deris Setiawan, Ahmad Kuswandi, Sri Desy Siswanti	14
Effect of Load on BLCD Motor	15
Rumiasih, Carlos R. Sitompul, Anton Firmansyah, Indah Susanti	15
Implementation of DSK TMS320C6416T Module in Designed of Sound Detection	16
D A Pratama, N L Husni, E Prihatini, S Muslimin	16
Automatic Cooling of a PV System to Overcome Overheated PV Surface in Palembang	17
Ahmad Taqwa ^{1,2} , Tresna Dewi ^{1,2} , RD. Kusumanto ^{1,2} , Carlos R Sitompul ^{1,2} , Rusdianasari ¹	17
Analysis of Performance Test and Consumption of BLDC 350 W Motor Power to Mechanical Vibration with Variation of Speed and Load Variation	18
Hairul, Markori, Indrawasih dan Sudirman Yahya	18
The Influence of Change of an Angle of Illuminance on Solar Power Generating Capacity 30 Watt Laboratory of Electrical Engineering Polytechnic of Sriwijaya	
Zainuddin Idris, M. Yunus, Siswandi, Bambang Guntoro	19
The Effect of Drying Airflow Rate on H2O MASS Evaporated for Banana Chips Drying Using Photovoltaic Solar Panel	20
Yohandri Bow ¹ , Adi Syakdani ² , Muhammad Taufik ² , Rusdianasari ³	20
Development and Feasibility Analysis of Floating Solar Panel Application in Palembang, South Sumatra	21
Benny Junianto ¹ , Tresna Dewi ² , Carlos Sitompul ²	21
Effects of Grid Frequency Drop on The Dynamic Performance of Full Converter Wind Turbine Generator	22
A. M. Shiddiq Yunus ^{1,} Makmur Saini ² , Sri Suwasti ¹ , dan Purwito Purwito ³	22



The 3rd FIRST 2019 (FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY) International Conference



International Conference

Jl. Srijaya Negara Bukit Besar Palembang 30139 South Sumatera – Indonesia phone +62711 353414 Fax: +62711 355918

Modified Design for Water Metering System	.23
Nyayu Latifah Husni ¹ , Dampito ² , Abdurrahman ³ , Evelina ⁴ , ade Silvia Handayani ⁵ , Sabilal Rasyad ⁶ , Adella Rialita ⁷¹⁻⁷ Electrical Department, Politeknik Negeri Sriwijaya	
Implementation of Fuzzy Logic Type-2 On Mobile Robot Navigation System	24
Ade Silvia Handayani, Jefri Alkausar, Sarjana Sarjana, Nyayu Latifah Husni, Siti Nurmaini, Irsyadi Yani	
INTELLIGENT CONTROLLER FOR FLEXIBLE ROBOT ARM	.25
The Analysis of Wear on Artificial HIP Joint with Dimple on Femoral Surface	26
Hasan Basri ^{1,*} , A. Syahrom ^{2,3} , Amir Putra Md Saad ² , A. T. Prakoso1, D. Wicaksono1, M. I. Amarullah ¹ , Tri Satya Ramadhoni ¹	. 26
Optimal Design of Plasticizing Screw Using Artificial Intelligent Approach	.27
Fatahul Arifin ^{1,2(*)} , Min-Wen Wang ¹ , Jhen-Wei Kuo ³ , Tzong-Horng Dzwo ⁴	.27
Mechanical Degradation Model of Porous FE Scaffold: Simulation Approach	28
Akbar Teguh Prakoso ¹ , Ardiyansyah Syahrom ^{2,3} , Amir Putra Md Saad ^{2,3} , Abdul Hadi Abdul Wahal M. A. Sulong ^{2,3} , Achmad Rendiko Ichsan ¹ , Apreka Diansyah ¹ , Risky Utama Putra ¹ , Muhammad Imam Ammarullah ¹ , Hasan Basri ^{1*}	
Scoopy Blade for Low Current River Waterwheel Supporting The Energy Needs in The Rural Areas Indonesia	
Darmawi ¹⁾ , Riman Sipahutar ²⁾ , Irwin Bizzy ³⁾	
SELT Design as a source of renewable electricity using the Flywheel Generator and Photodiode Sensor	30
Indra Maulana, Dicky Seprianto, Yossy Yudhianto, Muhammad Najib, Muhamad Azwar	.30
Analysis of Upgrading Process Of South Sumatera Low Rank Coal	.31
Riman Sipahutar ¹ , Diah Kusuma Pratiwi ¹ , Darmawi Bayin ¹ , Irwin Bizzy ¹ , Baiti Hidayati ^{1,2}	.31
The Effect of Parameters on The Process of Making Objects With Rapid Prototyping Digital Light Processing Technology on The Bending Stress	32
Romli ¹ , D Seprianto ¹ , DP Putra ¹ , M Rasid ¹ and A. Zamheri ¹	32
The Effect of Rectangular Parallel Key Manufacturing Process Parameters Made With Stereolithography DLP 3D Printer Technology against Impact Strength	33
D Seprianto ¹ , R Sugiantoro ¹ , Siproni ¹ , Yahya ¹ and M Erwin ²	33
Simulation of the Effect of Cutting Angle in Lathe Process on Distribution of Cutting Temperature	.34





Ismail T ¹ , Amrifan SM ² , Irsyadi Y ³ , Riman S ⁴ , Rahmad H ⁵	34
Conduction Heat Rate Analysis of Tool in Titanium Turning Process	35
Ismail T ¹ , Amrifan S M ² , Riman S ³ , Irsyadi Y ⁴ , Sandro O ⁵ , Fatiandari A ⁶	35
Cooling Channel Design for a Built-In Spindle of a Machine Tool	36
Kun-Ying Li ^{1, 2} , Win-Jet Luo ^{2*} , Shih-Jie Wei ¹ , and Yan-sin Liao ¹	36
Design of Automatic Control Systems at Loader Output of Snap Gauge Machine in Manufacturing Industry	
Syahril Ardi¹ and Rahardian Faizal Zuhdi²	37
The Influence of Change of an Angle of Illuminance on Solar Power Generating Capacity 30 Watts Laboratory of Electrical Engineering Polytechnic of Sriwijaya	
Zainuddin Idris, M. Yunus, Siswandi, Bambang Guntoro	38
The Effect of Drying Airflow Rate on H2O MASS Evaporated for Banana Chips Drying Using Photovoltaic Solar Panel	39
Yohandri Bow ¹ , Adi Syakdani ² , Muhammad Taufik ² , Rusdianasari ³	39
Development and Feasibility Analysis of Floating Solar Panel Application in Palembang, South Sumatra	40
Benny Junianto ¹ , Tresna Dewi ² , Carlos Sitompul ²	40
Effects of Grid Frequency Drop on The Dynamic Performance of Full Converter Wind Turbine Generator	41
A. M. Shiddiq Yunus ^{1,} Makmur Saini ² , Sri Suwasti ¹ , dan Purwito Purwito ³	41
Modified Design for Water Metering System	42
Nyayu Latifah Husni ¹ , Dampito ² , Abdurrahman ³ , Evelina ⁴ , ade Silvia Handayani ⁵ , Sabilal Rasyad Adella Rialita ⁷¹⁻⁷ Electrical Department, Politeknik Negeri Sriwijaya	-
Implementation of Fuzzy Logic Type-2 On Mobile Robot Navigation System	43
Ade Silvia Handayani, Jefri Alkausar, Sarjana Sarjana, Nyayu Latifah Husni, Siti Nurmaini, Irsyad Yani	
The Analysis of Wear on Artificial HIP Joint with Dimple on Femoral Surface	44
Hasan Basri ^{1,*} , A. Syahrom ^{2,3} , Amir Putra Md Saad ² , A. T. Prakoso1, D. Wicaksono1, M. I. Amarullah ¹ , Tri Satya Ramadhoni ¹	44
Mechanical Degradation Model of Porous FE Scaffold: Simulation Approach	46





Akbar Teguh Prakoso ¹ , Ardiyansyah Syahrom ^{2,3} , Amir Putra Md Saad ^{2,3} , Abdul Hadi Abdul Wah M. A. Sulong ^{2,3} , Achmad Rendiko Ichsan ¹ , Apreka Diansyah ¹ , Risky Utama Putra ¹ , Muhammad Imam Ammarullah ¹ , Hasan Basri ^{1*}	
Scoopy Blade for Low Current River Waterwheel Supporting The Energy Needs in The Rural Areas Indonesia	
Darmawi ¹⁾ , Riman Sipahutar ²⁾ , Irwin Bizzy ³⁾	47
SELT Design as a source of renewable electricity using the Flywheel Generator and Photodiode Sensor	48
Indra Maulana, Dicky Seprianto, Yossy Yudhianto, Muhammad Najib, Muhamad Azwar	48
Analysis of Upgrading Process Of South Sumatera Low Rank Coal	49
Riman Sipahutar ¹ , Diah Kusuma Pratiwi ¹ , Darmawi Bayin ¹ , Irwin Bizzy ¹ , Baiti Hidayati ²	49
The Effect of Parameters on The Process of Making Objects With Rapid Digital Prototyping Light Processing Technology on The Bending Stress	50
Romli ¹ , D Seprianto ¹ , DP Putra ¹ , and M Rasid ¹	50
The Effect of Rectangular Parallel Key Manufacturing Process Parameters Made With Stereolithography DLP 3D Printer Technology against Impact Strength	51
D Seprianto ¹ , R Sugiantoro ¹ , Siproni ¹ , Yahya ¹ and M Erwin ²	
Simulation of the Effect of Cutting Angle in Lathe Process on Distribution of Cutting Temperature	
Ismail T ¹ , Amrifan SM ² , Irsyadi Y ³ , Riman S ⁴ , Rahmad H ⁵	52
Conduction Heat Rate Analysis of Tool in Titanium Turning Process	53
Ismail T ¹ , Amrifan S M ² , Riman S ³ , Irsyadi Y ⁴ , Sandro O ⁵ , Fatiandari A ⁶	53
Cooling Channel Design for a Built-In Spindle of a Machine Tool	54
Kun-Ying Li ^{1, 2} , Win-Jet Luo ^{2*} , Shih-Jie Wei ¹ , and Yan-sin Liao ¹	54
Design Control Systems of Marking Machine and Total Length Check Damper Assembly Based on Programmable Logic Controller	
Syahril Ardi ¹ and Juliantito Ardianto ²	55
Experimental Vibration Study in Milling Thin-Walled TI6AL4V Under MQL Using Coconut Oil As Cutting Fluid	56
M Yanis ^{1*} , A S Mohruni ¹ , S Sharif ² , I Yani ¹ , M Zahir ¹	56
Determination Overlap Ratio on Savonius Twisted Water Turbine Using Numeca Software	57
Dr. Carolus Bintoro ¹ Vicky Wuwung MT ¹ Fathurrohman Nurdin ²	57





Optimization Electricity Supply for Thousand Island Jakarta Province by Using Hybrid Photovoltaic	
Wind Turbine-Diesel Generator-Crude Palm Oil (CPO) Power Plant-Battery System	58
Dharma Manurung ¹ and Rinaldy Dalimi ¹	58
Study on Using Casting Simulation Software for Design and Analysis Gate and Riser in Small Found Industries	•
Irawan Malik ¹ , A S Almadora ² and M Ali ³	59
Application of Vacuum Valve Technology as AFR Settings in 3500 Watt Operated by Methane Gas	.60
Tri Widagdo ¹ , Ella Sundari, Eka Satria martomi ¹	60
Innovation Utilization of Nitridation Method in Improving Hardness and Corrosion Resistance of Blacksmiths Crafts	61
Muhammad Rasid, S.T., MT. ¹	61
Performance Analysis of a Sludge Drying	62
Win-Jet Luo ¹ Nai-Feng Wu ² Cheng-Yan Lin ² Deri Suhaeji ²	62
Study on Ventilation Performance in Operating Room with Variation Ventilation Design	63
Yan-Lin Wu, Yu-Lieh Wu, Azka Hasya Hanifan	63
D Santoso ¹ , Z Abidin ¹ , J Yanto ²	64
Analysis Model for Orifice Flow Meter Correction Factor in Measuring in-Pipe Natural Gas Flow based on Numerical Simulation	65
Bunyamin ¹ , Kaprawi ¹ , Dewi Puspitasari ¹ , Sugianto ² , Nyayu Latifah Husni ³	65
The Analysis of Biogas Fermentation Time from Cow Manure on Biodigester Fixed Dome Batch Systems	66
Sajaruddin ¹ , Leila Kalsum ¹ , Zainuddin Muchtar ²	66
The Effect of Surface Modification on Heat Transfer of Heat Exchanger	67
Hong-Yi Lin,Yu-Lieh Wu,Kai-Siang Yang,Chih-Yung Tseng	67
Prototype of Biodiesel Processors Using Waste Oil (Study of The Effect of The Number of CAO Catalyst (Blood Shell Shells) and Reaction Time of The Biodiesel Rendemen)	68
Ida Febriana1,2, Anerasari M1, KA Ridwan1, Taufik Jauhari1	68
Production of Ethyl Ester with The Influence of Electrode Type, Reaction Time And Electric Voltag	
Rosdiana Moeksin * ⁾ , Farida Ali, Susila Arita	69



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Jl. Srijaya Negara Bukit Besar Palembang 30139 South Sumatera – Indonesia phone +62711 353414 Fax: +62711 355918

Biscuit Product Development Using Moringa Oleifera Flour as an Additional Source of Nutrition70
Hilwatullisan , M. Zaman , A. Husaini and Siti Chodijah
The Physical Characteristics of Cracked Plastic Waste71
Selpiana ¹ , Prahady Susmanto ¹ , Lia Cundari ¹ , Dedek Oktari ² , Omar Ibrahim ² 71
The Analysis of The Use Calcium Oxide from Waste Cockle Shells (<i>Anadara Granosa</i>) and Sodium Hydroxide Catalyst on Prototype Biodiesel Processors Using Waste Cooking Oil Reviewed on Yield of Biodiesel
Sahrul Effendy, Tahdid, Lety Trisnaliani, Sandy A Putra, dan Alifah R Hefyani72
Effect of Temperature and Starter Concentration on The Fermentation Process in Making MOCAF .73 $$
Muhammad Yerizam ¹ , Suri Andayana ¹ and Utari Oktavia ¹ 73
Adsorption of Synthetic DYE by Betel Nuts Activated Carbon in a Fixed-Bed Column, Experiments And Prediction of Breakthrough Curves
L Cundari*, M N Fakhri, M Z Rizki74
Effect of Catalysts on The Quality of Biodiesel from Waste Cooking Oil by Induction Heating75
Rusdianasari ¹ , Aida Syarif ¹ , Muhammad Yerizam ² , M. Syahirman Yusi ³ , Leila Kalsum ¹ , Yohandri Bow ² 75
Characterization of Red Beetroot Soft Jelly Candy with Guava Extract and Gel Colloid Added
Meilianti* ¹ , Marta Aznury ¹ , Yuniar ¹ , Sofia ¹ , Ismy Farhan ¹ , Lidia Agustina ¹ 76
Flow Rate Effect and NAOH Concentration to CO ₂ Reduction in Biogas Products Using Absorber77
Lety Trisnaliani ¹ , Dina Eka Pranata ² , Fatria ³ , Tahdid ⁴ , KA Ridwan ⁵ , M. Nurizzman Alfarizi ⁶ , Mangihut Pandapotan Lumbantoruan ⁷ 77
Prototype of Tray Dryer Unit for Silica Gel Drying Based on Bagasse
Selastia Yuliati ^{1/(a)} , Fadarina ¹ , Mustain Zamhari ¹ , and Ibnu Hajar ¹ 78
Modification of Starch from Yam Taro with Hydrolysis Acid as The Adhesive79
Yuniar ^{1,2} , Martha Aznury ¹ , Sofiah ¹ , Meilianti ¹ 79
The Performance of Riverse Osmosis (RO) Membrane in Producing Pure Water80
Robert Junaidi ¹⁾ , Abu Hasan ²⁾ , dan Muhammad Yerizam ³⁾ , Indah Purnamasarii ⁴⁾ 80
Concentrations of Dissolved Oxygen in Drinking Water
Erwana Dewi ^{1(a)} , Aisyah Suci N ¹ and Elina M ¹ 81
Growth Kinetics of Saccharomyces Cerevisiae and Tape Yeast on the Cassava Pulp Fermentation82





Beni Hidayat, Udin Hasanudin, Muhamad Muslihudin, Syamsu Akmal, Siti Nurdjanah, Neti Yulia	
Distillation of Patchouli Oil Using Firewood and Liquefied Petroleum Gas as Fuel: Effects of Yield, Quality and Cost Analyses	
Mahlinda and M. Dani Supardan	
Evaluation of Main Parameter Process of Anaerobic Digestion of Cow Dung in Fixed Dome Biodigester on Methane Gas Quality	84
Leila Kalsum, Abu Hasan, Rusdianasari, A.Husaini Yohandri Bow	84
Re-Design Pyrolysis Reactor Prototype for The Conversion of Plastic Waste into Liquid Fuel	85
Arizal Aswan, IrawanRusnadi, Fatria, Zurohaina, Rima Daniar	85
Value Added Analysis of Beef Floss with Fillers of Papaya Fruits And Banana Blossom's	86
Sri handayani, Chandra utami wirawati, Sarono sarono, Dwi eva nirmagustina	86
Marketing Efficiency of Organic Rice in Lampung Province	87
Sri Handayani, Dwi Eva Nirmagustina, Muhammad Irfan Affandi	87
Simple design of pyrolysis tool for making liquid smoke from shells and rubber seeds as a food preservative	88
Farida Ali, ¹ Roval Al Fiqri ²	88
Industrial Mapping in Java-Kalimantan-Nusa Tenggara Corridor	89
M A Berawi ¹ , P Miraj ^{2,3} , H Sidqi ² , G R Gaffara ^{2,4} and Gunawan ²	89
Revenue Analysis of Port-City Conceptual Design	90
M A Berawi ¹ , P Miraj ^{2,3} , E R Islamiah ² , and Gunawan ²	90
The Utilization of Plastics Waste in Flexible Pavement Hot Rolled Sheet and Asphalt Concrete Wearing Course With Marshall Immersion and Cantabro Test	91
Adhitya B B ¹ , Pataras M ² , and Kadarsa E ³	91
Characteristics Comparison of Refinery Asphalt, Rubberized Asphalt, and Buton Asphalt in Stone Matrix Asphalt Pavement with Marshall and Cantabro Method	92
Kurnia A Y ¹ , Dewi R ² , Permata D Y ³ , and Pataras M ⁴	92
The Effect of Polycarboxylate Addition towards The Workability and High Strength Concrete	93
Sumiati ¹ Mahmuda ² Andi Herius ³ dan Agus Suhrianto ⁴	03





Stabilization of Peat Soils Using Petrasoil with Cement Viewed from CBR Value and Free Compressive Strength Value of Soils	
Ibrahim, S.T.,M.T. ¹ , Andi Herius, S.T.,M.T. ² , Julian Fikri, S.S.T., M.Sc. ³ , M. Shaid Ramadhinata Maryani ⁵	
The Utilization of Crushed Clay Brick as Coarse Aggregate on Eco-Green Lightweight Foamed Concrete	95
Sumiati ¹ , Mahmuda ² , Sukarman ³ , Siswa Indra ⁴ , and Darma prabudi ⁵	95
Performance analysis of Patal - Pusri Intersections after underpass operated	96
Arfan Hasan1, Indrayani1, Ridho Adrian1, Dwiki Syamanda1, Darma Budi1, and Akhmad Mirza	1.96
Utilization of Coconut Shells as a Replacement of Some Coral Stone in Concrete Making	97
Raja Marpaung, Kosim, Zainuddin, Darma Prabudi	97
Public Transportation Service Bus Rapid Transit (BRT) Trans Musi Sustainable in Palembang City	98
A. Latif, Yusri, Moch.Absor, A. Fuad Z	98
Transportation Needed of Bus Rapid Transit (BRT) Corridor in Palembang	99
Herlinawati, Puryanto, Sudarmadji, Sazili	99
Effect of Groundwater Table on Slope Stability and Design of Retaining Wall	100
R Ahmad ^{1*} , A B Mardhanie ¹ , P Suroso ¹ , T E Sutarto ¹ and R Alfajri ²	.100
Falisa ^{1*} , Hendri Chandra ^{2*} , Harnani ^{3*}	. 108
^{1,3} Teknik Geologi, Universitas Sriwijaya, Indralaya	. 108
² Teknik Mesin, Universitas Sriwijaya, Indralaya	. 108
* Corresponding author: falisa@unsri.ac.id	. 108
Information System of Small And Medium Business in Palembang City	112
Hetty Meileni, Cindy Indah Pratiwi, Ienda Meiriska, and Desi Apriyanty	112
Inventory of Goods Data Processing Using The Economic Order Quantity (EOQ) Method	.113
Hetty Meileni, Diky Juniansyah Putra, Desi Apriyanti, Indra Satriadi, Sony Oktapriandi	. 113
Internet of Thing for the Command Robot Command System	114
Emilia Hesti ¹ , Sholihin ² , Adewasti ³ , Sarjana ⁴	114
The Effect Of Addition Of High Density Poly Ethylene (Hdpe) As Binder On Hebel Light Brick (Celc	on)



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The Effect Of Addition Of High Density Poly Ethylene (Hdpe) As Binder On Hebel Light Brick (Celcon)	
Implementation of Fingerprint Control in Majors Electrical Engineering Using Arduino	7
Biodiesel Production From Bintaro (Cerbera Manghas L) Seeds With Potassium Hydroxide As Catalys	
The Copper Fiber On Compressive Strength And Elastic Modulus On Concrete Fc'2511	9
Information System Feature Development Of Telecommunications Engineering Study Program To Support The New Accreditation And The New Curriculum System	0
Grip Tool Cnc Mill 3a To Get 12 Sides Of The Elbow On Results Induction Electrical Furnance Casting	
Implementation Of Parking Portal Door Security System Using Rfid And Password Based On Microcontrollers In Sriwijaya State Polytechnic	2
Technique Automatic For Detection And Segmentation Of Optic Disc Area In Retinal Image	
New Techniques For Segmentation And Extraction Retinal Blood Vessels	6
Erwin, A Rohman, L A Nurjanah, Yurika, D Sinta, Q Al'afwa12	6
Optimization of City Bus Routes in Surabaya Using Memetic Algorithm as a Solution to Solve Orienteering Problem	7
Fauzi Rakhmad Firdausi, Arif Djunaidy, Ahmad Muklason12	7
A Form of Preprocessing For Social Media Data Extraction	8
Dodo Zaenal Abidin, Siti Nurmaini, Reza Firsandaya Malik, Jasmir Jasmir12	8
Factors Affecting Knowledge Sharing Capability of Doctors in Palembang12	9
Nining Ariati, Dana Indra Sensuse, Putu Wuri Handayani	9
Serious Game Supply Chain Management Agribusiness as a Production Planning using Cournot Model	0
Saiful Bukhori13	
Smart Cup for Visual Impaired People Based on Arduino	2
Aryanti Aryanti ¹² , Lin Wei-cong ¹ , Lin chih-yi ¹ , Billy Brian Henriquez ⁴ , Ikhthison Mekongga ³ , Aaron Raymond See ^{1*} 13	
Challenges of Teaching in Massive Open Online Course	3



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International Conference

Jl. Srijaya Negara Bukit Besar Palembang 30139 South Sumatera – Indonesia phone +62711 353414 Fax: +62711 355918

M A Ahmad1, A R C Hussin, H M Dahlan1, J Mahmood	133
Analysis of Service Oriented Architecture and Enterprise Architecture Alignment for Loan Fi	_
Ahmad Nurul Fajar	134
Analysis of Service Oriented Architecture and Enterprise Architecture Alignment for Loan F System	_
Ahmad Nurul Fajar	135
Analysis of Server Virtualization Service Performance Using Citrix Xenserver"	136
Surahmat, Alfred Tenggono	136
The Pattern of The Marketing Ground Coffee Beans Using Decision Support System	137
Suparto Darudiato, Eliando Eliando	137
The Pattern of The Marketing Ground Coffee Beans Using Decision Support System	138
Suparto Darudiato, Eliando Eliando	138
The Utilization of Ontology in Association Rule	139
Dewi Wardani, Achmad Khusyaini	139
The Evaluation of Semantic Mapping	140
Dewi Wardani ¹	140
Measurement of User Satisfaction Level on Implementation of SISKEUDES Application	141
¹ Mardiana and ² Eka Hartati	141
Garbage Collector Robot (GACOBOT) Design for Dry Waste Distribution	142
Aditya P. P. Prasetyo, Rendyansyah, Sri Desy Siswanti, Siti Nurmaini, Abdurahman	142
Use of Haversine Formula in Finding Distance Between Temporary Shelter and Waste End P	_
Rezania Agramanisti Azdy, Febriyanti Darnis	143
Geographic Information Systems Search Test Location For Admission Of New Students In Sr State Polytechnic Using Location Based Service (LBS) Method	
Book Catalog Information System in The Reading Room (Library) Web-Based at Informatics Management Department in State Polytechnic of Sriwijaya	145
Henny Madora ¹ , Yusniarti ² , Ida Wahyunigrum ³ , Muhammad Noval ⁴	145
Pull-down Fitness Technique Analysis using Motion Capture	146





R Passarella, A S Nugroho, and F N Arsyad	. 146
Analysis of EDFAT Methods in Photography Techniques	. 147
Meiyi Darlies, Ema Laila, Ali Firdaus, Muhamad Erwin	. 147
Predicting Cost Recovery Rate of Ischemic Stroke Patients: A Potential Application of Big Data Analysis in Hospital	. 148
¹ *Heru Fahlevi, ² Teuku Roli Ilhamsyah Putra and ³ Rina Suryani Oktari	.148
Development Analysis For Numbers And Colors Learning Media	.149
Yesi Sriyeni and Maria Veronica	.149
Animation Design as an Educational Media of Adolescents' Social Behavior Deviation" has been accepted with major revision	.150
Heki Aprianto and Alan Saputro	.150
Designing Mobile Based User Interface for Promotion of Lakeur Craft Art Application at Balaputra Dewa State Museum	
Syahrul, Pertiwi	. 151
Prototype of RFID –Based Parking Slot Availability Detection System	. 152
Lindawati ¹ , I Salamah ¹ , Asriyadi ¹ , M Fadhli ¹	.152
Mobile Robot Motion Control Based on Static Hand Gesture	. 153
DS Sri , FP Rian , Z Ahmad	.153
Object-Based Design and Modeling Batik Nusantara Catalog Wibatara.com	.154
Adelin Adelin, Febria Sri Handayani	.154
Genetic Algorithm Based Feature Selection With Ensemble Methods For Student Academic Performance Prediction	. 155
Al Farissi, Halina Mohamed Dahlan, Samsuryadi	. 155
Information System Strategy Planning In The Private Universities Of South Sumatera	. 156
Engine Replacement Scheduling Optimization Using Data Mining	. 158
Farizal1 and Albert Joelian	.158
User Experience Analysis on Class I LPKA Palembang Filial E-School	. 159
D. Tri Octafian, Febrianty, Hendra Hadiwijaya	. 159
Information System of Student's Final Report And Final Assignment At State Polytechnic of Sriwija	aya 160



The 3rd FIRST 2019 (FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY) International Conference



International Conference

Jl. Srijaya Negara Bukit Besar Palembang 30139 South Sumatera – Indonesia phone +62711 353414 Fax: +62711 355918

Rika Sadariawati, A. Ari Gunawan, Meivi Kusnandar	160
Design of Semester Exam Scheduling at The State Polytechnic of Sriwijaya Application	161
Nita Novita, M. Aris Ganiardi, Indri Ariyanti, Delta Khairunnisa	161
Augmented Reality in the Registration Flow for Enterance Examination at State Polytechnic of Sriwijaya Based on Android	162
Rike Sucihati,Ahmad Bahri Joni Malyan, Ervi Cofriyanti	162
Design and Build Application of Campus Parking Area for State Polytechnic of Sriwijaya Based on Smartphone	
Leni Novianti, Devi Sartika , Dewi Irmawati, Ienda Meiriska	163
Implementation of Biometric Fingerprint Barbasis Security Doors with Attendance Database on Sriwijaya State Polytechnic	164
A.Bahri Joni M , Herlambang Saputra , Ahyar Supani , Indarto	164
Designing and Applying Flood Early Warning System with Fuzzy Logic Based on Rainfall and Water Level for Special of Palembang City	
Ahyar Supani, Yuli Adriani	165
Performance of RUS and SMOTE Method on Twitter Spam Data Using Random Forest	166
Huda Ubaya and Ria Siti Juairiah	166
Mobile Android Based Geographic Information System (GIS) Software Development for Tourist Destination Seekers in Palembang City Using RASCH Model Measurements	167
Sanjaya, Kurniawan, Saputra, Azhar	167
GIS Android Mobile Based Software Development for Tourism Objects, Public Places List, Transportations List, and Culinary Places List Using Usability Measurement	168
M. Rudi Sanjaya, Dedy Kurniawan, Ariansyah Saputra, Iman Saladin B Azhar	168
TRACK 3	172
MANAGEMENT ECONOMICS, BUSINESS ADMINISTRATION, ACCOUNTING	172
Impact of Learning, Socialization and Financial Lifestyle on Student' Intention to Invest in Capital Market	
Dewi Fadila, Hendra Satrawinata, Mariskha Z, Riska Maulana	172
The Effect Of Capital Readiness And E-Commerce Utilization On The Competitiveness Of Micro Stand Medium Enterprises (Msmes) Woven Palembang	
Dimensions of Village Expenditure in Development Sector	





Zulkifli Zulkifli, Rita Martini, Sukmini Hartati, Endah Widyastuti	174
Comparison Analysis of Organic Rice and an Organic Rice Added Value Approach	175
Dwi Eva Nirmagustina, Sri Handayani and Luluk Irawati	175
Analysis of Political Connection, Profitability and Capital Intensity Against Tax Avoidance in Co Companies on The Indonesia Stock Exchange	
Rizki Fitri Amalia	176
Human Resource Role and Application of Technology in the Fourth Industrial Revolution	177
Relationship Model among Employee Engagement, Organizational Commitment and Employe Performance	
Munparidi, L.Suhairi Hazizma & A.Jalaludin Sayuti	178
The Effect of Customer Orientation and Service Quality on Trust and Customer Loyalty	179
Gst Ayu Oka Widarti, Esya Alhadi, Elvia Zahara, Titi Andriani	179
Fetty Maretha, Yulia Pebrianti, Rini, Lisnini	180
E-government Policy, Leadership Commitment, Apparatus Resources Development, and Their Implications on Public Service Performance	
Koesharijadi, Hardiyansyah and Muhamad Akbar	181
Industrial Clasterization to Improve The Competitiveness of Small and Medium Industries in T of Palembang	•
Evada Dewata, Yuli Antina Aryani, Yuliana Sari, Aladin	182
The Influence Of Competence, Leadership, Motivation Work Impact On The Commitment Of C State Apparatus In The Office Of The Governor South Sumatera Province	
Sopian.A.R, Periansya, Ardiyan Natoen, Indra Satriawan	183
Analysis Method Economic Value Added (EVA) of Cosmetics Companies Listed on the Stock Ex	_
Lupikawaty, Alhamdari, Bustan	184
Anggeraini Oktarida, Eka Jumarni Fithri, Lambok Vera Riama, Sri Hartati	185
The Effect of Hospital Image And Service Quality on Customer Loyalty Through Customer Satis as Intervening Variables in Siti Khadijah Hospital in Palembang City	
Susi Ardiani, Sarikadarwati, Henny Yulsiati, Sandrayati	186
The Impact of Village Fund Program Implementation towards Society Welfare in Indonesia	187



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International Conference

Jl. Srijaya Negara Bukit Besar Palembang 30139 South Sumatera – Indonesia phone +62711 353414 Fax: +62711 355918

Yevi Dwitayanti, Maria Maria, Nurhasanah Nurhasanah, Rosy Armaini	187
Determinants of Village Financial Management Accountability (Study of Villages in Pampa	angan Sub-
District, OKI Regency and Rambutan Sub-District, Banyuasin Regency)	188
Desi Indriasari, Kartika Rachma Sari, Kiagus Zainal Arifin, Choiruddin	188
Evaluation of Sales Price within Calculation Cost of Good Production SMEs Pempek Ilir Ba Bukit Kecil District Palembang	
Elisa, Marieska Lupikawaty, Yusleli Herawati, Purwati	189
The Effect of Taxpayer Awareness and Tax Sanctions on Compliance In Paying Land And E Taxes in Bukit Kecil Sub-District of Palembang	_
M. Husni Mubarok, Faridah, Nelly Masnila	190
The Environmental Compliance Management of Palm Oil Plantation in Ogan Komering Ilii Sumatera Selatan, Indonesia	
M. Yusuf, Yusnizal Firdaus, Markoni Badri, AlHusori	191
Attitude, Motivation, and Parental Involvement towards Students' Reading Comprehensi Achievement	
Nurul Aryanti, Welly Ardiansyah, Murwani Ujihanti	192
Relationship between GPA, Length of Study, and Competence with The Length of Time to at Alumni of The Mathematics and Natural Sciences, University of Sriwijaya	
Ali Amran ¹ , Irmeilyana1 [*] and Anita Desiani ¹	193
Testing the Role of Charismatic Leadership, Psychological Climate, and OCB on Resilience	194
Wustari L. Mangundjaya	194
Individual Readiness For Change and Affective Commitment To Change: The Mediation E Technology Readiness On Public Sector	
Hermina Agustina Mahendrati, Wustari Mangundjaya	195
Leader-Member Exchange and Affective Commitment to Change: Mediating Role of Char Efficacy	_
Dwi Andriani Puspitasari, Wustari L Mangundjaya	196
Testing Mediation of Psychological Empowerment, Work Engagement to Affective Comm	
Susilo1, Wustari L. Mangundjaya2	197
Aim, Concept, and Objectives of Education in Islam	198





Suroso ¹ , Wasitoh Meirani ² , Muhammad Erwin ³ , Ayu Puspasari ⁴	. 198
Testing the Impacts of Organizational Justice on Affective Commitment to Change with Work Engagement as Mediator	.199
Yurnalis, Wustari Mangundjaya	.199
The Effect of Directed Reading - Thinking Activity on Students' Critical Thinking Abilities	.200
Eliyeny, Herman,Sunani, Muhammad Nadjmuddin	. 200
The Development of Teaching Material Speaking 2 Based on Communicative Approach for Stude in English Department of State Polytechnic of Sriwijaya	
Darmaliana, Risnawati, Risa, Sri Endah Kusmartini	. 201
Exploring Linkage among Experiential Value, Destination Image and Revisit Intention in Natural-based Tourism	. 202
Heri Setiawan, Taufiq Marwa, Zakaria Wahab, Muchsin Sagaf	.202
Students' Perception of English Blended Learning in State Polytechnic of Sriwijaya	.203
Munaja Rahma, Zakaria, Moehammad Ridhwan	. 203
Online Transportation Technology and Women's Driver Communication Skills	. 204
Pridson Mandiangan, Desloehal Djumrianti, Hanifati	. 204
The Importance of The Language Experience Approach (LEA) in Teaching Reading Comprehension The Third Semester of Engineering Students in State Polytechnic of Sriwijaya	
Zulkifli zulkifli, nian evawati, koryati koryati	. 205
The Effect of Organization Climate on Performance with Job Satisfaction as an Intervening Variable	
Paisal Paisal, Afrizawati Afrizawati, Divianto Divianto, Yahya	. 206
The Clustering of Paddy Fields in The Province of South Sumatera as an Input for The Government Determining Policy	
Suryati, Ahmad Sanmorino	. 207
The Public Service Quality of The Library Services at The Library Unit of State Polytechnic of Sriwi	
Deri Darfin, Zulkarnaini, Ridwan Effendi, Robinson,	. 208
The Effectiveness of Blended Learning Approach on Essay Writing Subject	.209
Sri Gustiani, Yusri, Tiur Simaniuntak, Evi Agustinasari	209





Analysis of Student Services at State Polytechnic of Sriwijaya	.210
Hadi Winarko, Zaliah, Aimi	.210
The Effect of Culinary Knowledge and Culinary Experience on Local Culinary Attractiveness	. 211
Heri Setiawan ¹ , Abd. Hamid ² , Ummasyroh ³ & Jusmawi Bustan ⁴	.211
Criminal Law Policy In The Crime Of Persecution Carried Out By People Who Come From Outside	!
Orang Rimba Group Against Members Of Orang Rimba Tribe Around The Bukit Duabelas Nationa	ıl
Park, Jambi Province, Indonesia	.212

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Geographic Information Systems Search Test Location For Admission Of New Students In Sriwijaya State Polytechnic Using Location Based Service (LBS) Method

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Abstract. New Student Admission Selection or in Indonesia called New Student Admission Selection (SPMB) is one of the new student admission selection tests for universities. The problem is usually found during the admission of new students because the students have come from outside the city. Another problem that could be a supervisor might make a mistake when they found the room they were late. And also the Admin is difficult to coordinate with supervisors and new students during the test. This is a geographic information system to search the test locations. This system is built using the Location Based Service (LBS) method by utilizing GPS in Maps. The system development method that is used is RUP, this system will provide the direction of the user's mobile device access. The results of research are made in a system that can facilitate students in finding the location of exam rooms. The geographical information system in mapping is the test location for the students who are going to do the test for the test location, and make it easier for supervisors to find out the location of the new student admission selection test.

Keywords: Geographic Information System (GIS), GPS, Location Based Service (LBS)

1. Introduction

Higher education as an educational institution has the main task of implementing the Tri Dharma of higher education, namely education and teaching, research, and community service. Sriwijaya State Polytechnic is one of the first six Polytechnics in Indonesia. The Sriwijaya State Polytechnic, formerly called the Sriwijaya University Polytechnic was inaugurated on September 20, 1982. Currently the Sriwijaya State Polytechnic has 9 (nine) departments and 20 (twenty) study programs and is divided into 11 (eleven) Diploma programs and 9 nine) Diploma IV.

New Student Admission Selection or commonly abbreviated as SPMB is one form of student admission examinations for universities, in addition to independent programs (through self-examination) and distribution of interests and talents through schools (formerly PMDK). This exam is carried out for two days every year simultaneously throughout Indonesia, usually held at the beginning of July.

The problem that is usually found when admitting new students is the difficulty of finding a test location for prospective students because most prospective students come from outside the city. The obstacles are that many students like high school kids who want to go to university do not know the location and any information contained on the university they want [1]. Another problem that arises is the occurrence of

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1500 (2020) 012133 doi:10.1088/1742-6596/1500/1/012133

errors when the supervisor looks for the exam room so that the supervisor is late in entering the examination room. And the Admin is also difficult to coordinate supervisors and prospective students when implementing the new student admission exam. With the ineffectiveness of finding the location of prospective student exams can be done with the Application of LBS which can be used to find the location of the test, the system will provide directions to the location of the test through access to the user's device. For such scenarios, in which cloaking area is exploited for privacy, results of the query request are generally based on nearest distance between client and service requested [2].

The developed PLAS can thus precisely determine individual user's free time and only supply information about the events they have sufficient time to participate during their free time [3]. This paper develops a formalism to construct topologically distinct configurations based on simple regions [4].

The system that will be created is a system that can facilitate prospective students and supervisors in finding the location of the exam rooms. And to implement a geographic information system in mapping the examination room space for Sriwijaya State Polytechnic students who can be seen by prospective students who will take the test without having to search the test location. And make it easier for supervisors to know the location of prospective student examinations.

Based on the description above the author intends to design and build an application in order to solve these problems. so that this system can run optimally. In connection with the above, the writer will compile the final assignment with the title "Geographic Information System Search for Test Locations for New Student Admissions at Sriwijaya State Polytechnic using the Location Based Service Method (LBS)".

2. Theoretical

2.1 Definition of GIS

Geographic Information System (GIS) is an information system that is used to enter, store, recall, process, analyze and produce geographic reference data or geospatial data, to support decision making in land use planning, management, natural resources, environment, transportation, city facilities, and other public services [5].

Geographic Information System (GIS) is a computer system that has a sub-system consisting of four capabilities in handling geographic reference data [6], namely:

- 1. Data input, this subsystem is related to the task of collecting, preparing and storing spatial data and its attributes from various sources.
- 2. Data output, is a subsystem that is able to display or produce the overall output or part of the data in the form of tables, graphs, maps or reports.
- 3. Data management, tasked with organizing data, both spatial data and related attributes into the database system so that it is easy to be recalled. So it is often referred to as the storage and retrieval subsystem.

Data *manipulation and analysis*, this subsystem performs data manipulation and modeling to produce the expected information produced by the Geographic Information System.

2.2 Definition of Location Based Service (LBS)

Location Based Service is a service that functions to search with Global Pasitioning Service (GPS) technology and Google's cell based location [2]. Map and location-based services use latitude and longitude to determine geographic location , but as a user we need our realtime address or position not the value of latitude and longitude. The two main elements of LBS are:

- 1. Location Manager (Maps API)
 - Providing *tools / sources* for LBS, *Application Programming Interface* (API) Maps provides facilities to display, manipulate maps along with other features such as satellite views, roads, and combinations.
- 2. Location Providers (API Location)
 - Users can determine their location, track movement / displacement, and proximity to certain locations by detecting displacement.

1500 (2020) 012133 doi:10.1088/1742-6596/1500/1/012133

Broadly speaking, LBS can be divided into two, namely:

- 1. Pull Service: Service is only provided when there is a request from the user.
- 2. *Push Service*: Services are provided directly by the *service provider* without waiting for requests from users.

Which is built from new information and communication technology (*New Information and Communication Technologies / NICTS*) which includes: *mobile* telecommunications systems and handheld devices, with data originating from the internet and Geographic Information Systems (GIS) that use spatial databases.

This paper develops a formalism to construct topologically distinct configurations based on simple regions.

3. Research Methodology

There are several steps taken in this research. In detail, some of the steps involved include:

3.1 Stages of Problem Formulation

This stage is the process of formulating problems and limiting the problems to be studied. Formulation and limitation of problems is needed in order to get more directing researchers in making the system so that the project that is done does not go out of the pre-determined limits.

3.2 Stages of Data Collection

1. Primary Data

At this stage, the authors conducted *a survey* directly to the authorities, the party who has the authority of the data collection. The author conducts interviews through questions about the location and location of admission examination for prospective students so that they get the obstacles that are being faced and the desire to hold an application in the test location search for new students.

2. Secondary Data

Here the author makes data retrieval indirectly, namely by searching for information through research journals, books, and other document sources .

3.3 Stage of Research Design

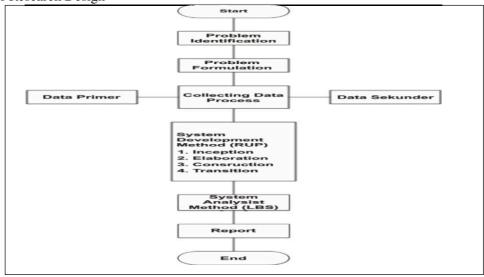


Figure 1. Stages of Research Design

1500 (2020) 012133 doi:10.1088/1742-6596/1500/1/012133

Data Flow Diagrams (DFD) are often used to describe an existing system or system that is developed logically without considering the physical environment, where the data flows or is stored [7].

4. Results And Discussion

- 4.1 System planning
- 4.1.1 Use Case Diagram

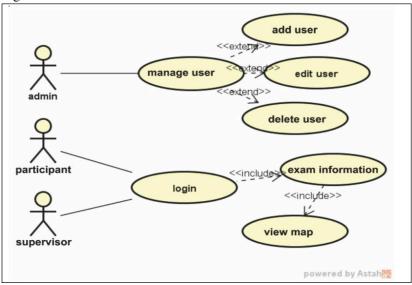


Figure 2. Use Case Diagram

Even List:

- 1. The actors in the system are 3 (three), namely Admin, Participant, Supervisor, and Committee.
- 2. Participants and Supervisors can log in and logout using the application, which is then able to check the location of the exam and see a map of the location.
- 3. Admin can manage users, i.e. add users, view user lists, edit users, and delete users.

4.1.2 Class Diagram

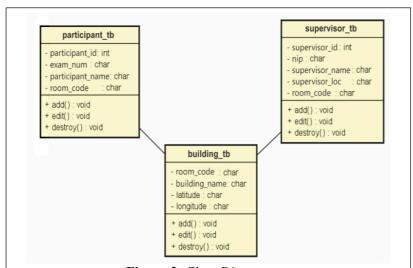


Figure 3. Class Diagram

1500 (2020) 012133 doi:10.1088/1742-6596/1500/1/012133

4.2 System Implementation

The following are some of the interface views of the geographic information system in search of test locations:



Figure 4. Login page view

On the login page there is a Test Number field that must be filled in. This is the start page when opening the application. If the participant successfully logs in, the system will display the main page after logging in according to the authority. If the participant does not successfully login, the system will repeat displaying the login page.

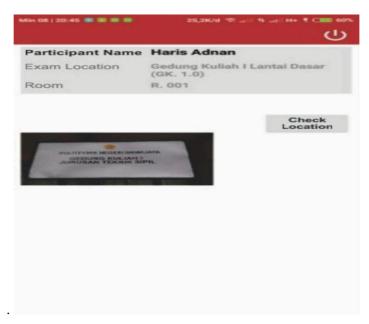


Figure 5. Display of the Main Page

1500 (2020) 012133 doi:10.1088/1742-6596/1500/1/012133

In the Main page view Participants will display the main menu according to the type authority that has been validated at login. For Participants , the Participant Name, Test Location, Test Room and Location Check will appear.



Figure 6. Map page view

On the Main Map page will display the main menu according to the type authority that has been validated when clicking on the map map will appear.

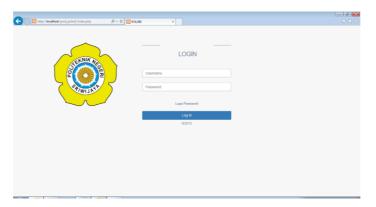


Figure 7. Display of Admin Login Page

On the admin *login* page there is a username field and password.

1500 (2020) 012133 doi:10.1088/1742-6596/1500/1/012133

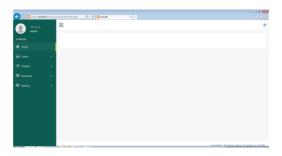


Figure 8. Admin Main Page Display

On this page there are several admin functions, which consist of *home* , admin, participant, supervisor, and building.

5. Conclusions And Recommendations

5.1 Conclusion

Based on the discussion that has been described, it can be concluded that a geographic information system searches the location of the test for the acceptance of prospective new students at the Sriwijaya State Polytechnic using the *Location Based Service* method can be used well in the form of android and admin that adds the data needed in the system.

5.2 Suggestion

For the development of the program, it is better to use a 360 camera for images included in the system so that prospective students can clearly see the test location.

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