Program Book

Information Systems International Conference (ISICO) 2019

July 23 – 24, 2019
Bumi Surabaya Resort, Indonesia

Role of Information Systems in Industry 4.0

PREFACE

Dear Participants,

Welcome to the Information Systems International Conference (ISICO) 2019!

Thank you for participating in this conference. ISICO is a biannual international conference organized by the Department of Information Systems, Institut Teknologi Sepuluh Nopember (ITS). We are proud to announce that this year is the fifth succession of this conference where we gain more supports from partners and communities, i.e. Universitas International Semen Indonesia, Asosiasi Cloud Computing Indonesia, Academic-Computer Security Incident Response Team.

Following our endless commitment to provide the best services to participants, this year ISICO invites outstanding speakers: Prof. Michael Rosemann—a prominent scholar in Business Process Management, Prof. Hyerim Bae—an expert in Big Data Analytics, Prof. Robert M. Davison—an expert in ICT for developing countries and Dr. Torsten Reiners—a specialist in Logistics and Supply Chain Management.

Thank you for your contribution and we hope you enjoy the conference.

Yours truly,

Conference Chair of ISICO 2019

Nur Aini Rakhmawati, PhD.

TABLE OF CONTENT

OUR KEYNOTE SPEAKERS

Prof. Michael Rosemann, PhD, FACS, FQA, MAICD
Professor and Head of the Information Systems School, Science and Engineering Faculty, Queensland University of Technology (QUT), Brisbane, Australia

Keynote's Title: The Entire New Challenges, and Opportunities for BPM

Abstract:
Business Process Management is conducted in the context of a larger economic environment, fast moving demographic and societal changes, technological innovation and entire paradigm shifts. This keynote will look back and forward by characterizing the requirements, achievements, but in particular upcoming challenges and opportunities for BPM in four stages, i.e. engineering excellence, corporate excellence, customer excellence and societal excellence. As most BPM activities in practice and academia are still in stage 2, there will be a number of exciting and rewarding pathways for researcher who like to make rigorous, high impact contributions in an increasingly opportunity-rich environment.

Short Biography:
Dr Michael Rosemann is Professor for Information Systems and the Executive Director, Corporate Engagement, at Queensland University of Technology. For seven years, he has been the Head of QUT's Information Systems School, a time during which he established the Woolworths Chair in Retail Innovation, the Brisbane Airport Chair in Airport Innovation and the PwC Chair in Digital Economy.

Passionate about innovative, inter-disciplinary and applied BPM, his work has among others initiated research in the areas of quality of process modelling, configurable process modelling, context-aware BPM, BPM maturity, systemic process innovation, rapid process redesign (NESTT) and ambidextrous BPM.

Michael is the author/editor of seven books, more than 280 refereed papers, Editorial Board member of ten international journals and co-inventor of US patents. His publications have been translated into Russian, Mandarin, German and Portuguese. His research projects received funding from industry partners such as Accenture, Infosys, PwC, Rio Tinto, SAP and Woolworths. Michael provides advice to senior executives from diverse industries such as telecommunication, finance, insurance, professional services, utility, retail, public sector, logistics and the film industry.

Michael is also the Honorary Consul for Germany in South-East Queensland and created in this role the David meets Goliath series, the Australian-German Start-up Hub Summit and the Brisbane German Week

Prof. Hyerim Bae

Professor in the Industrial Engineering Department at Pusan National University (PNU), South Korea

Keynote's Title: AI and Big data for Process Analytics in Manufacturing and Logistics Industry

Abstract:
Recent interest in Industry 4.0 has highlighted the importance of activities to discover patterns and find hidden knowledge in the manufacturing and logistics industries. In particular, this trend has been accelerated with the introduction of smart technologies such as IoT, Cloud computing, and AI, because the introduction of this technology facilitates the collection of a large amount of data that is generated during the execution of processes. The goals of these activities are to innovate processes and increase productivity by identifying and improving process-level problems through the analysis of Big Data. In this presentation, a new approach, process analytics, to improve productivity by discovering process-related knowledge, solving problems and predicting KPI from operational Big Data will be discussed. In the presentation, the analytical activities are based on event log data and process model discovered, which discriminate the approach from conventional analytic methodologies. Some case studies in the field of manufacturing and logistics industry will be introduced for a better understanding of our approach. The future direction of process analytics method will also be discussed.

Short Biography:
Hyerim Bae is a professor in the Industrial Engineering Department at Pusan National University (PNU), Korea. He received PhD, MS, and BS degrees from the Industrial Engineering Department, Seoul National University (SNU), Korea. He had been a manager of information strategic planning team at Samsung Card Corporation before he joined PNU. He has been an executive chair of AP – BPM Steering Committee since September 2012, committee chair of Busan Global Data Hub Center since July 2014 and a member of advisory board for Busan Metropolitan City, since September 2016. He was recently a visiting scholar at the Georgia Institute of Technology from March 2016 to February 2017. Currently, Prof. Bae is leading BAB – Best of Big Data Analytics project which is an open source operational big data analysis tool.

Prof. Robert M. Davison

Professor of Information Systems, City University of Hong Kong

Keynote's Title: Responsible IS Research for a Better World

Abstract:
In this keynote, I will examine some critical issues relating to the impact that our research has. Historically, we have tended to examine impact through the lens of impact factors and citation counts. However, research assessment exercises in various countries are now pushing us to examine the impact that our research has on specific non-academic actors. I link these new initiatives to the notion that we should seriously consider the moral obligation to make the world a better place, not only for corporate shareholders but also for ordinary citizens. Further, we should not forget the natural world and its ecosystems upon which we depend for life. Achieving these objectives requires that we go beyond impact and also consider the value that our research brings. I will provide examples of research that measures up to such standards of responsibility and will also consider the dark side of IS research that may be more problematic. I will explore some principles for responsible research that may enlighten or annoy researchers and attempt to link these principles to the

conference theme, Industry 4. I hope that these will help to ensure that Industry 4 is a force for good in the world.

Short Biography:
Robert Davison is a Professor of Information Systems at the City University of Hong Kong. His research focuses on the use and misuse of information systems, especially with respect to problem solving, guanxi formation and knowledge management, in Chinese organizations. He has published over 90 articles in a variety of journals such as MIS Quarterly, the Information Systems Journal, IT & People, Journal of IT, Journal of the AIS, Journal of the American Society for Information Science & Technology, IEEE Transactions on Engineering Management, Decision Support Systems, Communications of the AIS, and Communications of the ACM. Robert chairs the IFIP WG 9.4 (Social Implications of Computing in Developing Countries) and is the Editor-in-Chief of the Information Systems Journal and the Electronic Journal of Information Systems in Developing Countries. Robert travels extensively, seeking to understand how people in different contexts and cultures make sense of their lives with IS. As a researcher and as an editor, he seeks to promote both an inclusive and a local perspective to research. Home Page: http://www.is.cityu.edu.hk/staff/isrobert.

Dr. Torsten Reiners

Senior Lecturer in Logistics and Supply Chain Management at the Curtin University, Australia

Keynote's Title: Industry 4.0: Trends, Opportunities, Impacts, Risks

Abstract:
Talking to industry stakeholders, I received either pure excitement about a paradigm shift that is the solution to all their problems or a shrug of the shoulders about the next buzzword they will pass to see what is really relevant after the hype. The keynote is about taking a broader look at Industry 4.0 and the potential impact it can have on all player in the supply chain, including the consumer. Talking about the opportunities given by a sustainable integration; i.e. looking at the Triple Bottom Line, but also the risks to keep in mind when we believe to find all the answers in Big Data.

The keynote will depict some case to take a glimpse in how Industry 4.0 can benefit us and where we still have challenges that need to be addressed. Topics covered in the presentation are mixed reality, digital twins, digital ecosystems, deception, AI, corporate social responsibility, automation, society.

Short Biography:
Dr Torsten Reiners is a project leader on the OLT Grant (2012) "Development of an authentic training environment to support skill acquisition in Logistics & Supply Chain Management" and participated in VirtualPREX (ALTC grant, lead is Sue Gregory). He participated in multiple projects to use 3D spaces for learning support; i.e. to improve the authenticity of learning in classes about production and simulation as well as developing a theoretical framework for authentic and immersive education with gamified elements. Recent research interests include disruptive technology in the supply chain, the relation of deception and sustainability on the impact on consumer, event studies on the impact of sustainability practice implementations, and big data analytics. The over 100 publications include published journal articles in reputable journals; i.e. European Journal of Operation Research, International Journal of Production Economics, Journal of Business Research, International Journal of Logistics Research and Applications, and Transportation Research Part E: Logistics and Transportation Review.

CONFERENCE SCHEDULE

Venue: Bumi Surabaya City Resort

DAY 1 (TUESDAY – JULY 23, 2019)

TIME (GMT+7)	SESSIONS	ROOM
08:00 – 09:00	**Registration**	Isyana Ballroom
09:00 – 09:30	**Opening Ceremony** • *Welcome speech by the Chairman of ISICO: Nur Aini Rakhmawati* • *Opening speech by the Rector of ITS: Prof. M. Ashari* • *A Tribute: Traditional Remo Dance*	Isyana Ballroom
09:30 – 10:45	**Keynote Session I:** Prof. Hyerim Bae – Professor in the Industrial Engineering Department at Pusan National University (PNU), Korea **"AI and Big data for Process Analytics in Manufacturing and Logistics Industry"**	Isyana Ballroom
10:45 – 12:00	**Keynote Session II:** Prof. Robert M. Davison – Professor of Information Systems, City University of Hong Kong **"Responsible IS Research for a Better World"**	Isyana Ballroom
12:00 – 13:00	**Break and Lunch**	Lunch: Hotel Bumi Restaurant, Ground Level
13:00 – 15:00	**Presentation Sessions**	Breakout Rooms (see the presentation schedule)
15:00 – 15:30	**Break**	
15:30 – 17:00	**Presentation Sessions**	Breakout Room 1 – 6 (see the presentation schedule)
	Special Track Session	
18:30 – 21:00	**Dinner** • *Best Paper Award Bestowal* • *Dance and Performance* • *Quizzes and Door Prizes*	Isyana Ballroom

DAY 2 (WEDNESDAY – JULY 24, 2019)

TIME (GMT+7)	SESSIONS	ROOM
08.30 – 09:45	**Keynote Session III:** Prof. Michael Rosemann, PhD, FACS, FQA, MAICD – Professor and Head of the Information Systems School, Science and Engineering Faculty, Queensland University of Technology (QUT), Brisbane, Australia **"The Entire New Challenges, and Opportunities for BPM"**	Isyana Ballroom
09:45 – 11:00	**Keynote Session IV:** Dr. Torsten Reiners – Senior Lecturer in Logistics and Supply Chain Management at the Curtin University, Australia **"Industry 4.0: Trends, Opportunities, Impacts, Risks"**	Isyana Ballroom
11:00 – 12:00	**Presentation Sessions**	Breakout Rooms (see the presentation schedule)
	Special Sessions	
12:00 – 13:00	**Break and Lunch**	Lunch: Function Room (in front of Isyana Ballroom)
13:00 – 15:00	**Presentation Sessions**	Breakout Room 1 – 6 (see the presentation schedule)
15:00 – 15:30	**Break**	
15:30 – 17:00	**Presentation**	Breakout Rooms (see the presentation schedule)
	Special Sessions	
17:00 – 17:30	**Closing Ceremony**	Isyana Ballroom

SPECIAL SESSION FOR BLOCKCHAIN WORKSHOP*)
WEDNESDAY – JULY 24, 2019

TIME (GMT+7)	SESSIONS	ROOM
08:45 – 09.00	**Registration**	Trowulan I Room
09:00 – 12:00	**Workshop:** Concept and Theory	Trowulan I room

TIME (GMT+7)	SESSIONS	ROOM
12:00 – 13:00	**Break and Lunch**	Lunch: Function Room (in front of Isyana Ballroom)
13:00 – 16:00	**Workshop:** Installation and Practice	Trowulan I Room

**) This session is only intended for participants who have registered to join the workshop.*

Notes:
The venue also provides medical room and prayer room. Please ask the registration desk regarding the location.

PRESENTATION SCHEDULE (BY PAPER ID)

TUESDAY - JULY 23, 2019							
ROOM	AIRLANGGA	GAJAHMADA	WIJAYA	TROWULAN 1	TROWULAN 2	TROWULAN 3	TRIBUANA
TRACK			MIS	BIG DATA	ENTERPRISE SYSTEMS	DATA ANALYTICS	IT INFRASTRUCTURE & SECURITY
13:00 - 13:15			148	5			11
13:15 - 13:30			9	42			13
13:30 - 13:45			143	52			162
13:45 - 14:00			18	69			53
14:00 - 14:15			20	72			60
14:15 - 14:30			23	83			78
14:30 - 14:45			24	87			161
14:45 - 15:00			192	104			32
15:00 - 15:15			150	188			193
15:15 - 15:30							
TRACK		CHALLENGE TRACK: CLOUD COMPUTING	MIS	BIG DATA	ENTERPRISE SYSTEMS	DATA ANALYTICS	SPECIAL TRACK: CYBER SECURITY
15:30 - 15:45		36	28	117	12	6	90
15:45 - 16:00		54	33	118	22	31	68
16:00 - 16:15		66	35	119	165	15	70
16:15 - 16:30			41	123	173	91	111
16:30 - 16:45			44	152	89	200	
16:45 - 17:00					67	201	

WEDNESDAY - JULY 24, 2019							
ROOM	AIRLANGGA	GAJAHMADA	WIJAYA	TROWULAN 1	TROWULAN 2	TROWULAN 3	TRIBUANA
TRACK	MIS	ENTERPRISE SYSTEMS	SPECIAL TRACK: BPM		DATA ANALYTICS	DATA ANALYTICS	SPECIAL TRACK: IOT
11:00 - 11:15	61	56	101		57	158	16
11:15 - 11:30	80	95	126		58	163	37
11:30 - 11:45	114	140	170		82	164	39
11:45 - 12:00	130	147	172		84	184	40
TRACK	MIS	ENTERPRISE SYSTEMS	SPECIAL TRACK: BPM		DATA ANALYTICS	DATA ANALYTICS	SPECIAL TRACK: IOT
13:00 - 13:15	134	45	180		26	7	59
13:15 - 13:30	141	171	191		96	55	63
13:30 - 13:45	142	50	195		100	204	85
13:45 - 14:00	10	176	197		105	110	86
14:00 - 14:15	153	179			106	186	94
14:15 - 14:30	156	183			108	4	121
14:30 - 14:45	159	190			120	127	
14:45 - 15:00	160	194			132	207	
TRACK	MIS	BIG DATA	MIS		DATA ANALYTICS	MIS	SPECIAL TRACK: CYBER SECURITY + IT INFRASTRUCTURE & SECURITY
15:30 - 15:45	166	157	181		136	174	107
15:45 - 16:00	167	196	182		138	175	135
16:00 - 16:15	168	202	185		144	115	112
16:15 - 16:30	169	155	25		145	199	113
16:30 - 16:45	206		177		149	208	124
16:45 - 17:00			178		151	88	81
17:00 - 17:15							189

DAY 1 (TUESDAY – JULY 23, 2019)

ROOM : WIJAYA
DAY/SESSION : 1/1
TRACK : MANAGEMENT OF INFORMATION SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 – 13:15	148	Improving Health Information Management Capacity with Digital Learning Platform: The Case of DHIS2 Online Academy	Aprisa Chrysantina, Guardian Sanjaya, Matthieu Pinard, Ni'mah Hanifah
13:15 – 13:30	9	SILON KPU: The Perspective of It Balanced Scorecard Framework in General Election Commissions (KPU) of Surakarta	Andeka Rocky Tanaamah, Pinky Hastari
13:30 – 13:45	143	Understanding Theory of Workarounds in Practice	Arif Wibisono, Ibrahim Alhassan, David Sammon, Ciara Heavin, Gaye Kiely, Erma Suryani
13:45 – 14:00	18	The Role of Opinions and Ideas as Types of Tacit Knowledge	Jamal El-Den, Narumon Sriratanaviriyakul
14:00 – 14:15	20	The Effectiveness of Online Learning with Facilitation Method	Ahmad Fikri Zulfikar, Aeng Muhidin, Pranoto, Wayan Suparta, Agung Trisetyarso, Bahtiar Saleh Abbas, Chul Ho Kang
14:15 – 14:30	23	Android-Based Digitalization of Number System of Traditional, Ngalum, Ketengban, Lepki And Arimtap Tribes	Melkior N.N Sitokdana, Radius Tanone, Penidas F. Tanaem
14:30 – 14:45	24	Digitalization of The Local Language Dictionary of Pegunungan Bintang	Melkior N.N Sitokdana, Radius Tanone, Penidas F. Tanaem
14:45 – 15:00	192	Connecting Intention to Use Online Banking, Commitment to Environmental Sustainability, and Happiness: The Role of Nature Relatedness	Burhanudin, Ronny, Ellen Theresia Sihotang
15:00 – 15:15	150	Peer to Peer (P2P) Lending Problems and Potential Solutions: A Systematic Literature Review	Ryan Randy Suryono, Betty Purwandari, Indra Budi

ROOM : WIJAYA
DAY/SESSION : 1/2
TRACK : MANAGEMENT OF INFORMATION SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	28	Developer Payroll Approaches for Startup Environment Based On Agile Project Management	Yang Agita Rindri, Ridi Ferdiana, Rudy Hartanto

TIME (GMT+7)	ID	Paper Title	Author(s)
15:45 - 16:00	33	Indonesian Sign Language Recognition Based on Shape of Hand Gesture	Dolly Indra, Purnawansyah, Sarifuddin Madenda, Eri Prasetyo Wibowo
16:00 - 16:15	35	The Role of Satisfaction on Perceived Value and E-Learning Usage Continuity Relationship	Mahendra Adhi Nugroho, Dhyah Setyorini, Budi Tiara Novitasari
16:15 - 16:30	41	Acceptance factors and user design of mobile E-government website (Study Case E-government website in Indonesia)	Taufiq Agung Cahyono, Tony Dwi Susanto
16:30 - 16:45	44	Maturity assessment of local E-government websites in the Philippines	Suhaina A. Khalid and Rabby Q. Lavilles, DIT.

ROOM : TRIBUANA
DAY/SESSION : 1/1
TRACK : IT INFRASTRUCTURE & SECURITY

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	11	Theoretical Framework of Smart Intellectual Property Office in Developing Countries	Yoga Prihastomo, Raymond Kosala, Suhono Harso Supangkat, Benny Ranti, Agung Trisetyarso
13:15 - 13:30	13	Design and Development of MLERWS: A User-Centered Mobile Application for English Reading and Writing Skills	Charisa F. Llema, Cenie M. Vilela-Malabanan
13:30 - 13:45	162	Determining Factors Influencing the Acceptance of Cloud Computing Implementation	Mohd Talmizie Amron, Roslina Ibrahim, Nur Azaliah Abu Bakar, Suriayati Chuprat
13:45 - 14:00	53	Group Activity Recognition Method based on Camera in The Building	Chairani Fauzia, Selo Sulistyoa, Widyawana
14:00 - 14:15	60	A Review of Heuristics Evaluation Component for Mobile Educational Games	Nur Marissa Vee Senap, Roslina Ibrahim
14:15 - 14:30	78	Spring Framework Reliability Investigation Against Database Bridging Layer Using Java Platform	Arief Ginanjar, Mokhamad Hendayun

TIME (GMT+7)	ID	Paper Title	Author(s)
14:30 – 14:45	161	Challenges of cloud computing adoption model for higher education level in Zanzibar (the case study of SUZA and ZU)	Mohammed Khatib Juma, Aris Tjahyanto
14:45 – 15:00	32	Design and Development of Learn Your Way Out: A Gamified Content for Basic Java Computer Programming	Nerico L. Mingoc, Erik Louwe R. Sala
15:00 – 15:15	193	Deployment of Fog Computing During Hajj Season: A Proposed Framework	Sara Alraddady, Alice S Li, Ben Soh, Mohammed Alzain

ROOM : TRIBUANA
DAY/SESSION : 1/2
TRACK : SPECIAL TRACK: CYBER SECURITY

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 – 15:45	90	Web Vulnerability Assesment and Maturity Model Analysis on Indonesia Higher Education	IGN Mantra, Muhammad Syarif Hartawan, Hoga Saragih, Aedah Abd Rahman
15:45 – 16:00	68	Privacy Preservation Quality of Service Model for Data Exposure	Anizah Abu Bakar, Manmeet Mahinderjit Singh, Azizul Rahman Mohd Shariff
16:00 – 16:15	70	A Systemic Cybercrime Stakeholders Architectural Model	Manmeet Mahinderjit Singh
16:15 – 16:30	111	Protecting Facebook Password: Indonesian Users' Motivation	Ari Kusyanti, Harin Puspa Ayu Catherina, Yustiyana April Lia Sari

ROOM : TROWULAN 1
DAY/SESSION : 1/1
TRACK : BIG DATA

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	5	The Effect of Social Media to the Sustainability of Short Message Service (SMS) and Phone Call	Arif Ridho Lubis, Muharman Lubis, Citra Dewi Azhar
13:15 - 13:30	42	Investigating the relationship between Industry 4.0 and productivity: A conceptual	Simon Karl Hubert Backhaus, Devika Nadarajah

TIME (GMT+7)	ID	Paper Title	Author(s)
		framework for Malaysian manufacturing firms	
13:30 - 13:45	52	Sentiment Analysis in Social Media and Its Application: Systematic Literature Review	Zulfadzli Drus, Haliyana Khalid
13:45 - 14:00	69	Facebook Analysis of Community Sentiment on 2019 Indonesian Presidential Candidates from Facebook Opinion Data	Budi Haryanto, Yova Ruldeviyani, Fathur Rohman, Julius Dimas T. N., Ruth Magdalena, Muhamad Yasil F.
14:00 - 14:15	72	Sentiment Analysis to Assess the Community's Enthusiasm Towards the Development Chatbot Using an Appraisal Theory	Prima Widyaningrum, Yova Ruldeviyani, Ramanti Dharayani
14:15 - 14:30	83	A Review on Data Cleansing Methods for Big Data	Fakhitah Ridzuan, Wan Mohd Nazmee Wan Zainon
14:30 - 14:45	87	Opinion Mining on Mandalika Hotel Reviews Using Latent Dirichlet Allocation	Rossi Annisa, Isti Surjandari, Zulkarnain
14:45 - 15:00	104	Landslide Prediction Model of Prone Areas in Pulung, Ponorogo East Java	Dihin Muriyatmoko, Shoffin Nahwa Utama, Faisal Reza Pradhana, J Umami, AJ Rozaqi, H Setyaningrum
15:00 – 15:15	188	Social Bot Detection on 2019 Indonesia President Candidate's Supporter's Tweets	Pandu Gumelar Pratama, Nur Aini Rakhmawati

ROOM : TROWULAN 1
DAY/SESSION : 1/2
TRACK : BIG DATA

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	117	Empirical Study of #instastory	Ari Kusyanti, Harin Puspa Ayu Catherina, Yustiyana April Lia Sari
15:45 - 16:00	118	Sentiment Analysis of Social Media Twitter with Case of Anti- LGBT Campaign in Indonesia using Naïve Bayes, Decision Tree, and Random Forest Algorithm	Veny Amilia Fitri, Rachmadita Andreswari, Muhammad Azani Hasibuan

TIME (GMT+7)	ID	Paper Title	Author(s)
16:00 - 16:15	119	Persuasive System Design: Social Support Elements to Influence the Malaysian Wellness in Social Media	Zaifulasraf Ahmad, Nor Zairah Ab Rahim, Suraya Ya'acob
16:15 - 16:30	123	Health information system research situation in Indonesia: a bibliometric analysis	Masyri Madjido, Aufia Espressivo, Ahmad Watsiq Maula, Anis Fuad Mubasysyir Hasanbasri
16:30 - 16:45	152	Strategy for Research Data Management Services in Indonesia	Ekawati Marlina, Betty Purwandari

ROOM : TROWULAN 2
DAY/SESSION : 1/2
TRACK : ENTERPRISE SYSTEM

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	12	Customer Portfolio Analysis for Customer Lifetime Value categorization with RFM model	Siti Monalisa, Putri Nadya, Rice Novita, Misra Hartati, Fitra Kurnia, Tengku Nurainun
15:45 - 16:00	22	Architecture Model of Information Technology Infrastructure based on Service Quality at Government Institution	Adityas Widjajarto, Muharman Lubis and Umar Yunan S.H
16:00 - 16:15	165	Analysis of Quality of Paddy Harvest Yield to Support Food Security: A System Thinking Approach (Case Study: East Java)	Mala Rosa Aprillya, Erma Suryani, Anisa Dzulkarnain
16:15 - 16:30	173	Modeling Customer Satisfaction with the Service Quality of E-Money in Increasing Profit of PT. Telekomunikasi Indonesia	Dhyna Octabriyantiningtyas, Erma Suryani, Andriyan Rizki Jatmiko
11:00 - 11:15	89	Analysis on Purchase Intention of Indonesian Backpacker in Accommodation Booking through Online Travel Agent	Andre Parvian Aristio, S. Supardi, Rully Agus Hendrawan, Alifiansyah Arrizqy Hidayat
16:45 - 17:00	67	A Comparative Study of Factors Affecting User Acceptance of GO-PAY and OVO As a Feature of Fintech Application	Arief Zuliyanto Susilo, M Iksan Prabowo, Abdullah Taman, Adeng Pustikaningsih, Ahmad Samlawi

ROOM : TROWULAN 3
DAY/SESSION : 1/2
TRACK : DATA ANALYTICS

TIME (GMT+7)	ID	Paper Title	Author(s)
13:45 - 14:00	110	Determination of Freight Rates Based on Package Dimension and Distance of Delivery Using Fuzzy Logic System in	Faizal Johan Atletiko, Nur Aini Rakhmawati, Hartantya 'A. Ts
15:45 - 16:00	31	Optimization of Saprolite Ore Composites Reduction Process Using Artificial Neural Network (ANN)	Angella Natalia Ghea Puspita, Isti Surjandari, Zulkarnain, Adji Kawigraha, Nur Vita Permatasari
16:00 - 16:15	15	A Hybrid of Sentence-Level Approach and Fragment-Level Approach of Parallel Text Extraction from Comparable Text	Yin-Lai Yeong, Tien-Ping Tan, Keng Hoon Gan
16:15 - 16:30	91	Offline Signature Verification using Deep Learning Convolutional Neural Network (CNN) Architectures GoogLeNet Inception-v1 and Inception-v3	Jahandad, Suriani Mohd Sam, Kamilia Kamardin, Nilam Nur Amir Sjarif, Norliza Mohamed
16:30 - 16:45	200	Great Deluge Based Hyper-heuristics for Solving Real-world University Examination Timetabling Problem: New Data set and Approach	Ahmad Muklason, Gusti Bagus Syahrani, Ahsanul Marom
16:45 - 17:00	201	Automated Course Timetabling Optimization Using Tabu-Variable Neighborhood Search Based Hyper-Heuristic Algorithm	Ahmad Muklason, Redian Galih Irianti, Ahsanul Marom

ROOM : GAJAHMADA
DAY/SESSION : 1/2
TRACK : CHALLENGE TRACK: CLOUD COMPUTING

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	36	The Role of Information Technology Usage on Startup Financial Management & Taxation	Supardianto, Ridi Ferdiana, Selo Sulistyo
15:45 - 16:00	54	Cloud computing adoption strategic planning using ROCCA and TOGAF 9.2: a study in government agency	Nina Anggraini, Binariswanto, Nilo Legowo

TIME (GMT+7)	ID	Paper Title	Author(s)
16:00 - 16:15	66	Survey on Threats and Risks in the Cloud Computing Environment	Maniah, Edi Abdurachman, Ford Lumban Gaol, Benfano Soewito

DAY 2 (WEDNESDAY – JULY 24, 2019)

ROOM : WIJAYA
DAY/SESSION : 2/1
TRACK : SPECIAL TRACK: BPM

TIME (GMT+7)	ID	Paper Title	Author(s)
11:00 - 11:15	101	Predictive Business Process Monitoring – Remaining Time Prediction using Deep Neural Network with Entity Embedding	Nur Ahmad Wahid, Taufik Nur Adi, Hyerim Bae, Yulim Choi
11:15 - 11:30	126	Inter-dependencies on BPM Maturity Model Capability factors in deriving BPM Roadmap	Yogantara Setya Dharmawan, Gerald Genovez Divinagracia, Elliott Woods, Bryan Kwong
11:30 - 11:45	170	Business Process Maturity Level of MSMEs in East Java, Indonesia	Fitriyana Dewi, Mahendrawathi ER
11:45 - 12:00	172	Analyzing linkage between Business Process Management (BPM) capability and information technology: a case study in garment SMEs	Dita Nurmadewi, Mahendrawathi ER

ROOM : WIJAYA
DAY/SESSION : 2/2
TRACK :

- **SPECIAL TRACK: BPM**
- **MANAGEMENT OF INFORMATION SYSTEMS**

TIME (GMT+7)	ID	Paper Title	Author(s)
SPECIAL TRACK: BPM			
13:00 - 13:15	180	Impact of Alignment between Social Media and Business Processes on SMEs' Business Process Performance: a Conceptual Model	Lolanda Hamim Annisa, Mahendrawathi E.R
13:15 - 13:30	191	Antecedent and Business Process Management Non-Technical Capabilities in Social Media Implementation for Micro, Small and Medium Enterprises: a Conceptual Model	Sharfina Febbi Handayani, Mahendrawathi E.R.

TIME (GMT+7)	ID	Paper Title	Author(s)
13:30 - 13:45	195	Trace Clustering Exploration for Detecting Sudden Drift: A Case Study in Logistic Process	Frans Prathama, Bernardo Nugroho Yahya, Danny Darmawan Harjono, Mahendrawathi ER
13:45 - 14:00	197	A Conceptual Model for the Use of Social Software in Business Process Management and Knowledge Management	Fajar Ramadhani, Mahendrawathi ER

ROOM : WIJAYA
DAY/SESSION : 2/3
TRACK : MANAGEMENT OF INFORMATION SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	181	Assessment of the readiness of Micro, Small and Medium Enterprises in Using E-Money Using the Unified Theory of Acceptance and Use of Technology (UTAUT) Method	Hendro Gunawan, Benyamin Langgu Sinaga, Sigit Purnomo WP
15:45 - 16:00	182	Indonesia in the Spotlight: Combating Corruption through ICT enabled Governance	Alvedi Sabani, Mohamed H. Farah, Dian Retno Sari Dewi
16:00 - 16:15	185	Test Citizens' Physical and Cognitive on Indonesian E-Government Website Design	Pradita Maulidya Effendi, Tony Dwi Susanto
16:15 - 16:30	25	an Application of the UTAUT Model for Analysis of Adoption of Integrated License Service Information System	Novianti Puspitasari, Muhammad Bambang Firdaus, Celine Aloyshima Haris, Hario Jati Setyadi
16:30 - 16:45	177	Information Technology Investment: In Search of The Closest Accurate Method	Anggraeni Widya Purwita, Apol Pribadi Subriadi
16:45 - 17:00	178	Analysis of Motivation and Perceived Risk Factors in Open Data Measurement: A Conceptual Model	Dwi Nur Amalia, Tony Dwi Susanto

ROOM : **TRIBUANA**
DAY/SESSION : **2/1**
TRACK : **SPECIAL TRACK: INTERNET OF THINGS**

TIME (GMT+7)	ID	Paper Title	Author(s)
11:00 - 11:15	16	Evaluating on User Experience and User Interface (UX/UI) of EnerTrApp a Mobile Web Energy Monitoring System	Kristine Mae P. Escanillan-Galera, Cenie M. Vilela-Malabanan
11:15 - 11:30	37	Smart Tracking and Fall Detection for Golden Age's Citizen	Ratna Juwita Fauziah, Giva Andriana Mutiara, Periyadi
11:30 - 11:45	39	IoT Security Risk Management Model for Secured Practice in Healthcare Environment	Huraizah Zakaria, Nur Azaliah Abu Bakar, Noor Hafizah Hassan, Suraya Yaacob
11:45 - 12:00	40	Chief-Screen 1.0 as the Internet of Things Platform in Project Monitoring & Controlling to Improve Project Schedule Performance	Mohammed Ali Berawi, Adinugroho Sunardi, Mohammad Ichsan

ROOM : **TRIBUANA**
DAY/SESSION : **2/2**
TRACK : **SPECIAL TRACK: INTERNET OF THINGS**

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	59	Integration of Haptics Tactile Feedback into Heart Disease Monitoring Mobile Application: A Conceptual Model	Muhammad Sobri, Mohamad Taha Ijab, Norshita Mat Nayan
13:15 - 13:30	63	Usability Study and Users' Perception of Smartwatch: Study on Indonesian Customer	Nina Anggraini, Emil R. Kaburuan, Gunawan Wang, Riyanto Jayadi
13:30 - 13:45	85	Using Engeström's Activity Triangle Model to Design and Develop a Technology-based HIV Intervention for the Youth	Xenia Gay J. Calunod-Repuela, Cenie M. Vilela-Malabanan
13:45 - 14:00	86	mHealth Medical Record to Contribute to NonCommunicable Diseases in Indonesia	Dedi I Inan, Khin Than Win, Ratna Juita
14:00 - 14:15	94	A Generic Evaluation Framework of Smart Manufacturing Systems	Moamin A. Mahmoud, Jennifer Grace
14:15 - 14:30	121	Survey on Trust Calculation Methods in Internet of Things	Warsun Najib, Selo Sulistyo and Widyawan

ROOM : TRIBUANA
DAY/SESSION : 2/3
TRACK :

- **SPECIAL TRACK: CYBER SECURTIY**
- **IT INFRASTRUCTURE & SECURITY**

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 – 15:45	107	Web Application Security: An Investigation on Static Analysis with other Algorithms to Detect Cross Site Scripting	Abdalla Wasef Marashdih, Zarul Fitri Zaaba, Khaled Suwais, Nur Azimah Mohd
15:45 – 16:00	135	Information Security Policy Compliance: Systematic Literature Review	Angraini, Rose Alinda Alias, Okfalisa
16:00 – 16:15	112	Preliminary Insights in Security Warning Studies: An Exploration in University Context.	Devinna Win Anak Boniface Emang, Zarul Fitri Zaaba, Azham Hussain, Nur Azimah Mohd
16:15 – 16:30	113	A Review of Usability and Security Evaluation Model of E-commerce website	Nur Azimah bt Mohd, Zarul Fitri Zaaba
16:30 – 16:45	124	Risk Assessment Using NIST SP 800-30 Revision 1 and ISO 27005 Combination Technique in Profit-Based Organization: Case Study of ZZZ Information System Application in ABC Agency	Muhamad Al Fikri, Fandi Aditya Putra, Yohan Suryanto, Kalamullah Ramli
16:45 – 17:00	81	Will Users Keep Using Mobile Payment? It Depends on Trust and Cognitive Perspectives	Liza Agustina Maureen Nelloh, Adhi Setyo Santoso, Mulyadi Wiguna Slamet
17:00 – 17:15	189	Development of Microservice Based Application E-Inkubator: Incubation and Investment Service Provider for SMEs	Nisfu Asrul Sani, Wildan Azka Fillah, Aris Tjahyanto, Hatma Suryotrisongko

ROOM : TROWULAN 2
DAY/SESSION : 2/1
TRACK : DATA ANALYTICS

TIME (GMT+7)	ID	Paper Title	Author(s)
11:00 - 11:15	57	Using hospital claim data to develop referral decision support systems: improving patient flow from the primary care	Guardian Yoki Sanjaya, Lutfan Lazuardi, Mubasysyir Hasanbasri, Hari Kusnanto

TIME (GMT+7)	ID	Paper Title	Author(s)
11:15 - 11:30	58	Analysis and Prediction of Diabetes Complication Disease using Data Mining Algorithm	Cut Fiarni, Evasaria M. Sipayung, Siti Maemunah
11:30 - 11:45	82	Classification of Cancer Drug Compounds for Radiation Protection Optimization Using CART	Heri Kuswanto, Rizky Mubarok
11:45 - 12:00	84	Dealing with Noise Problem in Machine Learning Data-sets: A Systematic Review	Shivani Gupta, Atul Gupta

ROOM : TROWULAN 2
DAY/SESSION : 2/2
TRACK : DATA ANALYTICS

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	26	Applying linguistic G2P knowledge on a statistical grapheme-to-phoneme conversion in Khmer	Vathnak Sar, Tien-Ping Tan
13:15 - 13:30	96	Rubber Plant Disease Diagnostic System Using Technique for Order Preference by Similarity to Ideal Solution	Ramadiani, M. Syahrir Ramadhani, Muhammad Labib Jundillah, Azainil
13:30 - 13:45	100	The Efficacy of Facebook in Teaching and Learning: Studied via Content Analysis of Web Log Data	Suleiman Alsaif, Alice S Li, and Ben Soh
13:45 - 14:00	105	English Education Game using Non-Player Character Based on Natural Language Processing	Andhik Ampuh Yunanto, Darlis Herumurti, Siti Rochimah, Imam Kuswardayan
14:00 - 14:15	106	SMS Spam Message Detection using Term Frequency-Inverse Document Frequency and Random Forest Algorithm	Nilam Nur Amir Sjarif, Nurulhuda Firdaus Mohd Azmi, Suriayati Chuprat, Haslina Md Sarkan, Yazriwati Yahya, Suriani Mohd Sam
14:15 - 14:30	108	Cluster Phenomenon to Determine Anomaly Detection of Flight Route	Mohammad Yazdi Pusadan, Joko Lianto Buliali, Raden Venantius Hari Ginardi
14:30 - 14:45	120	HRV Assessment Using Finger-Tip Photoplethysmography (Pulserate) As Compared to ECG on Healthy Subjects	Alvin Sahroni, Izza Alifa Hassya, Rafky Rifaldy, Nida Ul Jannah, Aditama

TIME (GMT+7)	ID	Paper Title	Author(s)
		During Different Postures and Fixed Breathing Pattern	Faqih Irawan and Aisha Widi Rahayu
14:45 - 15:00	132	Normalization of Abbreviation and Acronym on Microtext in Bahasa Indonesia by Using Dictionary-Based and Longest Common Subsequence (LCS)	Dani Gunawan, Zurwatus Saniyah, Ainul Hizriadi

ROOM : TROWULAN 2
DAY/SESSION : 2/3
TRACK : DATA ANALYTICS

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	136	Evolutionary estimation of distribution algorithm for agricultural routing planning in field logistics	Amalia Utamima, Torsten Reiners, Amir H. Ansaripoor
15:45 - 16:00	138	Epileptic Seizure Detection Based on Bandwidth Features of EEG Signals	Diah P. Wulandari, Nomala G. P. Putri, Yoyon K. Suprapto, Santi W. Purnami, Anda I. Juniani, Wardah R. Islamiyah
16:00 - 16:15	144	Semi-supervised Learning for Sentiment Classification using Small Number of Labeled Data	Vivian Lay Shan Lee, Keng Hoon Gan, Tien Ping Tan, Rosni Abdullah
16:15 - 16:30	145	Towards Auto-labelling Issue Reports for Pull-Based Software Development using Text Mining Approach	Hassan Fazayeli, Sharifah Mashita Syed-Mohamad, Nur Shazwani Md Akhir
16:30 - 16:45	149	Individual Control Optimization of Drug Dosage Using Individual Bayesian Pharmacokinetics Model Approach	Brina Miftahurrohmah, Nur Iriawan, Catur Wulandari, Yogantara Setya Dharmawan
16:45 - 17:00	151	The Identification of Pornographic Sentences in Bahasa Indonesia	Dani Gunawana, Rendra Mahardika, Feri Ranja, Sarah Purnamawati, Ivan Jaya

ROOM : TROWULAN 3
DAY/SESSION : 2/1
TRACK : DATA ANALYTICS

TIME (GMT+7)	ID	Paper Title	Author(s)
11:00 - 11:15	158	Value Management-based Alternatives Ranking Approach for Automated Negotiation	Moamin A. Mahmoud, Mohd Sharifuddin Ahmad, Arazi Idrus
11:15 - 11:30	163	Business Intelligence for Designing Restaurant Marketing Strategy: A Case Study	Karina Kusuma Halim, Siana Halim, Felecia
11:30 - 11:45	164	Designing Facility Layout of an Amusement Arcade using Market Basket Analysis	Siana Halim, Tanti Octavia, Christian Alianto
11:45 - 12:00	184	Heart Rate Variability Analysis by Multiscale Entropy for Autonomic Nervous System Identification	Afifah Nurrosyidah, Faizal Mahananto, Mahendrawathi ER, Tomohiko Igasaki, Toshitaka Yamakawa

ROOM : TROWULAN 3
DAY/SESSION : 2/2
TRACK : DATA ANALYTICS

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	7	Square Matrix Multiplication Using CUDA on GP-GU	Ali Olow Jimale, Fakhitah Ridzuan, Wan Mohd Nazmee Wan Zainon
13:15 - 13:30	55	Experimenting Dynamic Clonal Selection (DCS) for Parallel Multiple Interest Topics of User Profile Adaptation in Content Based Filtering	Nurulhuda Firdaus Mohd Azmi, Norziha Megat Zainuddin, Nilam Nur Amir Sjarif, Haslina Md Sarkan, Suriayati Chuprat, Yazriwati Yahya
13:30 - 13:45	204	Assessing Centroid-Based Classification Models for Intrusion Detection System Using Composite Indicators	Bambang Setiawan, Supeno Djanali, Tohari Ahmad, Moh. Nasrul Aziz
15:30 - 15:45	6	Week-ahead Rainfall Forecasting Using Multilayer Perceptron Neural Network	Lemuel Clark P. Velasco, Ruth P. Serquiña, Mohammad Shahin A. Abdul Zamad, Bryan F. Juanico, Junneil C. Lomocso

TIME (GMT+7)	ID	Paper Title	Author(s)
14:00 - 14:15	186	On the Comparison of Crazy Particle Swarm Optimization and Advanced Binary Ant Colony Optimization for Feature Selection on High-Dimensional Data	Neni Alya Firdausanti, Irhamah
14:15 - 14:30	4	Implementation of Dijkstra Algorithm and Multi-Criteria Decision-Making for Optimal Route Distribution	Yesy Diah Rosita, Erly Ekayanti Rosyid, Muhammad Adik Rudiyanto
14:30 - 14:45	127	A Study on Facial Expression Recognition in Assessing Teaching Skills: Datasets and Methods	Pipit Utami, Rudy Hartanto and Indah Soesanti
14:45 - 15:00	207	Forecasting the price of Indonesia's rice using hybrid artificial neural network and autoregressive integrated moving average (Hybrid NNs-ARIMAX) with exogenous variables	Wiwik Anggraeni, Faizal Mahananto and Ayusha Qamara Sari

ROOM : TROWULAN 3
DAY/SESSION : 2/3
TRACK : MANAGEMENT OF INFORMATION SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	174	E-Commerce Service Design Readiness using ITIL framework with IT Balanced Scorecard Objective (Case Study: University E-Commerce)	Tining Haryanti, Apol Pribadi
15:45 - 16:00	175	The safety city: conceptual of safe city assessment models	Devi Mega Risdiana, Tony Dwi Susanto
16:00 - 16:15	115	Analyzing Factors Influencing Students' Perception Towards Digital Library Based on Chang's Model	Feby Artowidini Muqtadiroh, Hanim Maria Astuti and Niken Laily Zulfasari
16:15 - 16:30	199	Analysis of Factors Affecting Behavioural Intention to Use E-Government Services in Rwanda	Leonidas Nzaramyimana, Tony Dwi Susanto
16:30 - 16:45	208	Modelling the Smart Governance Performance to Support Smart City Program in Indonesia	Anisah Herdiyanti, Palupi Sekar Hapsari, Tony Dwi Susanto
16:45 – 17:00	88	Analysis of User Resistance Towards Adopting E-Learning	Feby Artwodini Muqtadiroh, Amna Shifia Nisafani, Regina Mia

TIME (GMT+7)	ID	Paper Title	Author(s)
			Saraswati, Anisah Herdiyanti

ROOM : GAJAHMADA
DAY/SESSION : 2/1
TRACK : ENTERPRISE SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
16:30 - 16:45	56	Development of System Dynamics Model to Increase Salt Fulfillment Ratio	Isnaini Muhandhis, Heri Susanto, Ully Asfari
11:15 - 11:30	95	Dynamic Metamodel Approach for Government Enterprise Architecture Model Management	Nur Azaliah Abu Bakar, Suraya Yaacob, Surya Sumarni Hussein, Anizah Nordin, Hasimi Sallehuddin
11:30 - 11:45	140	Business Process Analysis and Academic Information System Audit of Helpdesk Application using Genetic Algorithms a Process Mining Approach	Astrid Shofi Dzihni, Rachmadita Andreswari, Muhammad Azani Hasibuan
11:45 - 12:00	147	Dynamics Analysis of Container Needs and Availability in Surabaya Container Terminal with Agent-Based Modeling and Simulation	Putri Amelia, Artya Lathifah

ROOM : GAJAHMADA
DAY/SESSION : 2/2
TRACK : ENTERPRISE SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	45	The Influence of Discount Framing towards Brand Reputation and Brand Image on Purchase Intention and Actual Behaviour in e-commerce	Fanni Agmeka, Ruhmaya Nida Wathoni, Adhi Setyo Santoso
13:15 - 13:30	171	Analysis of flood identification and mitigation for disaster preparedness: a system thinking approach	Anisa Dzulkarnain, Erma Suryani, Mala Rosa Aprillya
13:30 - 13:45	50	The Role of Multichannel Integration, Trust and Offline-to-Online Customer Loyalty Towards Repurchase Intention: an Empirical Study in Online-to-Offline (O2O) e-commerce	Intan Dewi Savila, Ruhmaya Nida Wathoni, Adhi Setyo Santoso

TIME (GMT+7)	ID	Paper Title	Author(s)
13:45 - 14:00	176	Analysis of Greenhouse Gas Emissions Mitigation: A System Thinking Approach (Case Study: East Java)	Andriyan Rizki Jatmiko, Erma Suryani, Dhyna Octabriyantiningtyas
14:00 - 14:15	179	Influence of Inventory Changes to Bullwhip Effect on Private Industrial Network	Mudjahidin, Lukman Junaedi, Andre Parvian Aristio, Yudha Andrian Saputra
14:15 - 14:30	183	Testing Methods in System Dynamics: A Model of Reliability, Average Reliability, and Demand Of Service	Mudjahidin, Rully Agus Hendrawan, Andre Parvian Aristio, Joko Lianto Buliali, Muhammad Nur Yuniarto
14:30 - 14:45	190	The Impact of Social Media Usage on the Sales Process in Small and Medium Enterprises (SMEs): A Systematic Literature Review	Nanda Kurnia Wardati, Mahendrawathi ER
14:45 - 15:00	194	Behavioural Similarity Measurement of Business Process Model to Compare Process Discovery Algorithms Performance in Dealing with Noisy Event Log	Ifrina Nuritha, Mahendrawathi ER

ROOM : GAJAHMADA
DAY/SESSION : 2/3
TRACK : BIG DATA

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	157	New Filtering Scheme Based on Term Weighting to Improve Object Based Opinion Mining on Tourism Product Reviews	Ahimsa Denhas Afrizal, Nur Aini Rakhmawati, Aris Tjahyanto
15:45 - 16:00	196	Knowledge Representation for Infectious Disease Risk Prediction System: A Literature Review	Retno Aulia Vinarti
16:00 - 16:15	202	Integration of Crowdsourcing into Ontology Relation Extraction	Eunike Andriani Kardinata, Nur Aini Rakhmawati
16:15 - 16:30	155	Open Data Visual Analytics to Support Decisions on Physical Investments	Meditya Wasesa, M. Mashuri, Putri Handayani, Utomo S. Putro

ROOM : **AIRLANGGA**
DAY/SESSION : **2/1**
TRACK : **MANAGEMENT OF INFORMATION SYSTEMS**

TIME (GMT+7)	ID	Paper Title	Author(s)
11:00 - 11:15	61	Modeling Requirements of Multiple Single Products to Feature Model	Oman Komarudin, Daya Adianto, Ade Azurat
11:15 - 11:30	80	The Role of Brand Reputation and Perceived Enjoyment in Accepting Compulsory Device's Usage: Extending UTAUT	Samiaji Sarosa
11:30 - 11:45	114	XBRL based Corporate Tax Filing in Indonesia	Noor Romy Rahwani, Manik Mutiara Sadewa, Nurul Qalbiah, Nurul Mukhlisah, Phaureula Artha W, and Nailiya Nikmah
11:45 - 12:00	130	IT and Organizational Agility: A Critical Literature Review	Doddy Ridwandono, Apol Pribadi Subriadi

ROOM : **AIRLANGGA**
DAY/SESSION : **2/2**
TRACK : **MANAGEMENT OF INFORMATION SYSTEMS**

TIME (GMT+7)	ID	Paper Title	Author(s)
13:00 - 13:15	134	Blended Learning System Using Social Media for College Student: A Case of Tahsin Education	Muh Syaiful Romadhon, Amalia Rahmah and Yekti Wirani
13:15 - 13:30	141	Risk Assessment and Recommendation Strategy Based on COBIT 5 for Risk: Case Study SIKN JIKN Helpdesk Service	Sari Agustin Wulandari, Anggi Permata Dewi, M. Rizki Pohan, Dana Indra Sensuse, M. Mishbah, Syamsudin
13:30 - 13:45	142	Risk Management Framework for Distributed Software Team: A Case Study of Telecommunication Company	Wan Suzila Wan Husin, Yazriwati Yahya, Nurulhuda Firdaus Mohd Azmi, Nilam Nur Amir Sjarif, Suriayati Chuprat, Azri Azmi
13:45 - 14:00	10	Why Can Cultural Diversity Foster Technology-enabled Intergenerational Collaboration?	Irawan Nurhas, Bayu Rima Aditya, Stefan Geisler and Jan Pawlowski

TIME (GMT+7)	ID	Paper Title	Author(s)
14:00 - 14:15	153	Pedagogical Discussion Cases in Higher Education: The Role of Knowledge Sharing in Students' Learning	Narumon Sriratanaviriyakul and Jamal El-Den
14:15 - 14:30	156	The Role of Positive Psychology in Improving Employees' Performance and Organizational Productivity: An Experimental Study	Jasleen Kour, Jamal El-Den and Narumon Sriratanaviriyakul
14:30 - 14:45	159	Effect of social media activities to determinants public participate intention of e-government	Taqwa Hariguna, Untung Rahardja, Qurotul Aini, Nurfaizah
14:45 - 15:00	160	The antecedent of perceived value to determine of student Continuance Intention and student Participate Adoption of iLearning	Qurotul Aini, Untung Rahardja, and Taqwa Hariguna

ROOM : AIRLANGGA
DAY/SESSION : 2/3
TRACK : MANAGEMENT OF INFORMATION SYSTEMS

TIME (GMT+7)	ID	Paper Title	Author(s)
15:30 - 15:45	166	Maturity Level Assessment for ERP Systems Investment Using Val IT Framework	Renny Sari Dewi
15:45 - 16:00	167	The role of IT on firm performance	Asih Nur Fadhilah, Apol Pribadi Subriadi
16:00 - 16:15	168	40 Years Journey of Function Point Analysis: Against Real-time and Multimedia Applications	Mochammad Fajar Hillman, Apol Pribadi Subriadi
16:15 - 16:30	169	Business Continuity Plan: Examining of Multi-Usable Framework	Silmie Vidiya Fani, Apol Pribadi Subriadi
16:30 – 16:45	206	Communication management plan of ERP implementation program: A Case Study of PTPN XI	Eko Wahyu Tyas Darmaningrat, Feby Artwodini Muqtadiroh, Tori Andika Bukit

ABSTRACTS

TRACK: BIG DATA

PAPER ID: 5

The Effect of Social Media to the Sustainability of Short Message Service (SMS) and Phone Call

Arif Ridho Lubis, Muharman Lubis, Citra Dewi Azhar
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Abstract:
In the development of increasingly advanced technology, the use of SMS and telephone has been replaced by smartphone users who are more intended to use social media, especially among students. Social media are online media where users can communicate and interact one another for social interactions conducted online through the internet such as WhatsApp, Line, Instagram, Facebook, Twitter, Skype and Telegram. The existence of social media makes SMS and telephone user switch to social media which has more features, capacities and functions. Therefore, it is interesting to investigate the effect of social media to influence the sustainability of SMS and telephone which is seen from the effectiveness of social media in terms of time, quality and quantity, cost, distance, and energy in related to the utilization of SMS and telephone among users. To determine the effect of respected social media, this study use multiple regression, which is analysed using SPSS 17.0 and has passed the validity and reliability test up to 32.7% the influence of all variants. The most dominant influence on Usage and Function variables is Quality and Quantity which has 18% with significant value of test 0,000 smaller than the value set (0.05), the cost of which has 4.7% with significant value of T test at around 0.003 smaller than the value determined (0.05), and Energy which has 2.1% with significant value of T test about 0.013 smaller than the value set (0.05).

Keywords:
Media; Multiple Regression; SMS; Phone Calls;

PAPER ID: 42

Investigating the relationship between Industry 4.0 and productivity: A conceptual framework for Malaysian manufacturing firms

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Abstract:
Previous studies in Malaysia concerning Industry 4.0 focused mainly on cloud manufacturing, advanced robotics and intelligent manufacturing. Field studies conducted were focusing predominantly on the beverage and electrical equipment industry. Industry 4.0 is considered as a new industrial revolution. In contrast to the previous publications, the purpose of this conceptual paper is to provide a conceptual framework for further studies to be conducted in Malaysia identifying the relationship between Industry 4.0 key technologies and productivity. Wide field studies concerning Industry 4.0 and productivity of Malaysian manufacturing firms are still lacking. The paper describes briefly the key technologies of Industry 4.0 and ranks them according to the absolute frequency stated in the literature. The developed research questions

concern the relationship between productivity and Industry 4.0 technologies. Productivity is a key element of competitiveness for manufacturing firms. Hence research about the relationship between Industry 4.0 technologies and productivity is essential for Malaysian manufacturing firms prior implementation of new manufacturing technologies.

Keywords:
Industry 4.0; Productivity; Conceptual framework

PAPER ID: 52

Sentiment Analysis in Social Media and Its Application: Systematic Literature Review

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Abstract:
This paper is a report of a review on sentiment analysis in social media that explored the methods, social media platform used and its application. Social media contain a large amount of raw data that has been uploaded by users in the form of text, videos, photos and audio. The data can be converted into valuable information by using sentiment analysis. A systematic review of studies published between 2014 to 2019 was undertaken using the following trusted and credible database including ACM, Emerald Insight, IEEE Xplore, Science Direct and Scopus. After the initial and in-depth screening of paper, 24 out of 77 articles have been chosen from the review process. The articles have been reviewed based on the aim of the study. The result shows most of the articles applied opinion-lexicon method to analyses text sentiment in social media, extracted data on microblogging site mainly Twitter and sentiment analysis application can be seen in world events, healthcare, politics and business.

Keywords:
Sentiment analysis; Big data; Social media

PAPER ID: 69

Facebook Analysis of Community Sentiment on 2019 Indonesian Presidential Candidates from Facebook Opinion Data

Budi Haryanto, Yova Ruldeviyani, Fathur Rohman, Julius Dimas T. N., Ruth Magdalena, Muhamad Yasil F.
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Abstract:
On April 17, 2019, Indonesia will hold a presidential general election. Analysis of public sentiment towards presidential candidates and vice-presidential candidates of Indonesia in 2019 through social media especially Facebook, is needed to find out the popularity and public sentiments towards the candidates. Data was obtained through comments on Facebook posts of three major news media in Indonesia, namely Detik (@detikcom), TribunNews (@tribunnews), and Liputan6 (@liputan6online). The Opinion is classified using the data mining approach using the Naive Bayes Classifier algorithm. This research found that 40.52% of the comments were talking about presidential and vice-presidential candidate Joko Widodo and Maruf Amin (Jokowi-Maruf) meanwhile presidential candidate Prabowo Subianto and his running mate Sandiaga Uno (Prabowo-Sandi) dominate the comments by 59.48%. On the contrary, for the sentiment polarity results, the Jokowi-Maruf dominate by 56.76% positive sentiment and 43.24% negative sentiment, while the Prabowo-Sandi received 24.21% positive sentiment and 75.79% negative sentiment.

Keywords:
sentiment analysis, elections, naive bayes classifier, data mining

PAPER ID: 72

Sentiment Analysis to Assess the Community's Enthusiasm Towards the Development Chatbot Using an Appraisal Theory

Prima Widyaningrum, Yova Ruldeviyani, Ramanti Dharayani
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Abstract:
PT Kreatif Dinamika Integrasi will develop a chatbot as the computer program designed to simulate intellectual conversation via text and voice by using Artificial Intelligence (AI). However, because development costs are high enough, it is necessary to gather opinions on the community's enthusiasm that will support the decision whether the development should or should not to have proceeded. Community sentiment analysis of data obtained from social media Twitter. Appraisal Theory method is exercised utilizing the R Studio tool to perform tweet crawling, preprocessing, scoring and term weighting. R is an open-source language and environment used for statistical computing and graphics. The results of the analysis indicate positive sentiment where the positive and negative comparison ratio was 4,78. The expression of sentiment analysis results by using the NRC library is 547 for "anticipation" sentiment and 728 for "trust" expression so that the technology of chatbot can be developed by the company. Although the results of the analysis of obtained are positive assessment, there is still the negative sentiment in the community, so it is necessary to act to reduce the risk.

Keywords:
Sentiment Analysis, Appraisal Theory, Chatbot, Twitter

PAPER ID: 83

A Review on Data Cleansing Methods for Big Data

Fakhitah Ridzuan, Wan Mohd Nazmee Wan Zainon
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Abstract:
Massive amounts of data are available for the organization which will influence their business decision. Data collected from the various resources are dirty and this will affect the accuracy of prediction result. Data cleansing offers a better data quality which will be a great help for the organization to make sure their data is ready for the analyzing phase. However, the amount of data collected by the organizations has been increasing every year, which is making most of the existing methods no longer suitable for big data. Data cleansing process mainly consists of identifying the errors, detecting the errors and corrects them. Despite the data need to be analyzed quickly, the data cleansing process is complex and time-consuming in order to make sure the cleansed data have a better quality of data. The importance of domain expert in data cleansing process is undeniable as verification and validation are the main concerns on the cleansed data. This paper reviews the data cleansing process, the challenge of data cleansing for big data and the available data cleansing methods.

Keywords:
data cleansing; big data; data quality

PAPER ID: 87

Opinion Mining on Mandalika Hotel Reviews Using Latent Dirichlet Allocation

Rossi Annisa, Isti Surjandari, Zulkarnain
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Abstract:
Mandalika in the Province of West Nusa Tenggara (NTB) is one of the top 10 priority tourist destinations in Indonesia. Mandalika is also a Tourism Special Economic Zone because of its great tourism potential. The Special Tourism Economic Zone is an area designated for tourism business activities to support the implementation of entertainment and recreation, meetings and related activities. It is supported by the provision of infrastructure and ease of investment. The development of Mandalika is still being carried out by all parties to make continuous quality improvements, including hotel management. Hotel as one of tourism supporting factors is located around the tourism destinations and it provides facilities and services for tourists. Therefore, hotel can be one of traveler experience subjects which is often posted and discussed in online media. Hotel management can understand whether its business is doing well and what they need to improve. This study aims to infer the topics which is extracted from hotel reviews using Latent Dirichlet Allocation. The output of this study is eight topics extracted using topic coherence as the evaluation measurement for topic modeling using LDA. These topics are often discussed which certainly can be a feedback between hotel management and tourists in order to increase a greater number of tourists visiting to Mandalika.

Keywords:
Hotel Reviews; Latent Dirichlet Allocation; Mandalika; Opinion Mining; Tourism

PAPER ID: 104

Landslide Prediction Model of Prone Areas in Pulung, Ponorogo East Java

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Abstract:
Ponorogo (7°52'15.3"S, 111°27'44.5"E) has various typical landscapes. A total of 59 landslides occurred during 2012-2018 in those common areas. The most severe landslide occurred in Banaran, Pulung sub-district, which caused several deaths and material losses. This research aimed to predict the areas which have the highest landslide probabilities based on daily rainfall. The methods were applied are scoring in four parameters, including daily rainfall, slope, land type, and land use. The data sets obtained from a local government authority (BAPPEDA). The data were treated using ArcGIS, Map server for windows, PostgreSQL database, and framework pmapper. The results are a real-time map based on the website, which provided three main categories of landslide probabilities. The highest vulnerability level of landslide were located in villages of Munggung (7°50'46.4"S, 111°38'36.9"E), Bekiring (7°51'11.9"S, 111°39'31.0"E), Singgahan (7°52'26.1"S, 111°39'05.8"E), Bedrug (7°53'20.1"S, 111°38'53.4"E), Wagirkidul (7°52'11.0"S, 111°40'46.3"E), and Banaran (7°50'47.9"S, 111°40'49.2"E). The system based on the website can be updated real-time depends on four parameters mentioned. These current results expected as an early warning system for those all potential areas, especially during the rainy season.

Keywords:
Ponorogo; landslide prediction; daily rainfall; early warning system; geographical information system

PAPER ID: 117

Empirical Study of #instastory

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Abstract:
Instagram is a social media which provides services that enable users to share photos or videos via its features called Instastory. Indonesia as the largest Instagram user in Asia Pacific region is worth studying. There are several factors affecting Instagram users to share their photos or videos, such as they are enjoying to represent themselves in an online world so that the can get connected virtually or even build new relationship. Apart from the benefits, there is hidden risk that may occur such as the misused of the personal information they have shared that may lead to privacy violation. The main objective of this study is to analyze the factors that affect Instagram users in sharing their videos or photos via Instastory by using ten latent variables and one second-order variable. The data are collected from 300 respondents who are active users of Instagram. Data from respondents are analyzed using Structural Equation Modelling (SEM) model. The results of this study shows that the factors that affect self-disclosure on Instagram via Instastory are self-presentation, enjoyment, perceived collectivism, new relationship building, Internet Users Information Privacy Concerns (IUIPC) and perceived risk.

Keywords:
SEM; Instastory; Internet Users Information Privacy Concerns (IUIPC)

PAPER ID: 118

Sentiment Analysis of Social Media Twitter with Case of Anti- LGBT Campaign in Indonesia using Naïve Bayes, Decision Tree, and Random Forest Algorithm

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Abstract:
People use social media as a means to express their thoughts, interests, and opinions on various things. Thousands of submissions occur every day on every social media. Everyone can express their opinions through social media freely. These opinions contain positive, negative and neutral sentiments on a topic. The case study taken by researchers is the Anti-LGBT campaign in Indonesia. The case was taken because the Anti-LGBT campaign was widely discussed by the Indonesian people on Twitter's social media. If you want to know the tendency of public comments on the Anti-LGBT campaign in Indonesia, is it positive, negative, or neutral, then a sentiment analysis is conducted. The algorithm used in conducting sentiment analysis is Naïve Bayes because it has a high degree of accuracy in classifying sentiment analysis. The stages in conducting sentiment analysis in this study are preprocessing data, processing data, classification, and evaluation. The sentiment analysis obtained in this study shows that Twitter users in Indonesia give more neutral comments. In this study, an accuracy of 86.43% was obtained from testing data using Naïve Bayes Algorithm in RapidMiner tools, where the accuracy is higher than the other algorithms, Decision Tree and Random Forest which is 82.91%.

Keywords:
Twitter; Naïve Bayes; Anti-LGBT campaign; sentiment analysis

PAPER ID: 119

Persuasive System Design: Social Support Elements to Influence the Malaysian Wellness in Social Media

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Abstract:
Obesity is a significant problem in Southeast Asia, especially in Malaysia, where the report by The National Health and Morbidity Survey of 2015 emphasized that the country has the highest proportion of obese and overweight population in the region and it is increasing by the year. Recently, it was observed that the social media could be leveraged for influencing healthier lifestyle. It is believed that, to motivate people to engage with social media or any wellness system, social support is important. However, research indicated that the understanding of social support from the perspectives of system design is still lacking. This study aims to fill these gaps and have better understanding of social support through the Persuasive System Design (PSD). The objectives of this research are (i) to identify the social support elements within the persuasive design elements (ii) to qualitatively verify the social support elements for Malaysian wellness in social media. Qualitative data collection was conducted through social media content observations and focus group interviews with selected respondents. Five PSD elements in social support were identified. They are: social learning, social facilitation, social comparison, recognition and normative influence. The relevancy and significance of these elements towards the health and wellness motivation among Malaysian were also identified.

Keywords:
persuasive system design; social support; social media; Malaysian wellness

PAPER ID: 123

Health information system research situation in Indonesia: a bibliometric analysis

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Abstract:
Health system strengthening has been greatly supported by system information. The progress and reliability of health information systems (HIS) are also influenced by contributions from existing research in HIS field. Research in health informatics has been focusing on the use of bibliometric analysis with regards to bibliometric tools and analysis of different sources of electronic evidence. We would like to answer whether the research has fulfilled the needs of problem solving in Indonesian health systems. This study explored the health information research topics in Indonesia through Sinta publication database and international resources (Scopus). This study used the bibliographic information from Google Scholar article database between 2014 to 2018 using total sampling technique. Data was extracted using Mendeley Web Importer and Mendeley Desktop tools. Indonesian health information researchers have shown their interest in using the most current approach in exploring health information through the big data and internet of things in their practice. This study showed an increasing number of local researchers who are interested in using health informatics as their focus of research in the 2014 - 2018 period. The most prevalent topics of research were hospital information systems, electronic medical records, mHealth, telemedicine, and primary health care information system (SIMPUS).

Keywords:
publication; HIS; bibliometric; VOSViewer; Google Scholar; Indonesia

PAPER ID: 152

Strategy for Research Data Management Services in Indonesia

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Abstract:
Research data management (RDM) ensures the availability of data access and long term data preservation. Its practices are common in developed countries. On the other hand, it is relatively premature in the developing world including Indonesia. To address this problem, we conducted a Systematic Literature Review (SLR) to study best practices for research data management globally. The results become a basis to develop a strategy for research data management services in Indonesia. The SLR synthesis identified the RDM Strengths, Weakness, Opportunities, and Threats (SWOT), which were mapped into the SWOT matrix. It was further analysed to develop strategies to implement RDM services in Indonesia, which suggest provision of national policy and IT/IS infrastructure, as well as improvement of research data awareness among reseachers. The strategies were validated by interviewing three experts in research management.

Keywords:
Research data management; SWOT analysis; Systematic literature review

PAPER ID: 155

Open Data Visual Analytics to Support Decisions on Physical Investments

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Abstract:
Before making decisions about the location of physical investments (e.g. factories, warehouses, stores, etc.), investors have to conduct thorough profiling on the prospective locations of the physical facilities. For this profiling purpose, investors consider a number of important aspects such as the location's local resources, market size, economic growth, regional minimum wage (salary) standard, land acquisition cost, human development index, and gross domestic product (GDP). While conducting manual research on those decision variables can cost extensive time and efforts, in this article, we present an open data visual analytics which will help investors in making decisions on the prospective location of physical investments. Investors can use the web-based application to easily gather information and do a quick comparison among prospective investment locations in terms of the selected decision variables.

Keywords:
Open Data; Visual Analytics; Descriptive Analytics; Spatiotemporal Data; Physical Investment

PAPER ID: 157

New Filtering Scheme Based on Term Weighting to Improve Object Based Opinion Mining on Tourism Product Reviews

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Abstract:
Reviews are an essential thing in tourism industry. Opinion mining used for processing a massive amount of review data, so it can be more useful for the industry. The utilization of filtering can improve the feature extraction result from object based on opinion mining, and can improve opinion classification result generally. However, there is no proven method yet to develop filter data automatically. This work applies several term weighting methods such as TF-IDF mTFIDF and BM25 to develop filter data automatically. The result from this research is the best term weighting method for developing filter data, that can improve the feature extraction and opinion mining relatively. TFIDF become the best term weighting method applied for filter data combined with the most frequent objects, The accuracy is 37.98%, the precision is 50.69%, the recall is 44,28%, and F-measure 47.27% for hotel data. Meanwhile, for restaurant data, the accuracy is 37.98%, precision is 50.69%, recall is 44.28%, and F-measure 47.27%.

Keywords:
Opinion mining; feature extraction; filtering; term-weighting

PAPER ID: 188

Social Bot Detection on 2019 Indonesia President Candidate's Supporter's Tweets

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Abstract:
Nowadays, social media is considered as an essential tool for an organization to communicate with another user, customers and potential customers for gaining popularities, getting ideas and opinion from the users, or affecting another user. One of the problems on social media is the uses of the social bots, that used to make a human user believe the opinion generated from the social bots. These bots can use their ability to post in higher rates than human user to shift the topic that discussed in the time being. To resolve the problems on social bots, there are several ways to identify a bot from an account such as checking the date of account creation and interval on creating between posts with using machine learning.in this paper we will discuss what is the best machine learning algorithm to determine a social bot, and which feature that helps the algorithm the most. In our work, the data that will be used from Indonesia President Candidate's Supporter's Tweets from each side, Joko Widodo (@jokowi) as the first candidate and Prabowo Subianto (@prabowo) as the second candidate from a month. The algorithms that will be used on this paper are Support Vector Machine and Random Forest with cross-validation as a training method. We found that the year of account created has the highest contribution to bot detection.

Keywords:
Social Media; Social Bot; Twitter; Machine Learning

PAPER ID: 196

Knowledge Representation for Infectious Disease Risk Prediction System: A Literature Review

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Abstract:
This article contains a literature review to seek knowledge representation for infectious disease risk prediction system. The knowledge representation should be able to encode knowledge related to infectious diseases and usable by experts. 188 articles are collected through several constraints. From these articles, 14 knowledge representations are gathered. Ontology comes out as the most used knowledge representation related to disease, followed by fuzzy and rules. This leads to the next step of the research, on how to encode knowledge using these representations.

Keywords:
Knowledge Representation; Infectious Diseases; Prediction

PAPER ID: 202

Integration of Crowdsourcing into Ontology Relation Extraction

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Abstract:
Ontology learning is a continuous process that is always being researched and developed. A learning method for one domain may not be applicable to another because of the different characteristics of the data involved. Researchers have been developing various methodologies to build the highest quality of ontology efficiently. As identified in the previous works, one problem which could not be solved my machine alone is the extra-logical errors. These errors can only be identified by human judges and are usually related to the domain of the ontology. In this research, we aim to catalogue available methods, specifically for relation extraction, and the online incremental algorithms which will allow integration of crowdsourcing into ontology learning—to handle said challenge. We also briefly discussed an existing ontology editor called OntoCop, which may be used as a reference for further research. Henceforth, we propose a framework based on our review to improve the current relation extraction method.

Keywords:
crowdsourcing; integration; online incremental; ontology learning; relation extraction;

TRACK: CHALLENGE TRACK: CLOUD COMPUTING

PAPER ID: 36

The Role of Information Technology Usage on Startup Financial Management & Taxation

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Abstract:
The level of participation of taxpayers, particularly Startups in Indonesia, is still low. According to Directorate General of Taxes, two things at least cause the low rate: first is the high turnover rate of Startup; second is the low rate of financial literacy, which correlates with tax administration. Consequently, having good financial governance is a must. Furthermore, technology may significantly help startups in systematizing their financial governance activity; while at the same time may help the startup to progress. The purpose of this study was to investigate the role of the use of information technology on Startup financial governance and taxation. Data were collected through a survey conducted in Yogyakarta using 37 respondent who are small business or startups. A researcher–administered questionnaire survey method was used for data collection. The results reveal that many startups have used technology for financial governance — the use of technology as part of digital transformation such as paperless accounting or digitalizing documents previously were done manually, such as making invoices and other matters related to recording. Startup widely uses cloud-based applications. More than half of startups that conduct financial governance utilize internet-based applications or cloud computing. The applications used by startups are limited to recording transactions, but none of the startups have utilized the taxation application, especially for Final Income Tax for Startups. These finding can enable policymakers to develop information system which can use as financial governance and managing taxation simultaneously.

Keywords:
information technology; finacial governance; digital transformation; purposive sampling; cloud computing

PAPER ID: 54

Cloud computing adoption strategic planning using ROCCA and TOGAF 9.2: a study in government agency

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Abstract:
Cloud computing is the latest paradigm that many private and public agencies have shown a significant interest in enabling the technology. However, there has been no standardize framework that support the need while aligning with business strategy. This study focus on designing architecture framework that can help government agencies in adopting cloud solution based on ROCCA and TOGAF 9.2. Both of them are well known used for cloud adoption initiatives and architecture work, especially for organizations who are actively transforming themselves. We mapped ROCCA and TOGAF 9.2 processes to provide baseline requirements of cloud adoption. Then, validate the proposed framework with implementation and evaluation in case study for The Special Task Force of Upstream Oil and Gas Activities (SKK Migas). The result showed the processes provided are a good guidance and appropriate to support strategic government approach in analyzing and planning cloud solutions effectively.

Keywords:
Cloud computing; Strategic planning; Enterprise architecture; ROCCA; TOGAF; Government

PAPER ID: 66

Survey on Threats and Risks in the Cloud Computing Environment

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Abstract:
A very important job in handling Cloud Computing services is handling threats as early as possible, both threats to users or threats to cloud service providers. Threats in the cloud context are all things that will bring loss to company assets that will cause IT risks to be stored in cloud computing. The purpose of this study is to survey threats in the scope of: Data, Applications, Infrastructure, and services in general in the cloud computing environment. The types of threats or attacks in the context of the cloud have been defined through surveys of relevant articles. The research methodology used is conducting a survey on some of the results of previous studies relating to threats or obstacles in cloud computing carried out in 5 steps, namely: writing the formulation, conducting a search, conducting selection and evaluation, analysis, and summarizing the results. From the survey results, there are many types of threats / obstacles in the cloud computing environment, which are divided into 4 (four) groups, namely: Threats to applications, Threats to data, Threats to infrastructure, Threats to cloud services in general. The results of this study are to provide a more detailed understanding of the types of threats for each service in the cloud.

Keywords:
Cloud Computing, Threats, Survey

PAPER ID: 150

Peer to Peer (P2P) Lending Problems and Potential Solutions: A Systematic Literature Review

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Abstract:
There is a growing Financial Technology (Fintech) business model, such as Peer to Peer (P2P) Lending. P2P Lending allows individuals and businesses to borrow and lend money to each other. In its development, China has become the market with the most P2P lending platforms. However, there is a moral hazard that makes this business need to be monitored. This threat begins with verification of the borrower's data that is not appropriate. Whereas in Indonesia Fintech P2P Lending has received special attention, because its regulations and policies have not matured yet. Besides, P2P Lending is considered as a new business to flourish. Consequently, it requires investigation on problems from the implementation of the P2P Lending. This study aims to identify problems in P2P Lending and present alternative technical and non-technical solutions to the problems. By implementing the Kitchenham Systematic Literature Review (SLR) approach from the ACM, AIS, IEEE, SCOPUS, and Science Direct databases, this research finds a rich picture, creates a table of problem identification and alternative solutions.

Keywords:
Fintec;, P2P Lending; Systematic Literature Review.

TRACK: DATA ANALYTICS

PAPER ID: 4

Implementation of Dijkstra Algorithm and Multi-Criteria Decision-Making for Optimal Route Distribution

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Abstract:
Nowadays, product distribution is extremely complex. The decision makers have many parameters to make an optimum decision. They avoid a receiving which is not on time. The aims to grant the best service. Mostly, the consideration parameters for decision-making are a cost and a distance. The parameters are used to obtain an optimal route distribution. Nevertheless, there are other parameters which have also the priority level such as congestion and risk. Absolutely, the parameters have the priority level for a decision maker. Therefore, the making decisions is increasingly difficult by reason of many parameters and its priority level. In this research, the various parameters will be created into a value to facilitate a making decision of a distribution optimal route. Giving the priority level of all parameters has been employed to solve the problem by vector normalized technique that is the best-normalized technique of MCDM. The normalization is not only required to find the optimal route but also the system utilizes the priority level and Dijkstra algorithm which is the mostly method for the problem. Accordingly, the experimental result establishes that our system yielded high accuracy by considering all priority level of predetermined parameters.

Keywords:
Dijkstra; distribution; mcdm; routing; priority

PAPER ID: 6

Week-ahead Rainfall Forecasting Using Multilayer Perceptron Neural Network

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Abstract:
Accurate rainfall forecasting plays a significant role for weather stations as it serves to warn people about incoming natural disasters. This paper presents an implementation of week-ahead rainfall forecast that utilizes Multilayer Perceptron Neural Network (MLPNN) in processing historical rainfall data. Proper data preparation, model implementation and performance evaluation were conducted to two MLPNN models which yields promising results in predicting week-ahead rainfall. The MLPNN architecture was a supervised feed-forward neural network having 11 input neurons consisting of different weather variables along with various hidden neurons and 7 output neurons representing the week-ahead forecast. The MLPNN models which were SCG-Tangent and SCG-Sigmoid, produced a MAE of 0.01297 and 0.1388 and RMSE of 0.01512 and 0.01557, respectively. This viable implementation of MLPNN in rainfall forecasting hopes to provide organizations and individuals with lead-time for the strategic and tactical planning of activities and courses of action related to rainfall.

Keywords:
artificial neural network; multilayer perceptron neural network; rainfall forecasting

PAPER ID: 7

Square Matrix Multiplication Using CUDA on GP-GU

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Abstract:
This paper focuses on matrix multiplication algorithm, particularly square parallel matrix multiplication using Computer Unified Device Architecture (CUDA) programming model with C programming language. Matrix multiplication is under the list of time-consuming problems that require s huge computational resources to improve its speedup. As many studies have shown, it is not easy to achieve high performance speedup in sequential matrix multiplication algorithm using larger input. The emphasis of this study is to propose a parallel algorithm to calculate the product of two square matrices with improved speedup performance compared to the sequential and OpenMP algorithms. In this research, biruni (super machine workstation) in the School of Computer Sciences, USM, Malaysia with General Purpose Graphics Processing Unit (GP-GU) was used to parallelize the matrix product algorithm. A comparison between parallel OpenMp versions and sequential algorithm with the proposed CUDA based algorithm of this research was carried out to evaluate the speedup performance of the proposed parallel CUDA based algorithm. The overall results show that CUDA based parallel matrix multiplication is approximately 400 times faster than sequential matrix multiplication and 4 times faster than OpenMp matrix multiplication algorithms, respectively. Therefore, the proposed parallel algorithm can help the researchers working with matrix multiplication application problems. It can also help mathematicians to easily calculate the product of any two matrices and obtain the result in a shorter time.

Keywords:
CUDA;GPGU; parallelization; C language; Matrix multiplication

PAPER ID: 15

A Hybrid of Sentence-Level Approach and Fragment-Level Approach Of Parallel Text Extraction From Comparable Text

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Abstract:
Parallel texts are essential resources in linguistics, natural language processing, and multilingual information retrieval. Many studies attempt to extract parallel text from existing resources, particularly from comparable texts. The approaches to extract parallel text from comparable text can be divided into sentence-level approach and fragment-level approach. In this paper, an approach that combines sentence-level approach and fragment-level approach is proposed. The study was evaluated using statistical machine translation (SMT) and neural machine translation (NMT). The experiment results show a very significant improvement in the BLEU scores of SMT and NMT. The BLEU scores for SMT for the test in computer science domain and news domain increase from 17.45 and 41.45 to 18.56 and 48.65 respectively. On the other hand, the BLEU scores for NMT in the computer science domain and news domain increase from 14.42 and 19.39 to 21.17 and 41.75 respectively.

Keywords:
sentence-level; fragment-level; parallel text extracton; machine translation

PAPER ID: 26

Applying linguistic G2P knowledge on a statistical grapheme-to-phoneme conversion in Khmer

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Abstract:
A Grapheme-to-Phoneme (G2P) convertor generates the pronunciation given a word. G2P is an important module in a speech synthesis system and an automatic speech recognition system. Two main G2P approaches are: knowledge-based and data-driven. The knowledge-based G2P is built based on linguist knowledge. The data-driven approach such as the statistical approach on the other hand does not need expert knowledge, but it requires data to learn the rules. In this research, we propose an approach that combines linguistic knowledge into a statistical-based G2P convertor for Khmer. We examined a simple way of adding linguistic knowledge into the statistical G2P convertor by simply inserting vowel tags into a Khmer word. Three types of vowel tags were used. The main strength of this approach is it combines the strength of linguistic knowledge and statistical-based approach, to build a robust G2P model. The information allows better modeling and prediction of the phoneme sequence, thus improving the phoneme error rate (PER) and word error rate (WER). The PER and WER of our proposed Khmer G2P improve from 23.2% and 69.6% to 11.1% and 51.4% respectively.

Keywords:
Grapheme-to-phoneme (G2P); Khmer; Rule-Based G2P; Statistical G2P

PAPER ID: 31

Optimization of Saprolite Ore Composites Reduction Process Using Artificial Neural Network (ANN)

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Abstract:
Indonesia is the third largest country that has laterite reserves. The potential for resources and nickel ore reserves is quite large in Indonesia, but nickel content in nature is very small. One type of laterite nickel ore is saprolite ore, which has small Fe and large Ni content (around 1.5 - 2.5%). In accordance with the Law No. 4 of 2009 concerning Mineral and Coal Mining in increasing the added value of nickel ore, it is necessary to process and refine nickel ore. One of the nickel ore processing/refining technologies is through Pyrometallurgy technique. Pyrometallurgy technique involves high temperature and large energy. The reduction process is one of the nickel ore processing process using the Pyrometallurgy technique. In addition to the reduction process, the use of composites which are mixing of saprolite ore, coal, additive and bentonite has an important role. There are several factors that influence the reduction process in saprolite ore composites. The results of this reduction process are analyzed using X Ray-Difference Fluorescence (XRF). The objective of this research is to obtain an optimal factor combination of the reduction process of saprolite ore composites, which is important to develop effective, efficient and systematic methods. This study utilises a neural network approach that will produce optimal factors with the estimate on the composition in the reduction process of saprolite ore composites. The optimal factor combination is a coal ratio of

15% with a type of additive Ca 2 SO 4 or Composite SB 15 Ca 10 P 2 with a temperature of 1200 o C and time duration of 3 hours.

Keywords:
optimization; saprolite ore; reduction process;Tube Furnace; Artificial Neural Network.

PAPER ID: 55

Experimenting Dynamic Clonal Selection (DCS) for Parallel Multiple Interest Topics of User Profile Adaptation in Content Based Filtering

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Abstract:
User profile for information filtering is an inspiring issue through distinctive profiling features plus profiling desires. The profile of the user should be accomplished of constant learning and be unable to remember past interest. Forgetting on the past interest is necessary for maintaining present demonstration of the user's profiling. Profile that does not forget the past interest will eventually become drenched with not relevant features of user's interest. The dynamic nature of the user profiling offers the use of Artificial Immune Systems (AIS). The clonal selection theory in natural immune system has gain the insight to researchers to create an algorithm that evolve the repertoire by means of selection, cloning and mutation. This paper discusses the experimentation of dynamic clonal selection (DCS) algorithm in adapting user profile for content-based filtering. The experiment focused on the scenario of multiple interest of topics in user profiling for content based filtering. The result shows that the algorithm of DCS is applicable with classification over multiple topics of interest in which changing interest of topics are tracked in data over time with a form of maintaining and enhancing range of the repertoire.

Keywords:
User Profile Adaptation; Dynamic Clonal Selection (DCS); Content-Based Filtering, Information Filtering; Artificial Immun Systems (AIS)

PAPER ID: 57

Using hospital claim data to develop referral decision support systems: improving patient flow from the primary care

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Abstract:
The decision to make a referral for a primary physician is influenced by several factors such as the need for specialist consultation and requesting support for diagnosis or disease management using advanced equipment. Unfortunately, primary care physicians are faced with a number of hospitals that have different resources. This study aims to improve the quality of referral services by facilitating primary care physicians in determining the right referral hospital or specialty care. Prototyping method was used to extend rule-reasoning decision support in an electronic referral system where hospital coordinates and real-time availability of bed exist. The research was conducted in DI Yogyakarta province, Indonesia. Appropriate referral hospital was inferred based on the presence of differential diagnosis and or required procedure. The history of medical diagnosis and procedures from hospital claim data was used as

knowledge-based that connect hospital master data. IF ... AND (OR) ... THEN rule-reasoning was used to recommend referral hospitals based on a differential diagnosis and or required medical procedure determined by a primary care physician in the electronic referral system. To narrow down the referral hospitals, the Google Maps API was used to estimate the distance from primary health facilities to several available hospital options. Information on the availability of beds was also visualized for preference in determining the choice of a referral hospital. A decision support system can help primary care physicians to find the right referral hospital or specialty care for a desired patient before making a referral to a higher level of health facility.

Keywords:
decision support systems; hospital claim; patient referral; primary care; diagnosis; procedure

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PAPER ID: 58

Analysis and Prediction of Diabetes Complication Disease using Data Mining Algorithm

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Abstract:
Diabetes is one of the most dangerous chronic disease that could lead to others serious complicating diseases. In Indonesia, the most common diabetes microvascular complications diseases are retinopathy, nephropathy and neuropathy. In order to prevent these complications to manifest, data mining technique to extract knowledge of risk factor for each complication becomes crucial. The goal of this research is to construct a prediction model for three major diabetes complication diseases in Indonesia and find out the significant features correlated with it. In this research, the diabetes risk factor narrowed into seven features, which are Age, Gender, BMI, Family history of diabetes, Blood pressure, duration of diabetes suffers and Blood glucose level. Thus, Naive Bayes Tree and C4.5 decision tree based classification techniques and k-means clustering techniques were used to analyze this dataset. After this analysis, we evaluated the performance of each technique and found the correlated feature and sub feature as a disease risk factor for them. Resulting the most influential risk factor for Retinopathy is a female patient that having a hypertension crisis. As for Nephropathy, the most prominent risk factor is the duration of diabetes more than 4 years. But for Neuropathy, it dominated for female patients, with BMI more than 25. As for family history of diabetes, there is no distinct significant correlation with these complication diseases. The overall accuracy of the proposed model is 68% so it, could be used to as an alternative method to help predict diabetes complication diseases at an early stage.

Keywords:
Diabetes complication disease; data mining; prediction model; k-means; Naive Bayes; C4.5 decision tree.

PAPER ID: 82

Classification of Cancer Drug Compounds for Radiation Protection Optimization Using CART

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Abstract:
This paper applies Classification and Regression Tree (CART) to classify the selected compounds of cancer drug related to radiation protection for cancer treatment. CART is one of machine learning methods that has been widely applied in drug design due to its simple algorithm and efficiency. The classification is applied to the 5%, 10%, 20%, 30%, 35% most important features selected by Mean Decreasing Gini Index. Moreover, the performance of CART on classification with full features is also investigated. The analysis shows that classification of cancer drug compounds using CART reached 79% accuracy when it uses 5% or 10% most important features. In this case, the performance of CART is slightly better than other complex machine learning methods applied in the previous researches.

Keywords:
CART; toxicity; machine learning; drug discovery.

PAPER ID: 84

Dealing with Noise Problem in Machine Learning Data-sets: A Systematic Review

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Abstract:
The occurrences of noisy data in data set can significantly impact prediction of any meaningful information. Many empirical studies have shown that noise in data set dramatically led to decreased classification accuracy and poor prediction results. Therefore, the problem of identifying and handling noise in prediction application has drawn considerable attention over past many years.

In our study, we performed a systematic literature review of noise identification and handling studies published in various conferences and journals between January 1993 to July 2018. We have identified 79 primary studies are of noise identification and noise handling techniques. After investigating these studies, we found that among the noise identification schemes, the accuracy of identification of noisy instances by using ensemble-based techniques are better than other techniques. But regarding efficiency, usually single based techniques method is better; it is more suitable for noisy data sets. Among noise handling techniques, polishing techniques generally improve classification accuracy than filtering and robust techniques, but it introduced some errors in the data sets.

Keywords:
Noise; Class noise; Attribute noise; Types of noise; Noise identification techniques; Noise handling techniques; Classification

PAPER ID: 91

Offline Signature Verification using Deep Learning Convolutional Neural Network (CNN) Architectures GoogLeNet Inception-v1 and Inception-v3

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Abstract:
Biometric systems such as signature verification are highly viable in order to identify individuals in organizations or in finance divisions. Advancement in classification of images using deep learning networks has opened an opportunity for this problem. In this study, the largest available handwritten signature dataset, namely, the GPDS Synthetic Signature Database, was employed for the classification of signatures of 1000 users, each of which having 24 original (or genuine) signatures, and 30 forged (or fake) signatures. Moreover, two popular GoogLeNet architecture versions of CNN, namely, Inception-v1 and Inception-v3, were used. Firstly, algorithms were trained on samples from 20 users, and achieved a validation accuracy of 83% for Inception-v1 and 75% for Inception-v3. In terms of Equal Error Rates (EER), Inception-v1 managed to obtain an EER as low as 17 for 20 users; while EER for Inception-v3 with 20 users obtained 24, which is a good measure compared to prior works in the literature. Although Inception-v3 has performed better in the ImageNet image classification challenge, in the case of 2D images of signatures, Inception-v1 has performed the classification task better than Inception-v3 It is also acknowledged in this study that Inception-v1 spent less time training, as it had a lower number of operations compared to Inception-v3.

Keywords:
Convolutional Neural Networks, CNN, GPDS Synthetic Signature Database, Inception-v1, Inception-v3, GoogLeNet

PAPER ID: 96

Rubber Plant Disease Diagnostic System Using Technique for Order Preference by Similarity to Ideal Solution

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Abstract:
Data from the Plantation Office of East Kalimantan Province, the area of rubber plantations has decreased every year. One of the factors that make productivity of rubber plants low is the presence of pests and diseases. The time limit of an expert is an obstacle in identifying rubber plantations. To overcome this problem, we need an expert system that can identify rubber plant diseases such as an expert. This system was developed to be able to provide solutions in diagnosing rubber plant diseases such as White Root Fungus (Rigidoporus micropus), Upas Mushroom Disease (Corticium salmonicolor), Antraknosa Disease (Colletorichum gloeosporoides), Skin Necrosis (Fusarium sp.), And Cancer Lines (Phytoptora palmivore). This study uses the TOPSIS method. There are four variables used as assessment criteria in this study, namely: the level of damage to the root, the level of damage to the stem, the level of damage to the leaves and the level of damage to the tapping path or the intensity of tapping, with preference values from 0 to 100; none, Very Light Intensity (1), Mild Intensity (3), Medium Intensity (5), Weight Intensity (7) and Very Heavy Intensity (9). Each weight value C1= 0.3; C2= 0.22; C3= 0.28; C4= 0.2. The results of this study compare manual calculations and calculations on the system obtained 99.99% accuracy. This system is expected to help facilitate rubber farmers in identifying diseases and can help experts.

Keywords:
Rubber plant disease, East Kalimantan, TOPSIS, Expert System

PAPER ID: 100

The Efficacy of Facebook in Teaching and Learning: Studied via Content Analysis of Web Log Data

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Abstract:
The use of social network sites (SNS) as learning tools has potential advantages to teaching and learning process. This study investigated the effectiveness of Facebook in teaching and learning a computer science course in a university preparatory year setting in Saudi Arabia. Based on the web log data collected, a qualitative content analysis approach is used to discuss the teaching and learning observations with reference to the four themes: Learning Motivation, Academic Communication, Collaborative Learning and Interactive Learning; abbreviated MC2I. Our findings help to effectively develop a comprehensive understanding of the learners' behaviors and the nature of the learners and lecturer interactions with respect to the above four themes. Our experimental results demonstrate that the students' positive attitude has been enhanced when utilising Facebook and Web 2.0 tools in their learning activities.

Keywords:
Social network; collaborative learning; interactive learning; content analysis

PAPER ID: 105

English Education Game using Non-Player Character Based on Natural Language Processing

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Abstract:
Game education is a game that aims for educational and entertainment. But the educational game is not popular to users. Therefore, it takes innovation and other ways to improve the educational game itself. Based on the current user survey, games that have dynamic elements such as artificial intelligence are sufficiently requested by users. For this reason, this study aims to build educational games that implement artificial intelligent (AI). In a game, AI is often implemented as Non-Player Character (NPC). The method used for NPCs in this game is based on the Natural Language Processing approach. This is so that the NPC can answer questions about English automatically. The results show that the educational game that has this NPC gets an average score above 75% of users. In addition, users also provide positive feedback on the game itself apart from the questionnaire. So it can be concluded that the presence of NPCs in educational games can increase user interest. With this new approach, it is hoped that it can also increase the popularity ranking of the educational game genre.

Keywords:
Educational Game; Non-Player Character; Natural Language Processing; User Assessment

PAPER ID: 106

SMS Spam Message Detection using Term Frequency-Inverse Document Frequency and Random Forest Algorithm

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Abstract:
The daily traffic of Short Message Service (SMS) keeps increasing. As a result, it leads to dramatic increase in mobile attacks such as spammers who plague the service with spam messages sent to the groups of recipients. Mobile spams are a growing problem as the number of spams keep increasing day by day even with the filtering systems. Spams are defined as unsolicited bulk messages in various forms such as unwanted advertisements, credit opportunities or fake lottery winner notifications. Spam classification has become more challenging due to complexities of the messages imposed by spammers. Hence, various methods have been developed in order to filter spams. In this study, methods of term frequency-inverse document frequency (TF-IDF) and Random Forest Algorithm will be applied on SMS spam message data collection. Based on the experiment, Random Forest algorithm outperforms other algorithms with an accuracy of 97.50%.

Keywords:
Short Message Service, Spam, TF-IDF, Random Forest

PAPER ID: 108

Cluster phenomenon to determine anomaly detection of flight route

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Abstract:
The study of Flight has anomaly begun 21 years ago. The focus of this research is to automatically resolve conflicts on flights through the flight route. The deciding factor to analyse flight phenomena is a flight data sourced from Automatic Dependent Surveillance-Broadcast (ADS-B) data sets. The main parameters to be referenced position (latitude, longitude); velocity (speed); and traveling time. This study aims to detect flight anomalies based on the call sign in a waypoint area. The proposed method is BSGVD, ie a) Building Segment based on waypoint range; b) Grouping object based on clustering; c) Determining the computing aspect of the clustering; d) Cluster Validity based on index value; and e) Distance measurement on cluster centroid for funding to find a potentially anomalous area. The results achieved in this study were to generate potential anomaly areas in the ADS-B data in the segment region. It is dominantly influenced by time parameters. Because, based on the analysis of the distance between the four aspects, obtained the longest distance is in the aspect (latitude, longitude, traveling time) with distance = 182.01 and aspects (speed, traveling time) with distance = 182.32. Based on the index value criteria, we get the aspect (speed, travel time) that has the cluster analysis. Then, the final are measurement validity results obtained: Dunn index value = 0.645; Silhouette index value = 0.89; and Davies-Bouldin index value = 14.81.

Keywords:
segment, internal validity cluster, four aspects of anomaly detection;

PAPER ID: 110

Determination of Freight Rates Based on Package Dimension and Distance of Delivery Using Fuzzy Logic System in Angkotin Application

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Abstract:
Angkot.in is a website for goods delivery service by "angkot". "Angkot" is abbreviation from Angkutan Kota . Angkutan Kota (City Transport) is a mode of transportation with a predetermined route set by the government. The price of goods delivery is influenced by a number of factors. This research aims to solve this problem using fuzzy logic system, using it will be built an automated system to calculate the transportation price needed to be paid by the customer. The rate is determined by taking into consideration the dimension of the goods and the number of angkot used. This is done because fuzzy logic system can solve problems related to calculation system that is not detailed about changes in the input. The method used in this fuzzy logic system is Tsukamoto's. This system weights on the factors that influence the rate to calculate the accurate number. With the existence of this rate calculation system, it is hoped that the rate determined will be accurate and could maintain the rate in the normal range of angkot usage, which is economical. Tsukamoto method is one example of a method in a fuzzy logic system. In Fuzzy Design , The Rules are made to map out the conditions obtained from the user. Creating accurate rules is vital because it will affect the result. Knowledge base as an important fact source to create rules will determine the total rate need to be paid by the user. Before creating rules, first the variables that influence need to be determined. From the result of the tests on the features that supports the rate calculation system, was obtained a conclusion that almost all features created are already running as intended and support the performance of this system. The Rate calculation system built by implementing fuzzy logic system using initial location and destination as inputs to obtain distance value and goods size input (length, width, height) and weight to obtain dimension.

Keywords:
Microservice; City Transport, Angkotin , Fuzzy Logic System , Tariff.

PAPER ID: 120

HRV assessment using finger-tip photoplethysmography (PulseRate) as compared to ECG on healthy subjects during different postures and fixed breathing pattern

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Abstract:
Heart Rate Variability (HRV) is a well-known method to assess the human Autonomic Nervous System (ANS) functions. Currently, in the health care information system, HRV properties are very useful to provide medical and other vital signs of the patients. The HRV assessment was derived using the ECG R-R beat interval series, however, using the ECG probes with the electrode's gel is not convenient for certain people such as who has an allergic symptom and or probes localization in front of the body part that needs certain knowledge how to put it on the correct location. Photoplethysmography (PPG) was considered to be an alternative way to assess HRV using the Peak-to-Peak interval series (PPI). Since previous studies already reported the availability to use PPG to assess HRV instead ECG, this study investigated how the HRV

properties using those two methods during different postures with a fixed breathing pattern. Ten subjects participated in this study and we observed the R-R and the Peak-Peak beat interval time series from ECG and PPG respectively during sitting-supine, and standing-supine postures with 3 seconds breathing pattern. The results showed that using PPG to assess HRV still can be used with caution, especially during supine posture that had a deviation (SD) difference between ECG and PPG from the inter-subject analysis ($p < 0.05$). We concluded that the use of PPG still needs to be carefully considered to assess HRV properties, especially for wearable device and health care information system.

Keywords:
ECG; PPG; HRV; autonomic functions; breathing pattern; postures

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PAPER ID: 127

A Study on Facial Expression Recognition in Assessing Teaching Skills: Datasets and Methods

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Abstract:
Facial expressions recognition (FER) is an important modality in the future assessing teaching skill system (ATS). The fundamental difference with FER is in its low resolution image, unique occlusion of veiled teachers, and varied lighting conditions. However, it is still able to solve the problem of variations in head poses. This study, overall, began with the collection of articles from Scopus, created the FER taxonomy class and mapped the use of datasets. After finding out which datasets were suitable for the image of expression in teaching, a deeper discussion about classifier-classifier (using the same CK+ dataset) was capable of solving problems (low resolution image, occlusion, variation in lighting conditions and head poses). Finally, from the discussion conducted, it is known the potential for modification of algorithms, appropriate datasets and research opportunities for future FER in ATS.

Keywords:
FER; ATS; Occlusion; Lighting Condition; Low Resolution Image; Head Pose Variation; Single-RGB camera; CK+; CNN

PAPER ID: 132

Normalization of Abbreviation and Acronym on Microtext in Bahasa Indonesia by Using Dictionary-Based and Longest Common Subsequence (LCS)

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Abstract:
The communication nowadays has reached a need to express the idea in short text. This kind of communication is delivered in various media such as short messages service (SMS), Facebook status, Twitter post, chat messages, comments, and any form of short text. These various kinds of short text are known as microtext. The microtext usually has one sentence or less, written informally, consists of abbreviations, acronyms, emoticons, hashtags, and others. These features of the microtext become a particular challenge to the text classification. These features

cannot be processed directly as in the traditional text processing, because it may lead to inaccuracy. Therefore, it requires microtext normalization to transform these features into well-written texts before applying text processing. This research aims to normalize some of these features, which are abbreviations and acronyms. The normalization applied dictionary-based and longest common subsequence (LCS) approach to the microtext in Bahasa Indonesia. Dictionary-based has shown an excellenct performance instead of LCS. However, it is limited to pre-defined abbreviations and acronyms. Besides, the LCS offers dynamic microtext normalization. Nevertheless, the combination of both approaches increases normalization performance slightly.

Keywords:
microtext normalization; abbreviation; acronym; dictionary-based normalization; longest common subsequence normalization;

PAPER ID: 136

Evolutionary estimation of distribution algorithm for agricultural routing planning in field logistics

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Abstract:
Agricultural Routing Planning (ARP), a problem in field logistics, has the objective to minimize the headland distance used by machines when performing agricultural tasks. This study gathers for its datasets the data for several fields obtained from previous research. The Estimation of Distribution Algorithm (EDA) is an algorithm that employs a probabilistic model to produce candidate solutions. This paper extends the EDA to become the Evolutionary EDA that combines a general EDA, a neighborhood search, and an elitism technique. Evolutionary EDA is tested on the optimization of ARP. The experimental results show that Evolutionary EDA can get the same or outperform the solutions generated by previously applied algorithms on ARP problems.

Keywords:
Evolutionary algorithm; estimation distribution algorithm; agricultural routing planning; field logistics

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PAPER ID: 138

Epileptic Seizure Detection Based on Bandwidth Features of EEG Signals

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Abstract:
Detection of seizure from EEG signals may help neurologist analyze the condition of epileptic patients. Variance in types of epileptic seizures provides challenge in recognizing the pattern of seizure signals from normal ones. In this paper, we discuss the classification of seizure and non-seizure conditions in epilepsy based on bandwidth features of EEG signals. These features were extracted using Empirical Mode Decomposition (EMD). This method decomposes signal into eight Intrinsic Mode Functions (IMFs) and its residue. The IMFs is then analyzed by Hilbert transform to obtain amplitude modulation bandwidth (BAM) and frequency modulation bandwidth (BFM). These features are fed as input to Support Vector Machine (SVM). We propose to combine the first four IMFs to extract bandwidth features and we

implement this method on two data sets, public data set that contains signals from both extracranial and intracranial EEG, and data set OF Rumah Sakit Universitas Airlangga (RSUA) that contains signals from extracranial EEG only. The results showed that in general, the values of accuracy and specificity using combined features of first four IMFs outperformed those using features of single IMF, for all SVM kernel functions. The best accuracy and specificity on public data set were 97.3% and 98.25% respectively using RBF kernel, while the best sensitivity was gained using polynomial kernel based on only IMF1 bandwidth features by 99.0%. The experiments on RSUA data showed that the best accuracy was 96.5% and the best specificity was 99.38% when using Mexican Hat kernel based on combined features of first four IMFs, while the best sensitivity was 94% when using polynomial kernel based on only IMF1 bandwidth features.

Keywords:
EEG; Empirical Mode Decomposition; epilepsy; machine learning

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PAPER ID: 144

Semi-supervised Learning for Sentiment Classification using Small Number of Labeled Data

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Abstract:
Sentiment analysis is an essential task to gain insights over a huge amount of opinions and thoughts. Timeliness of data is important in making major decision. However, the manual data labeling method is slow and expensive, it also cannot cope with this enormous amount of data. We investigated the literature of sentiment analysis and discovered most of the works using manual data labeling. We propose semi-supervised learning as a method that helps to reducing the effort and time needed in data labeling as it uses a combination of small amount of labeled data and a large pool of unlabeled data for model training. In our work, we trained semi-supervised deep neural network with different settings and compared the model performances to a baseline, the supervised deep neural network trained with same number of labeled data. From the results, we can see that the unlabeled data is useful in improving the data performances. But it is not a guarantee, the unlabeled data must be handled with care otherwise degraded the model performances.

Keywords:
Semi-supervised learning; deep learning; sentiment classification

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PAPER ID: 145

Towards Auto-labelling Issue Reports for Pull-Based Software Development using Text Mining Approach

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Abstract:
In recent years continuous integration has become an important practice for pull-based software development. It helps developers make contributions flexibly to an isolated copy of the project's repository, create a pull request that represent such changes, and submit it to the project for evaluation. Despite its test centric approach, the ability of teams to scale up distributed development is limited by the manually demanding task of adding and updating

labels to an issue report. Automating this step enables a project to produce quality results. We categorized issue reports to derive a specific classification of issue reports of pull-based development projects. Given that manual classification of issues are a tedious task and needs an expert domain knowledge, auto-classification is extremely needed. We considered different strategies and developed diverse text analytics techniques for automatic labelling issue reports of a GitHub's project. We applied J48, SMO, Naïve Byes, and LibSVM algorithms so that different classification models are produced. Our results showed that SMO is able to label the issue reports with accuracy of87.15 and F-measure of 0.869, when both the title and the body description of issues are considered in a balanced binaryclassification model.

Keywords:
Continuous Integration, GitHub, Issue Reports, Pull-Based Software Development, Text Classification

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PAPER ID: 149

Individual Control Optimization of Drug Dosage Using Individual Bayesian Pharmacokinetics Model Approach

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Abstract:
Giving the right dose of medicine is very important in the healing process from a disease. Improper dosing may worsen the disease or even can cause death. Drug dosing should not only be done based on the population because each individual has different body characteristics. Therefore, the drug dosage was carried out individually using the individual Bayesian pharmacokinetics modeling approach. This case evokes problems regarding how to obtain the estimated population and individual parameters and then determine the optimal dose. The purpose of this analysis is to get the parameters estimation of both population and individual and determine their optimal dose. The data used in this study is patient data who received gentamicin injection. Variables used is gentamicin levels in serum as response variables and sampling times and initial doses as predictor variables. The results obtained are individual pharmacokinetic models with 100% prediction accuracy and dose ranges that can still be tolerated for each individual.

Keywords:
Bayesian; Dosage; Pharmacokinetics; Gentamicin

PAPER ID: 151

The Identification of Pornographic Sentences in Bahasa Indonesia

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Abstract:
The positive and negative content is mixed in the Internet world. The government of Indonesia notices that negative content is a potential issue that might threaten Internet users. The government launches several services such as DNS Nawala and TRUST+TM Positif database. However, government action is not enough because of the validation of the TRUST+TM Positif database requires many human resources. This research is the beginning of the identification of negative content on a web page. It provides the core system to determine the category of a sentence, which is pornography or non-pornography. The research begins with the corpus

building, continued with the data training model, and the last is data testing. The corpus is downloaded from the pornographic websites from the TRUST+TM Positif database. Moreover, we tested the identification process by using K-Nearest Neighbor (KNN), Passive Aggressive Classifier, and Support Vector Machine (SVM). Both Passive Aggressive Classifier and SVM show an excellent performance. Meanwhile, KNN yields a mediocre result. The SVM algorithm has the highest accuracy of 98.25%.

Keywords:
pornography, pornographic sentence, pornographic corpus, pornography identification;

PAPER ID: 158

Value Management-based Alternatives Ranking Approach for Automated Negotiation

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Abstract:
Ranking alternatives is considered one of the main challenges in automated negotiation by multi-agent systems. Several approached have been identified by literature to mitigate the challenges of alternatives ranking, however, these approaches overlooked the importance of value management principles in modeling. Value management emphasizes on two main criteria to make a value decision which are Cost verses Functions. In this paper, Value Management-based Alternatives Ranking Approach that includes cost and function criteria in the modelling. Two main approaches are proposed by literature to optimize the ranking which are interest-based ranking and weight-based ranking. However, the two approaches produce totally two different results for a particular problem. Alternative interest-based ranking is recommended by value-management; but it creates a huge conflict among members. While, Alternative ranking based-weight is straight-forward with low or no conflict but it is influenced by power, such influencing reduces reliability of a decision. To tackle this problem, we combine the processes of the two approaches alternative interest-based ranking and weight to make value decision and at the same time reduce the conflict among members. A scenario from construction domain is selected to test the proposed approach in ranking the alternatives based on cost and function criteria. The result shows a promising approach that could assist in making value decision, in addition, the result also shows that interest-weight-based ranking reduce the conflict between parties in comparison with interest-based ranking and weight-based ranking.

Keywords:
alternative ranking; decision making; automated negotiation; multi-agent systems

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PAPER ID: 163

Business Intelligence for Designing Restaurant Marketing Strategy: A Case Study

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Abstract:
In this study we design marketing strategy for a restaurant in Surabaya. The restaurant is a café restaurant, which targets mid-low consumer. The main problem for that restaurant is there has never been a specific marketing strategy. Promotions that have been applied so far are not directed and have no impact on sales because they are not based on any strategy. The

application of business intelligence with Power Business Intelligent (Power BI) is expected to be a way for restaurants to predict consumer's consumption patterns. Additionally, we also model the consumption pattern using Market Basket Analysis. Consumer's consumption patterns captured used for designing the right marketing strategy with the 4P (Product, Place, Price, Promotion) concept. It was found that some of the restaurant menu' had a unique relationship and could be used as a promotion to increase sales. Other results, in segment consumers there are children's and office worker. All information is supported using Power BI dashboard that expected to make the restaurant' executives easier to analyze changes in sales based on the occurrence of events and activities.

Keywords:
Business Intelligent; Market Basket Analysis; Power Business Intelligent; 4P concept; Restaurant

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PAPER ID: 164

Designing Facility Layout of an Amusement Arcade using Market Basket Analysis

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Abstract:
In this study, we applied the market basket analysis to design facility layout of an amusement arcade in Surabaya. The problem faces by the amusement arcade is customers only play in certain games that causes many game machines to be idle. This problem will be difficult to resolve because of revenue pattern has not been acknowledged. Therefore, market basket analysis is applied to know the customer behavior in playing the games. As the result we proposed two layouts. First proposal layout will be designed based on game type. This layout will classify game machines based on market basket analysis results in each category where each category is independent of other category. The independent assumption in the first layout is released in the second layout proposal. In the second layout proposal each game category is dependent of other category. As the result, the second proposal is more likely to be applied, since this arrangement does not cost any money and does not require specific material handling.

Keywords:
Facility layout; market basket analysis; games machines; arcade.

PAPER ID: 184

Heart Rate Variability Analysis by Multiscale Entropy for Autonomic Nervous System Identification

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Abstract:
Information technology in the medical field has a role in improving patient treatment quality by tracking patient condition in real time using heart rate variability (HRV). There is a correlation between HRV and autonomic nervous system (ANS), where HRV analysis can be used in an invasive way for monitoring ANS activity. There are many analytical methods related to cardiac autonomic modulation, for instance, time domain, frequency domain, and nonlinear analyses. The previous study has been using PUCK as a new index to evaluate the ANS activity

and MSE for analysis of cardiovascular disease. However, the indication of PUCK showed the another possibility of the cardiac modulation. Therefore, the objective of this research is to know the relation between MSE with ANS activity from several physical activities using treadmill exercise. An accurate control of heartbeat interval during exercise is measured using wearable electrocardiograph to get high precision. MSE analysis may provide to detect several cardiovascular diseases. The information related to the entanglement of the ANS of the heart rate using MSE is lacking, even though the MSE method in the clinical analysis is widely accepted. As a results, MSE in the large scales tend to decrease following the change of posture and the increasing of speed during treadmill exercise. The present study shows that MSE could indicate the activity of ANS in the large scales for the parasympathetic system activity. Further research is needed to know the specific parameters in the MSE method to get the results that can quantify ANS activity correctly.

Keywords:
heart rate variability; autonomic nervous system; entropy

PAPER ID: 186

On the Comparison of Crazy Particle Swarm Optimization and Advanced Binary Ant Colony Optimization for Feature Selection on High-Dimensional Data

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Abstract:
DNA microarray technology not only can measure the expression level of thousands of genes simultaneously in one experiment but can also identify the possibility of diagnosing a disease. Microarray data consists of thousands of variables, but the available data is very little. Conventional classification methods are not effective and efficient to handle this type of data. Support Vector Machine (SVM) is a supervised machine learning method that can be used for classification on the high-dimensional dataset. Therefore, reducing data dimensions will simplify and accelerate the classification process. Feature selection will eliminate irrelevant features so that it can improve the quality and accuracy of classification and can accelerate the learning process. Several approaches have been carried out for the feature selection process, including the feature selection with wrapper-based approach. Wrapper-based algorithm used in this research is Crazy Particle Swarm Optimization (CRAZYPSO) and Advanced Binary Ant Colony Optimization (ABACO). Both of CRAZYPSO and ABACO algorithm are inspired by the movement behavior of animal in finding food sources. This research uses k-fold cross-validation accuracy to compare the CRAZYPSO and ABACO algorithm for feature selection in the case of microarray data classification using Support Vector Machine Classification. The result shows that ABACO algorithm gives better result than CRAZYPSO algorithm with higher accuracy rate and less selected features.

Keywords:
Advanced Binary Ant Colony Optimization; Classification; Crazy Particle Swarm Optimization; Microarray, Support Vector Machine

PAPER ID: 200

Great Deluge Based Hyper-heuristics for Solving Real-world University Examination Timetabling Problem: New Data set and Approach

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Abstract:
The university examination timetabling problem is one of challenging optimization problems. Its NP-hard nature makes this problem attractive to be studied, especially in the field of operation research and artificial intelligence. In the literature, the state-of-the-art approach for solving examination timetabling problem is meta-heuristics. However, this approach has limitation, i.e. the need for intensive problem-specific parameter tuning. To cope with this problem, a relatively new approach namely hyper-heuristics was proposed. Different from meta-heuristics that search upon solution space, hyper-heuristics search upon low-level space. This strategy makes hyper-heuristics more generic that works over cross-domain, compared to meta-heuristics that usually designed for specific problem domain. This paper reports the success of solving real-world university examination timetabling problem in Institut Teknologi Sepuluh Nopember using hyper-heuristics based on great deluge algorithm. The main contributions of this study are two folds: a new dataset and new approach for solving examination timetabling problem. The computational results show that the proposed algorithm could produce much better solutions compared to the solutions generated manually. In addition, the proposed algorithm also outperforms two benchmarking algorithms, namely hill climbing and simulated annealing algorithms.

Keywords:
Hyper-heuristics; Examination Timetabling Problem; Great Deluge Algorithm; Simulated Annealing

PAPER ID: 201

Automated Course Timetabling Optimization Using Tabu-Variable Neighborhood Search Based Hyper-Heuristic Algorithm

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Abstract:
Course timetabling problems are challenging, laborious and repetitive work in the universities. However, in many universities this repetitive works was still carried out manually. It is because there are so many constraints that must be considered either from the students and lecturers' requirement or the infrastructure such as room availability. Therefore, to automate the process of timetabling is hard problem. Scientifically, in the literature, course timetabling optimization is one of non-deterministic polynomial problems, usually abbreviated as NP-hard problem. For NP-hard problem, there is not any exact algorithm known could solve the problem within polynomial-time. The state-of-the-art methods for solving the problem are approximation algorithms that are mainly meta-heuristics. This paper presents a new approach, namely, hyper-heuristics as opposed to meta-heuristics, to cope with the need of intensive problem specific parameter tuning in meta-heuristics approach. The algorithms employed within hyper-heuristic approach presented in this paper are tabu search hybridize with variable neighborhood search. Tested over two real-world course timetabling problem datasets, the computational results from the experiments showed that the proposed algorithm could automate the process of timetabling. Furthermore, compared to the timetable produced

manually, in term of soft constraint violation penalties, the proposed algorithm could improve by 1855 and 1110 respectively. In addition to new approach, the main contribution of this paper is two real-world course timetabling problems available for public to encourage further research as future works.

Keywords:
Course Timetabling; Variable Neighborhood Search Algorithm; Tabu Search Algorithm; Hyper-Heuristic Algorithm

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PAPER ID: 204

Assessing Centroid-Based Classification Models for Intrusion Detection System Using Composite Indicators

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Abstract:
Detecting intrusion in network traffic is one of the computer security problems that has received a lot of attention for years. Various intrusion detection models were developed by machine learning and data mining. Commonly, confusion matrix-based performance measures are used to compare the performance of several models. But sometimes we need to combine those measure or combine it with performance measures outside the confusion matrix. In this study, we propose two composite indicator indexes (CPI) which built based on composite indicators and weighted linear aggregation methods to evaluate the model's performance. The first CPI is a combination of accuracy, robustness, completeness, and speed. We use it to rank the performance of the three centroid-based classifications models (CANN, L-SCANN, CASMN) on NSL-KDD dataset. While the second is a combination of overall class accuracy and accuracy of each class, we use to compare the models with the other IDS models.

Keywords:
Intrusion detection system; Centroid-based classification; Composite indicators

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PAPER ID: 207

Forecasting the price of Indonesia's rice using hybrid artificial neural network and autoregressive integrated moving average (Hybrid NNs-ARIMAX) with exogenous variables

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Abstract:
As a primary food, rice has a special attention by the Indonesian Government. The variability and trend of rice price become its main concern. Based on the data obtained from Indonesian national statistics agency (BPS), it shows that there is an increasing trend toward the retail price of rice in traditional markets. The price of rice has uniqueness in the process of determining it. Many variables are influenced the price and it is highly regulated. In order to help the decision maker to determine the price, they some how need a clear insight of future trend of it price changing regarding to several influencing variable. Thus, an appropriate forecasting should be conducted. In 2017 there is a 15 tons rice surplus where the production is higher than its consumption. This is an example of poor stock management that can lead to higher rice prices. In addition, the price of rice can be affected by several other factors such as rice harvest area, rice production, rice consumption, and season. These factors will be used as variables in

forecasting. The method used in this research is Hybrid NNs-ARIMAX which is a combination of Artificial Neural Network and ARIMAX. The result shows forecast of rice price per month during the year 2018-2019 in several Indonesian provinces. The result of model evaluation shows that the hybrid method gives better result than an ANN single method. This is because input data has linear and non-linear pattern which is more suitable with Hybrid method than single method. There is an increasing in forecasting performance of an ANN single method as compared to the Hybrid NNs-ARIMA and Hybrid NNs-ARIMAX methods with an average decreasing MAPE of 1.21% of ANN to Hybrid NNs-ARIMA, and 0.23% of ANN to Hybrid NNs-ARIMAX. The results of this research are expected to help the Ministry of Agriculture and the National Logistics Agency in making decisions and policies of national rice price

Keywords:
forecasting; price of rice; hybrid NNs-ARIMAX; artifical neural network; ARIMAX; exogenous variable

TRACK: ENTERPRISE SYSTEMS

PAPER ID: 12

Customer Portfolio Analysis for Customer Lifetime Value categorization with RFM model

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Abstract:
The same treatment of all customers will cause customers who are not so valuable will be value destroyer rather than a value creator. Giving discounts and promos to all customers has not provided benefits to a company in retaining customers. These two things are currently being experienced by LWC Company so that changes are needed in evaluating the strategy taken to keep the relationship with customers, especially potential customers, by forming customer portfolios. Customers portfolios can be analyzed from customer transactions. With customer transactions data, the company can find out which potential customers and the customers who do give less value for the company. The way to analyze customer transaction data is by clustering customers with Fuzzy C-means algorithm by using RFM model. Forming the number of clusters is validated by PCI model and ranking is done by multiplying AHP weight to find the life value of the customer so that it can be known which customer group gives high value to the company. The result of this research is that the customers of LWC Company categorized as superstar customer, typical customer and dormant customer. Based on the portfolio, LWC Company can carry out strategy in managing their customer according to the type of the portfolio.

Keywords:
FCM Algorithm, PCI, AHP, CLV, Categorization

PAPER ID: 22

Architecture Model of Information Technology Infrastructure based on Service Quality at Government Institution

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Abstract:
Public service activities in several government institutions are currently using information technology services so that information technology services must also have criteria in accordance with the government's vision and mission. One fundamental problem is providing quality and reliable information services that provide infrastructure support that has the capability and capacity. The provision of this infrastructure can be approached with accurate and complete planning and design. The purpose of this research is to produce infrastructure architecture planning and design that forms infrastructure services. As a service, infrastructure architecture has the duty to provide quality and reliable services for end users. Applications and data which are business processes of government institutions require infrastructure parameters that are presented from the service side perception. One way to present infrastructure services for information services in business processes is by planning right before the implementation and deployment phase. At present, the discussion of infrastructure architecture that is widely used is based on the core functions of infrastructure

architecture which are limited to the main development and use. These core functions usually focus on availability and modularity (scalability). Availability is usually discussed in the criticality of services that require infrastructure backup. Whereas modularity is related to an increase in the number of users or services. In this study a collaborative role was added, namely an open contribution to the service delivery cycle from the infrastructure section. This open collaborative method is a strategy to "develop synergies" between infrastructure service providers and service users (end-users).

Keywords:
Service Quality; Architecture Model; ICT Infrastructure; Gap Analysis;

PAPER ID: 45

The Influence of Discount Framing towards Brand Reputation and Brand Image on Purchase Intention and Actual Behaviour in e-commerce

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Abstract:
In e-commerce context, there are many implementations of discount framing that have effect toward brand reputation as well as brand image. The latter two constructs have been noted to affect consumer purchase intention and actual behaviour. However, there are limited studies that examine the relationship between discount framing consumer purchase intention and actual behaviour. Therefore, the objective of this study is to examine the impact of discount framing towards consumer's purchase intention and actual behaviour that may mediated by brand reputation as well as brand image. The researchers conducted a quantitative study with 307 valid sample data from the respondents in Greater Jakarta Area who have ever made purchases in Lazada, a leading e-commerce in Indonesia. The research results show that the path for discount framing in influencing purchase intention and actual behaviour depends on both brand reputation and brand image.

Keywords:
discount framing, brand reputation, brand image, purchase intention, actual behaviour

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PAPER ID: 50

The Role of Multichannel Integration, Trust and Offline-to-Online Customer Loyalty Towards Repurchase Intention: an Empirical Study in Online-to-Offline (O2O) e-commerce

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Abstract:
In the current information system literature, the role of trust and customer loyalty towards repurchase intention has been widely discussed. However, there are still limited discussions regarding this topic in the emerging multichannel Online-to-Offilne (O2O) e-commerce context. Thus, the purpose of this research is to examine the influence of multichannel integration and trust towards offline loyalty and online loyalty to repurchase intention. This research conducts quantitative method with Structural Equation Modeling (SEM) by using 311 respondent data from O2O e-commerce users in Greater Jakarta Area. The research findings show that both multichannel integration and trust have significant effect toward both customer

online loyalty and customer offline loyalty that drive customer repurchase intention. The implications of these findings are discussed.

Keywords:
Multichannel Integration; Trust; Offline Loyalty; Online Loyalty; Repurchase Intention.

PAPER ID: 56

Development of System Dynamics Model to Increase Salt Fulfillment Ratio

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Abstract:
Salt demands in Indonesia have continued to increase over the past decade, while salt production fluctuates and still depends on weather conditions. This makes salt imports tend to increase and salt self-sufficiency is difficult to achieve. Indonesia needs serious efforts to achieve self-sufficiency, both consumption salt and industrial salt. In this study we identify problems that exist in the salt industry and determine the factors that have a significant effect on the system. The national salt production system is represented in a dynamic model using the System Dynamic. We use System Dynamic based on the consideration that this framework offers the ability to combine expert knowledge in the model and the ability to model non-linear behavior that has a significant contribution to the national salt production. System dynamic modeling is also able to associate between variables in a closed causal loop so that actions taken by changing one variable will have an impact on the initial conditions. From the base model simulation results, we developed several scenarios to increase salt fulfillment ratio. To support the sustainability of the salt business, we make a price scenario that supports salt business remains profitable for farmers. To increase salt production, we provide a scenario of increasing productivity through optimal technology implementation. As a result of the two scenarios, total salt production reaches 5 million tons per year. The fulfillment ratio of consumption salt and industrial salt can be achieved.

Keywords:
salt production; self-sufficiency; fulfillment ratio; implementation of technology; price scenario

PAPER ID: 67

A Comparative Study of Factors Affecting User Acceptance of GO-PAY And OVO As a Feature of Fintech Application

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Abstract:
The new era of technology has changed how people run their businesses, including transportation network companies. The business has started to utilize advanced internet-based technology. Gojek and Grab have both joined the competition by introducing GO-PAY and OVO as their crucial features in their applications. Both Gojek and Grab have succeeded in countering conventional means of transport and taken over the dominations of services to clients. The term of fintech has been optimized in day-to-day operations, however the figures of capitalization are different significantly indicating the number of loyal customers. Technology Acceptance Model (TAM) was used to spot the main causes, a problem illustrated by intention to use and considering the usefulness and also ease of use the applications. Eighty-two of Diploma degree students were asked to complete a set of TAM questionnaires, and

answer which applications they use the most. The hypothesis testing indicates that the high degree of usefulness of similarities, ease of use perceptions, attitude to actual usage between GO-PAY and OVO.

Abstract:
Fintech; GO-PAY; OVO; Technology; TAM

PAPER ID: 89

Analysis on Purchase Intention of Indonesian Backpacker in Accommodation Booking through Online Travel Agent

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Abstract:
The growing number of internet user in Indonesia encourage e-commerce in Indonesia, especially for online travel agent. Every online travel agent must now provide a different value proposition by knowing what factors influence the customer's purchase intention. To overcome these problems, an analysis will be carried out regarding the intention to purchase of customer in travel accommodation through an online travel agent. A model from Agag and El-Masry was applied, in which the model discusses the effect of intention to purchase on several variables. Result of study show that intention to purchase variable is significantly influenced by attitude, where attitude itself is significantly influenced by compatibility and trust. For word of mouth positive variables are significantly influenced by attitude and intention to purchase, where the intention to purchase is significantly influenced by compatibility and attitude.

Keywords:
e-Commerce; SEM; Online Travel Agency; Purchase Intention

PAPER ID: 95

Dynamic Metamodel Approach for Government Enterprise Architecture Model Management

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Abstract:
Enterprise Architecture (EA) is widely adopted by many organisations to align their business and IT together to ensure the resources optimization is achieved. This recent EA development not only brings positive impacts to the business organisation but the government organisation as well. Nevertheless, during the implementation of EA, one of the challenges is to create a standardised and dynamic metamodel that able to integrate the government agencies business models. To date, it is still yet to find any dynamic metamodel that designed for this purpose. Therefore, this paper aims to propose an EA dynamic metamodel design based on complex cognitive activities (CCA) concept. This study starts with an investigation of EA metamodel concept and current practice through literature review and preliminary interviews, followed by the design on EA dynamic metamodel for government agencies with a selection of Malaysian education EA Reference as a pilot case study. As a result, a Dynamic EA Metamodel by using CCA concept is proposed by utilizing the four layers of dynamic design using cognitive action (physical, perceptual, functional, conceptual) and Archimate generic metamodel schema. This is a new contribution to EA Body of Knowledge (EABoK) and EA practice as it helps for better management of EA models especially for a large and complex organisation of the government

sector. This model will allow the EA team in multiple organisations to design and develop their EA models according to their own business process but yet still following the EA metamodel set by the top EA office.

Keywords:
enterprise architecture, complex cognitive activities, dynamic; metamodel, government

PAPER ID: 140

Business Process Analysis and Academic Information System Audit of Helpdesk Application using Genetic Algorithms a Process Mining Approach

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Abstract:
The purpose of making an Academic Information System is to support the process of academic activities effectively and efficiently. Telkom University is an institution that already has an Academic Information System called Integrated Academic Information System or I-Gracias. I-Gracias uses a single sign-on system which means one user for all applications. The Helpdesk application is one application that supports this institution. The Helpdesk application has 4 categories of complaints, namely Serial Number License, Website / Subdomain, Academic I-Gracias, and Non-Academic I-Gracias. With the various complaints categories in the Helpdesk application, Helpdesk application actually promises time with the same service standards, its 3 days for a maximum by filling in the same format in each category. The time is considered not enough to describe the process of handling the services of the Helpdesk application. Therefore, to find out the student activities in the Helpdesk application, a modeling process is carried out to find activities that have the longest time. To find out the time of each activity by the user, an audit process is to find out activities that have the longest time by the process mining approach to obtain modeling. Identification of the modeling process using process mining approach by utilizing the event log on i-Gracias. This modeling process uses a genetic algorithm because it is considered capable of making business process modeling accurately. After obtaining a process model, an audit is carried out by analyzing the bottleneck for each activity. The results show that the resulting process model is good with fitness values, precision and structure are 0.9994142, 0.7653061 and 1 respectively. Modeling in performance analysis shows the bottleneck in two activities, Input Ticket and See Ticket Progress. Bottlenecks show that business processes in the Helpdesk application has problems in resolving complaints through academic information systems.

Keywords:
Helpdesk; Process Mining; Genetic Miner Algorithm; Audit; Bottleneck

PAPER ID: 147

Dynamics Analysis of Container Needs and Availability inSurabaya Container Terminal with Agent-Based Modeling and Simulation

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Abstract:
Maritime transportation is a mode of transportation that is widely used to transport freight. East Java is a province in Indonesia which has a strategic location in terms of maritime transportation. PT. Terminal Petikemas Surabaya (PT TPS) is one of the terminals in East Java

which has the largest international container flow, however, container flows are not balanced by the investment in increasing the number of container fields in the port. In addition, too long the dwelling time makes the terminal need to provide special land for a very long time limit. Determination of the deadline for stacking containers to be exported needs to be considered so that land availability and capacity can be optimized. Therefore, this study will analyze the deadline for the accumulation of export containers at PT. Terminal Petikemas Surabaya. In this study, agent-based simulations will be conducted. Using dynamic of the containers movement we described the better setting time for occupation of the container yard. The changing of lifespan and middle value can decrease the Yard Occupation Ratio by 6%. This result can be addressed as the policy of the dwelling time and long-stay period of the container in the terminal.

Keywords:
maritime transportation; freight; dwelling time; container; agent-based modeling and simulation.

PAPER ID: 165

Analysis of Quality of Paddy Harvest Yield to Support Food Security: A System Thinking Approach (Case Study: East Java)

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Abstract:
Rice (Oryza Sativa) is a staple food for the people in Indonesia. East Java Province is a province with potential agricultural in Indonesia. East Java has advantages in agriculture and has a role in the national food sector. Population in Indonesia is projected to reach 271.1 million by 2020. East Java's population growth rate from 2010 to 2017 was 0.64% with consumption of 213,783 tons of rice in 2018. Raw materials such as paddy, are perishable materials that require fast and precise handling. When handling is not right it will cause a loss of the results of high quality and quantity, this can be harmful to farmers because it will affect their income. This study uses a system dynamic to build the conceptual model (Causal Loop Diagram) to improving the quality of paddy yields to support food security. The results of study are a model that has some useful information regarding factors that affect the quality paddy. This can be used as decision support by the government for decision making about policies that will be applied to improve the quality of paddy harvest yields for support food security. Further research can be carried out by simulating several scenarios to predict the state of the rice farming system in the future.

Keywords:
Decision support; Decision making; Food security; Paddy; Quality of paddy; Rice; System dynamics;

PAPER ID: 171

Analysis of flood identification and mitigation for disaster preparedness: a system thinking approach

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Abstract:
Floods are a major threat to agricultural production. Reducing the impact on agricultural production is a challenging task in mitigating flood. By understanding the causes of the

flooding, we can use the information to make a comprehensive flood mitigation model. The approach of system dynamics can be used to look at the factors that influence the handling and prevention of flooding in the agricultural sector. This study aims to illustrate flood mitigation in agriculture using a system dynamics approach. We are using the information collected from interviews with key officials from the government office. We also use the information from existing research reports or another publication related to floods and disaster management. Both information source is used as a base in developing flood mitigation model. District governments can use flood mitigation models to reduce the risk of flooding on agriculture.

Keywords:
flood mitigation; risk analysis; system dynamics; causal loop diagram;

PAPER ID: 173

Modeling Customer Satisfaction with the Service Quality of E-Money in Increasing Profit of PT. Telekomunikasi Indonesia

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Abstract:
E-money is an embodiment of a modern banking system that uses a means of payment using cards or applications that are already connected to a bank account. Every year e-money users increase significantly, but the increase is not accompanied by an increase in transactions made using e-money. Last year, it was noted that e-money users were only 35% active. Some clinical studies have established an assessment of service quality, there are several dimensions that are assessed according to the topic of the study. The dimensions of service quality used in this study are dimensions of ease of use, reliability, responsiveness, privacy, and security. It is important to develop a systems analysis approach that can be used for the development and evaluation of service quality, both at the tactical and strategic level. The purpose of this study is to present a taxonomic analysis of the dynamic system approach for modeling and simulating customer satisfaction on the quality of e-money services. By using a dynamic system, a model can be drawn that describes the relationship of dimensions on service quality, so that it can be used as a reference to create new policies in order to increase customer satisfaction. The results of this modeling are subjective frameworks to assist companies in making policies that are suitable for increasing customer satisfaction and loyalty.

Keywords:
Customer Satisfaction, E-Money, Service Quality, System Dynamics

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PAPER ID: 176

Analysis of Greenhouse Gas Emissions Mitigation: A System Thinking Approach (Case Study: East Java)

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Abstract:
The area of Indonesian rice fields in 2016 reached 8.19 million hectares (ha), an increase of 1.16% from the previous year, this number comprising 4.78 million ha of irrigated rice fields and 3.4 million ha of non-irrigated rice fields. In 2017, especially in East Java, the harvest area is 2,278,460 hectares, and rice production is 13,633,701 tons. On the other hand, increasing agricultural activities can also contribute to emissions that can trigger climate change through

the greenhouse gases (GHG) produced. GHG is a gas contained in the atmosphere, which absorbs and re-emits infrared radiation. Side effects of greenhouse gas accumulation can cause extreme climate change that affects land productivity. This study aims to analyze rice field productivity and build a greenhouse gas emission model that produce from the rice field productivity system. Emissions to be discussed in this study are CO_2, CH_4, and N_2O. The approach is carried out with a system dynamics because it has the characteristics of a complex, non-linear system dynamics, changes in system behavior over time and feedback that describes new information about the state of the rice productivity system, which will then produce further decisions. The results of this study are causal loop diagram of CH_4, CO_2 and N_2O emissions resulting from the productivity of rice fields modeled using system dynamics. This model contains GHG information generated from the agricultural sector and its impact. This model can be used as a consideration for the government and stakeholders as a reference for making policies for GHG emission mitigation technology as part of smart agriculture.

Keywords:
Greenhouse Gas Mitigation; System Dynamics; Decision Support

PAPER ID: 179

Influence of Inventory Changes to Bullwhip Effect on Private Industrial Network

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Abstract:
This article presents a mathematical model to compute the influence of inventory changes to bullwhip effect on the case of the private industrial network that consists of four stages. Sequentially, in each stage, there is 6 Supplier companies, Manufacturer company, 3 Distributors companies, and 6 Retailer. Each company has an inventory of product or component with the value of maximal, minimal, safety stock, and initial of it. By pull inventory system for replenishment and production of product and component, as well using the parameter on data set, the work in this article computes the inventory on Retailers, Distributors, Manufacturer, and Suppliers (upstream companies to downstream companies). Next, the work compares the bullwhip effect of inventory on each company for every stage, which based on fixed parameters on data set and sensitivity analysis on the value of maximal, minimal, safety stock, and initial for inventory. Results showed that by performing the sensitivity analysis could find the values of inventories so that the bullwhip effect occurs not cause the inventory shortage on each company. In addition, these values of inventories can change the average of the minimum inventory to be positive, the maximum inventory decreased, and availability and the total number of shortages on the PIN become not occur.

Keywords:
Bullwhip effect; Private industrial network; Inventory; Replenishment

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PAPER ID: 183

Testing Methods in System Dynamics: A Model Of Reliability, Average Reliability, and Demand Of Service

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Abstract:
As a model used to simulate policies by creating scenarios, system dynamics must have similarities with real systems. Therefore, the system dynamics model should test so declare as the right model and representing the behaviour of a system. Thus, in this article, we propose three test methods to ensure the system dynamics model have appropriate structure, correct value according to the specified equation, and can use to establish the parameter of the model. We study articles to propose the testing methods (the structural testing, algorithms testing, and behavioural testing) and present the case study about reliability, average reliability, and its affected demands. In this article, we prove that the testing methods can be used to show the system dynamics model appropriates and represents the real system, all computation generated by the simulation output is proper to the specified equation and can use to choose the best parameter.

Keywords:
System dynamics; Testing method; structural testing; algorithms testing; behavioral testing.

PAPER ID: 190

The Impact of Social Media Usage on the Sales Process in Small and Medium Enterprises (SMEs): A Systematic Literature Review

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Abstract:
The dramatic growth of the internet has led to the emergence of two important phenomena: social media and online search engines. In business context, social media is a new communication channel between the companies including SMEs and customers, which allows them to interact directly. This study aims to conduct an analysis of the impact of social media usage on the sales process in SMEs. The method used in this study is Systematic Literature Review (SLR). The method is carried out by reviewing several journals that discuss about related research topics. The results of this study identified similar impacts of social media use in SMEs across different countries. The use of social media depends on the type of industry and the type of social media used in accordance with SMEs business objectives. The impact obtained is mostly related to customers, stakeholders, business partners and competitors. However, the impact produced in this study is still general. Therefore, further research needs to be done to gain more insights on the drivers of social media use in SMEs and their impact on the performance of SMEs.

Keywords:
Social Media; Small and Medium Enterprises; Sales; Marketing.

PAPER ID: 194

Behavioural Similarity Measurement of Business Process Model to Compare Process Discovery Algorithms Performance in Dealing with Noisy Event Log

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Abstract:
Process discovery algorithms have different strength and weakness to find the most suitable model. The five process discovery algorithms will be compared in this research such as Alpha, Heuristic Miner, Duplicate Genetic, Genetic, and Inductive Miner, to get the recommendation

of chosen algorithm in modeling business process from Shoes Manufacturing Company. This research provides two case studies of business process, ie the business process of planning-to-stock and production planning-to-export. This research focuses on how the performance and ability of process mining algorithm in facing event logs which consist of 1% noise. This research will rank those five algorithms based on behavioural similarity values between reference and mined model. Result from the behavioural similarity measurement shows that the Genetic and Inductive Miner Algorithm is recommended for planning-to-stock business process, whereas Inductive Miner algorithms is recommended for production planning-to-export business process in Shoes Manufacturing Company

Keywords:
Alpha; Heuristic Miner; Duplicate Genetic; Genetic; Inductive Miner; Process Mining; Behavioural Similarity

TRACK: IT INFRASTRUCTURE & SECURITY

PAPER ID: 11

Theoretical Framework of Smart Intellectual Property Office in Developing Countries

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Abstract:
Rapid ICT development, globalization challenges, intellectual property (IP) as indicators of economic development, and the challenge are the patentability of computer-implemented inventions and artificial intelligence implications for the IP Office (IPO) to transform from the digital paradigm to the smart paradigm. Nevertheless, because of the lack of literature on the smart IPO framework, we refer to smart government and smart city framework. The aim of this paper is to propose a framework for smart IPO in developing countries in the context of smart city framework. The study found that smart IPO composed of several components such as 1) Smart IPO Model; 2) Smart IPO Enterprise Architecture; 3) Smart IPO Collaboration Model; 4) Smart IPO Development Model; 5) Smart IPO Measurement Model; 6) Smart IPO Standard; and 7) Smart IPO Services. It also found that there are four models of IP office as follows: Model 1 (basic web-based, public services); Model 2 (advanced internal administration); Model 3 (full process automation); and Model 4 (knowledge-based IP services). Moreover, we found also three stages of IP development model: Stage 1 (automation of internal processes); Stage 2 (web-based e-services); Stage 3 (e-dossier, e-filing, e-payment).

Keywords:
Smart IP Office Framework; IP Office; IT Governance

PAPER ID: 13

Design and Development of MLERWS: A User-Centered Mobile Application for English Reading and Writing Skills

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Abstract:
This study aimed to design and develop a mobile learning application for the subject English Reading and Writing Skills of senior high school. Five-Design Sheet (FDS) methodology and a modified evolutionary prototyping was utilized in designing and developing that resulted to a user-centered mobile learning application. The said application underwent three iterations with user evaluation to ensure its functionalities and usability. The application contains translations from English to Tausug (the local dialect in Bongao) to guide students while studying skimming and scanning lessons along with other features. Furthermore, MLERWS (Mobile Learning application for English Reading and Writing Skills) utilized offline database to make the mobile app usable for students with or without internet connectivity.

Keywords:
Mobile Computing; Mobile Learning; Five – Design Sheet; User – Center; Evolutionary Prototyping

PAPER ID: 32

Design and Development of Learn Your Way Out: A Gamified Content for Basic Java Computer Programming

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Abstract:
Learning computer programming requires problem-solving skills, coding skills and algorithmic skills which are complex and difficult to master. Computer programming is difficult because of its essence in creating a solution that requires translating it in a language understood only by the computer. This poses barriers like anxiety, panic, stress, grief and frustration to novice programmers. The purpose of this study was to design and develop a gamified content for selected topics of basic Java computer programming for freshman college students of Mindanao State University Tawi-Tawi College of Technology and Oceanography. The game follows the Player-Centered, Iterative, Interdisciplinary and Integrated framework. The idea of using Gamification was adopted in the development of the gamified content. The game was evaluated using Octalysis by seven subject experts from the Institute of Information and Communications Technology. The overall rating of the game resulted to have proper motivation for Gamification.

Keywords:
Programming; Gamification; Octalysis

PAPER ID: 53

Group Activity Recognition Method based on Camera in The Building

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Abstract:
Group activities are an activity carried out together at the same time and place. In the office/university environment, they play a role in energy consumption. For this reason, the smart building needs group activity recognition (GAR) systems for electrical device control. Several studies on the GAR have been carried out in the outdoor environment, such as exercising, walking, or running. However, indoor group activities that share of energy consumption are found still rare, such as in meetings, seminars, and classroom activities. This study proposes a GAR method in the buildings using multi-image based on Camera through the sitting position of

people and formed from the face identified from the image and visualized into the mapping. The simulation was carried out based on references from the scenario of the meeting, seminar, and class activity in the S307-room, Department of Electrical Engineering and Information Technology, Universitas Gadjah Mada. The Neural Network algorithm was used to the GAR. The performance was evaluated in various measures such as precision, accuracy, and recall. The result of the GAR accuracy of the learning phase was 93.33%. The results of the GAR accuracy of testing phase were 63% and the error of GAR were 37%, respectively.

Keywords:
Group activity recognition; Smart building; Neural network; Face recognition.

PAPER ID: 60

A Review of Heuristics Evaluation Component for Mobile Educational Games

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Abstract:
Mobile educational games research has gained a lot of attention among researchers. This is due to mobile games popularity and engagement among younger generation. However, developing an effective mobile educational game is always a challenge. Heuristics evaluation is one of the most popular and cost-effective usability inspection method. Numerous sets of heuristics (usability principles) have been proposed for various game products ranging from general to specific. However, the existing heuristics lack comprehensive components to evaluate the usability of mobile educational game. This study therefore aims to reviews previous studies that proposed heuristics for evaluation of games, educational games and mobile application in a bid to identify the relevant heuristics components for developing heuristics of mobile educational games.

Keywords:
Heuristics Evaluation; Usability Evaluation; Mobile Educational Games; Game Evaluation; Game Design

PAPER ID: 78

Spring Framework Reliability Investigation Against Database Bridging Layer Using Java Platform

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Abstract:
There are several frameworks that can be used to make create applications easier in the Java programming environment, whether in web applications or desktop applications. If we focus more on Java web framework, there is Spring Framework that has been popular since 2004, especially with the ability of Spring Framework which can be combined with various other frameworks such as Hibernate Framework, Ibatis or namely MyBatis Framework today and several other frameworks. This research was conducted in comparing ability of data loading from a web service application built using the Java programming language with the Spring Framework, especially if combined with Database Bridging Layer such as Java Database Connection (JDBC), Hibernate Framework, MyBatis Framework, plus additional framework capabilities contained at Hibernate and MyBatis that have as cache data layer. Performance test scenario create a web service in Spring Framework then accessed by custom test script built with third party code and call it repeatedly with a certain time period.

Keywords:
Spring Framework; Hibernate; Ibatis; MyBatis; JDBC; Cache Engine; Web Service. JSON.

PAPER ID: 161

Challenges of cloud computing adoption model for higher education level in Zanzibar (the case study of SUZA and ZU)

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Abstract:
The progressive education department in creating nations, including Zanzibar, is experiencing the issue of conveying dimension of the data and interchanges innovation. Technology like cloud computing encourages educating, learning, what's more, on motion exercising, which is essential for instructive necessities. Based on these difficulties the study attempts to find those challenges in implementing the cloud computing adoption model to Zanzibar's universities such as SUZA and ZU to overcome the existing problems. In the effort of identifying those challenges the study proposes a special model named as ITOETAM to break down different challenges and precise complications faced by SUZA and ZU in implementing clouding system. The model validated via an online survey of 84 respondents from students, lecturers and staff of Zanzibar's universities (SUZA and ZU), partial least squares demonstrating (PLS-SEM) led to affirm the cloud computing adoption model (ITOETAM) measurements. The model consists of five constructs named CCAM, IEF, TF, OF, and EF, where all were significant to CCAM with T-value more than 1.98 and p-value less than 0.05 for example, (IEF (β= 0.709), TF (β= 0.596), and EF (β= -0.317)) have proven the proper challenges of cloud computing adoption model at university level in Zanzibar's universities except OF (β= 0.027) which rejecting the model. The rejected factors was due to the size is big enough and not considered as matter, also the age of the institution is too long since they start providing services. Based on validation of measurement and structural model test, the study found that data security and risk among technological factors, peer pressure and government regulation categorized as environmental factors, privacy and management as internal-external factors proved as a statistical significant challenge in implementing the cloud computing adoption model to the higher educational entity especially SUZA and ZU. This model is usable and significance to researchers and planners for policy implication. Researchers will use the model for research, reference, and literature review while the planner and executive members of corresponding higher education institutions in Zanzibar (SUZA and ZU) will use the model to discuss the role of implementation based on the TOGAF framework.

Keywords:
Cloud Computing Model; Cloud Adoption Challenges; PLS-SEM.

PAPER ID: 162

Determining Factors Influencing the Acceptance of Cloud Computing Implementation

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Abstract:
Cloud computing (CC) has attracted many organizations to invest in this virtual storage technology since it is seen to be able to help businesses in managing and sharing data in a more flexible, cost saving, and business scalability. However, there are many issues faced by CC, such as data security concern, the high cost during the set-up process, designing the cloud model as well as high dependency on the cloud providers. Apart from these issues, several studies have also highlighted that several other factors are influencing the acceptance of CC implementation, especially in the organizational environment. Therefore, this paper aims to review and identify the relevant factors that influence the acceptance of CC implementation in the organization. This study reviewed 55 articles related to CC implementation, and a total of 21 factors have been obtained through the several processes. These factors were arranged according to the frequency based on the thematic analysis method. As a result, 21 factors were obtained and ranked; Compatibility, Top Management Support, Relative Advantage, Security,

Complexity, External Pressure, IT Knowledge, Cost, Trust, Trialability, Regulations & Government Support, Innovativeness, External expertise, Sharing & Collaboration, User experiences, Awareness, Firm Size, Social Influence, Task, Vendor Support, and Business Continuity. This study managed to unveil a new context in cloud computing studies as it provides more insights on the factors that may have been untouched.

Keywords:
cloud computing; acceptance; literature review; acceptance model; influence factor

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PAPER ID: 189

Development of Microservice Based Application E-Inkubator: Incubation and Investment Service Provider for SMEs

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Abstract:
Information Technology had significant influenced in business without exception for small and medium enterprises (SMEs). Many SMEs has used software or system. This research aims to study one of SME's need in increasing their growth through business incubator. Previous research implementation produces E-inkubator, an incubation and investment service provider platform. This application still used monolithic architecture, by the time users were increased cause response time of that application decrease. This application also cannot be integrated with other existing system in governments or enterprises as an investor in order to make easier investment process. Increasing number of users, response time, and integrity issues can be solved by implement microservice architecture, in this paper we apply. Microservice concept as loosely coupled solution. It makes easier third party to access service from this application. By separating services this framework also makes request per second from application faster toward many requests. This paper will cover design, development, and evaluate E-Inkubator application that based on microservice architecture. By comparing monolithic against microservice architecture, we show the results of performance tests executed on both applications and describe that microservice is cheaper and make easier third party's system to access services. In addition, the result shows that microservice architecture make request per second 2.5 higher than monolithic architecture.

Keywords:
Microservice; Incubation; Investment; SMEs.

PAPER ID: 193

Deployment of Fog Computing During Hajj Season: A Proposed Framework

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Abstract:
With the considerable growth of mobile computing and IoT devices these days, cloud computing faces some difficulties in responding to a sudden, momentous increase in high number of requests for network resources. In 2012, Cisco introduced the idea of bringing the computation process to the periphery of the network and geographically closer to the end users to offload the main cloud and bandwidth, leading to a faster response time and less cost. Leveraging on this concept, the cloud computing and IoT technologies, we propose in this paper a novel fog-computing related framework to mitigate the problem of bandwidth

bottleneck and packet delay during the Hajj season in Saudi Arabia, where millions of pilgrims are gathered in a small area for a short period of time along with all service providers, health and security personnel. We also demonstrate the potential applicability of our proposed framework in terms of efficient data entry and information retrieval.

Keywords:
fog computing; mobile edge computing; IoT devices; Hajj; resource management; middleware

TRACK: MANAGEMENT OF INFORMATION SYSTMEMS

PAPER ID: 9

SILON KPU: The Perspective of It Balanced Scorecard Framework in General Election Commissions (KPU) of Surakarta

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Abstract:
The presence of SILON KPU is intended to create general election processes with integrity, credibility, and transparency in 2019 in order to put out legitimate and reliable election results for the community. To measure the effectivity of SILON in underpinning a legitimate election process, the IT BSC approach was employed in this study. The approach is grounded by the satisfaction value through four perspective, namely: Corporate Contribution, Customer (User) Orientation, Operational Excellence, and Future Orientation. Thus, the expected effective measurement results were retrieved from a case in KPU Surakarta. Interview sessions were conducted in order to retrieve the essential data for this qualitative research. The research results revealed that SILON KPU contributes effectively to the candidature stages and the automatic checking process. SILON KPU also helps the users in corresponding dual-submitted data. Nevertheless, some errors were still encountered in the system and the users caused by the lack of user understanding in operating the system, limited training, and the downed system server. The factors impact the performance achievement of SILON KPU.

Keywords:
Silon KPU, IT Balanced Scorecard, downed system, Training, Surakarta

PAPER ID: 10

Why Can Cultural Diversity Foster Technology-enabled Intergenerational Collaboration?

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Abstract:
Globalization and information technology enable people to join the movement of global citizenship and work without borders. However, different type of barriers existed that could affect collaboration in today's work environment, in which different generations are involved. Although researchers have identified several technical barriers to intergenerational collaboration (iGOAL), the influence of cultural diversity on iGOAL has rarely been studied. Therefore, using a quantitative study approach, this paper investigates the impact of differences in cultural background on perceived technical and operational barriers to iGOAL. Our study reveals six barriers to IGC that are perceived differently by culturally diverse people (CDP) and non-CDP. Furthermore, CDP can foster IGC because CDP consider the barriers to be of less of a reason to avoid working with different generations than do non-CDP.

Keywords:
challenges; problems; cross-generational collaboration; cross-cultural teamwork; barriers

PAPER ID: 18

The Role of Opinions and Ideas as Types of Tacit Knowledge

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Abstract:
Purpose: The paper identifies the difficulties associated with managing tacit knowledge in its entirety among distributed individuals and proposes its categorization into types/kinds as a solution for its effective externalization and measurement. The categorization process implies the identification of those types or kinds of tacit knowledge which could be externalized and measured easier than others. The paper posits that such categorization is a step in the right direction for better tacit-to-explicit transformation.

Design: The paper is designed based on literary evidences supporting that some parts or instances of tacit knowledge could be more easily externalized/transformed into explicit form than other forms. This research through the analysis of opinions and ideas focuses on building up the relationship between tacit knowledge and these two constructs. The paper will introduce a comparative analysis between opinions and ideas and tacit knowledge.

Findings: The relationships and correspondences between opinions/ideas and tacit knowledge are developed and a Reflection-articulation-interpretation model which demonstrates these relationships and the externalization to explicit knowledge.

Practical implications: The introduced relationships between Tacit Knowledge Instances, Opinions and Ideas as well as the externalization model form the basis for proper tacit knowledge externalization based on its categorization. The authors believe that if tacit knowledge is categorized into types, this will have positive effects on improved tacit knowledge externalization.

Originality: The proposed Model and the framework are not only original but, to the authors knowledge, are a unique attempt addressing tacit knowledge categorization and how opinion/ideas are externalized.

Keywords:
Tacit knowledge; opinion/ideas; knowledge externalization; tacit knowledge categorization

PAPER ID: 20

The Effectiveness of Online Learning with Facilitation Method

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Abstract:
The purpose of this study is to evaluate the application of electronic learning systems to the effectiveness of learning with facilitation methods to increase the level of student participation in online discussion forums. Specifically review the effects of facilitation methods and teacher involvement in student participation in online discussion forums. In the trial attended by 94 teachers, 193 classes and 5104 students, to compare the level of student participation in the online discussion forums held in all study programs in the Faculty of Law, Faculty of Law, University of Pamulang The participation of the students as the dependent variable in the two methods facilitated the discussion, the discussion was facilitated by the students as an

experimental class and the discussions were facilitated by the teachers as a kind of control. Teacher participation as a covariate. In general, the results show that the amount of student participation in student issues initiated by the students is superior to the discussion topics initiated by the teachers, once the level of teacher participation is adjusted. The discussion topic made by the students encourages students to participate more than the topic of discussion made by the teachers, because the students are more interested in the topics that interest them. This study has the effect of facilitating participation in online learning discussion forums at the level of student participation. The results also show that the freedom granted to students to make the topic of discussion is not influenced by the size or participation of the teacher.

Keywords:
e-learning, effectiveness of learning, facilitation methods

PAPER ID: 23

Android-Based Digitalization Of Number System Of Traditional, Ngalum, Ketengban, Lepki And Arimtap Tribes

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Abstract:
The influence of fast-growing globalization and modernization has a negative impact on the existence of Indonesian culture, namely the degradation of local cultural values and tribal identity crises which are marked by the extinction of various local languages throughout the archipelago. One area that is under threat of extinction of local languages is Papua Province. The symptoms threat of language extinction was discovered when the researcher conducted interviews with young generation from Ngalum, Ketengban, Lepki and Arimtap tribes who studied in Jayapura, Bandung, Salatiga, Semarang and Yogyakarta, which on average they were unable to count traditional numbers even though they were fluent in local languages. This shows that having fluent regional languages do not guarantee their ability in counting traditional numbers. Therefore, the author designs in this study an android-based digital application of traditional number system for Pegunungan Bintang tribe with the aim of facilitating young generation to recognize numbers 1 to 27 in the local language of each tribe and also this study is documented for the benefit of scientific development. Testing of this application is done using blackbox testing so that the obtained result is an application that can run properly according to its function where users can use this application to recognize numbers through sound when the numbers are pressed.

Keywords:
Digitalization, Number System, Ethnicity, Android

PAPER ID: 24

Digitalization Of The Local Language Dictionary Of Pegunungan Bintang

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Abstract:
The increasingly rapid development of globalization and modernization in Indonesia has changed the order of life of its people. The positive change is that people's lives are increasingly modern, but on the other hand it is disastrous for them, namely the degradation of cultural

heritage which should be used as the main foundation of the nation's civilization. As happened in Papua, some local languages have become extinct and some are threatened of extinction. Some local languages that are under threat of extinction are found in the Pegunungan Bintang regency, namely the languages of the Ngalum, Ketengban, Murop, Lepki and Arimtap tribes. Speakers of the local languages of these tribes are increasingly diminishing due to social, political and economic globalization. While on the other hand globalization brings opportunities for us to develop and preserve local languages by utilizing the sophistication and availability of information technology. As in this study, the digital dictionary application for Pegunungan Bintang local language is made using those development opportunities. This study uses qualitative method to investigate, find and manage language data of Ngalum, Ketengban, Murop, Lepki and Arimtap tribes. The collected vocabulary data turn into an android application with a prototyping approach, which is an approach that develops a device that will be developed or repaired according to user' needs. This application has been tested and it can be run on an android smartphone by being able to translate vocabulary from Indonesian to all local languages of Pegunungan Bintang and vice versa. Blackbox testing was also done to observe the functionality of the application when users use the application.

Keywords:
Digitalization, Dictionary, Language, Android

PAPER ID: 25

an Application of the UTAUT Model for Analysis of Adoption Of Integrated License Service Information System

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Abstract:
The use of information technology, especially information systems in government agencies is very important to improve public services. The Integrated Licensing Service Information System is a computerized system that performs licensing data processing, and produces a collection of interacting information to be given to all levels of users in the Samarinda City Investment and Integrated One-Stop Service. But since the issuance of this system in 2013 there has been no system evaluation or development. This study uses the Unified Theory of Acceptance and Use of Technology (UTAUT) method with Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Behavioral Intention to Use, Gender, and Age variables. This research was conducted to determine the variables that affect users in utilizing the Integrated Licensing Service Information System and then to provide input and suggestions for Samarinda City Investment and Integrated One-Stop Service in the future implementation of the system can be better and can be accepted according to the needs of its users. Based on the results of the study, the variables that greatly influence the acceptance and utilization of this information system are performance expectations. Where the Integrated Licensing Service Information System can improve the quality of public services, especially licensing services and this system becomes a necessity in supporting work efficiency and effectiveness.

Keywords:
Integrated Licensing Service Information System, UTAUT, Samarinda City Investment and Integrated One-Stop Service

PAPER ID: 28

Developer Payroll Approaches For Startup Environment Based On Agile Project Management

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Abstract:
Formulating developer payroll in a software development project is important for organizations to provide an equitable salary formulation that can motivate developers to work professionally. Payroll can also be used as references in planning the cost of software development projects in order to meet startup financial success. In the literature, developer payroll estimations can be obtained by multiplying the number of working hours on a project with the developer's wage. However, multiplying the number of working hours with the developer's wage is considered unfair because each developer has different competencies and performance. In addition, not much attention given to understanding how to estimate developer payroll in software development organizations by considering different competencies and performance. For those reasons, it is important to understand how to overcome the different developer's competencies and performance in developer payroll formulation. Thus, the competency and performance factors can be formulated into the developer payroll. This paper proposes a method in calculating developer payroll for a startup environment based on Agile Project Management by considering the developer's competency and performance parameters. The parameters consist of how many years developers have been working, what the type of developer role is, how many bugs developers produce and how many days developers are not able to complete the task on time. This study is expected to provide an alternative method to formulate developer payroll at startup environment.

Keywords:
Agile Project Management; Startup; Payroll;

PAPER ID: 33

Indonesian Sign Language Recognition Based on Shape of Hand Gesture

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Abstract:
In this research the proposes a method of recognition of BISINDO letters based on hand-shape features that hint every shape of BISINDO Letters. In outline, this method is divided into two parts: the first is part of formation database shape features of BISINDO letters A-Z and the second is part of BISINDO letters recognition. In the first section consist of hand-shape image acquisition that hint every BISINDO letters, segmentation process, edge detection process, feature extraction process that is probability value of hand-shape chain code occurrence and process of database feature formation. In the second section is consist of hand-shape image acquisition process as BISINDO letters query followed by segmentation process, edge detection process, hand-shape feature extraction and recognition process by using calculation difference in distance between query shape feature to each shape feature in database feature. The image acquisition process in two parts above conducted directly (real time) via Webcam connected to the computer device. The method above has been implemented into prototype of Bisindo letters recognition software interface. The experiment results show the accuracy level of BISINDO letter recognition (26 BISINDO letters A to Z) which is reaching above 95%.

Keywords:
BISINDO; Segmentation; Edge Detection; Shape Feature Extraction; Shape and Letter Recognition

PAPER ID: 35

The Role of Satisfaction on Perceived Value and E-Learning Usage Continuity Relationship

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Abstract:
This research is intended to explore the role of satisfaction on perceived value and e-learning continuance intention to use relationship's in the learning process. In investigating the issue, this research is using 48 lecturers implementing e-learning in their teaching and learning as the sample. The sample is gathered by using a simple random sampling technique by spreading an online questionnaire to all of the population. Partial Least Square (PLS) approach, assisted by Smart PLS 3.2.7 is utilized to analyze the gathered data the analysis showed that perceived value has an impact on continuance intention with p value equals to 0.000 (H1 is supported). The result also indicated that satisfaction can act as a full mediating variable (indirect only mediating variable type) in the relationship between perceived value and e-learning continuance intention with p value equals to 0.000 and VAF 97% (H2 is supported). Theoretically, this research contributes to highlight the role of satisfaction in the perceived value and continuance intention relationship which was tested separately and partially in the previous researches.

Keywords:
Perceived Value, Continuance Intention, Satisfaction, Mediating Variable, E-Learning

PAPER ID: 41

Acceptance factors and user design of mobile E-governmentwebsite (Study Case E-government website in Indonesia)

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Abstract:
The purpose of this study is to understand the factors that influence a person in using mobile website e-government. In addition, this study also understands the moderating effect of interface design components on human ergonomic (psychomotor, cognitive, affective. So, the results of this study provide a proposed interface design that fits human ergonomics. Samples and research objects were taken from several e-Government websites in Indonesia that were selected based on the form of layout, content, navigation. Data was taken from 48 respondents by distributing questionnaires and direct observation using eye tracker as a detector of eye movement and mindWave as a brain wave detector. This study adopted and developed the TAM model to explain the causes and consequences of the factors found. We divide the research variables into 2 broad categories. The first category of relative advantage, perceived interactivity, perceived mobility we categorize as perceived usefullnes. While the second category includes psychomotor, cognitive, affective variables we categorize as perceived ease of use. We conducted an analysis using SPSS and SmartPLS to validate the research model. In this study, we found five main factors that influence people's desire to use mobile website e-government. These five factors are relative advantages, perceived mobility, psychomotor,

affective and attitude. Furthermore, the components of interface design only affect relationships of affective and attitudes.

Keywords:
Mobile Website; User Interface; HCI; Usability; E-government

PAPER ID: 44

Maturity assessment of local E-government websites in the Philippines

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Abstract:
E-government is seen to have the potential to improve government services. Developing countries, for instance, are still in the process of adopting. In particular, the context in these countries posed challenges for the implementation and its potential use. In the Philippines, the national e-government initiatives continue to progress. However, there is a lack of empirical studies on the local e-governments level. Thus, in order to determine the country's current local e-government development, this paper examined the maturity level of websites in the municipal and city governments in the country and identified the issues associated with its e-government development. Using the United Nation (UN) e-government maturity model, 150 local government websites were assessed based on the model's online service component. Through a stratified sampling method, the population was divided into sub-groups based on income classifications of municipalities and type of cities. Interviews were also conducted to key informants from local offices to determine possible issues associated with e-government development. The results show that several of the local governments are still on a basic (emerging) stage. The highly urbanized cities, on the other hand, showed that most of their websites are already on stage two (enhanced), in which it can accommodate simple one-way communication services. Moreover, among the reasons behind the lag of e-Government progress are the lack of technological infrastructure and skills, organizational issues and lack of government regulations among others. This study can be used to develop a plan to improve e-government services as well as supporting evidence on the status of e-government websites in the Philippines.

Keywords:
e-Government; UN maturity model; Philippines

PAPER ID: 61

Modeling Requirements of Multiple Single Products to Feature Model

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Abstract:
This work investigates how the requirements of multiple single products can be modeled into a feature model as part of domain engineering process in software product line engineering (SPLE) methodology. It adopts an extractive strategy in devising a two-step process for creating the feature model. The first step is by identifying the business process and list of features across all products into a product roadmap. The second step is identifying the commonality and variability of features based on the product roadmap into a feature model. The proposed approach may help a software company that produces software products for certain domain to migrate from traditional single product development lifecycle to software product line development lifecycle.

Keywords:
software product line engineering, feature model, domain engineering

PAPER ID: 80

The Role of Brand Reputation and Perceived Enjoyment in Accepting Compulsory Device's Usage: Extending UTAUT

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Abstract:
This study is exploring the acceptance of compulsory Apple iPad usage by Faculty of Business and Economics, Atma Jaya Yogyakarta University (FBE-UAJY) in Indonesia. New undergraduate students each year are required to purchase e-books and iPad as part of their admission and enrollment package. Previous two studies using UTAUT (both published and "original" version) have concluded that the students accepted the iPad. The subsequent interview revealed that the students might be influenced by brand reputation and enjoyment of using a well-known brand such as Apple. Few pieces of anecdotal evidence suggested that the price of iPad has caused new students to cancel their enrollment due to cost consideration. We devised a survey to extend UTAUT by using Brand Reputation and Perceived Enjoyment as new variables. We also used Gender, Prior Tablet Ownership, Price Perception, and hypothetical options if the iPad was not compulsory as moderating variables. We circulate the survey to FBE-UAJY class of 2018 undergraduate students. The findings suggest that Brand Reputation and Perceived Enjoyment are in fact influencing the Intention to Use iPad. While Gender, Prior Tablet Ownership, and Price Perception moderating the influences toward Intention to and the Actual Use of iPad.

Keywords:
UTAUT; brand reputation; perceived enjoyment; compulsory usage; iPad

PAPER ID: 88

Analysis of User Resistance Towards Adopting E-Learning

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Abstract:
Institut Teknologi Sepuluh Nopember (ITS), Surabaya is one of the best public and technology university in Indonesia that has implemented an e-learning service as a learning media since 2016. E-Learning in ITS, referred as SHARE ITS, Sharable and Reusable e-learning of ITS, utilizes Moodle, a web-based Learning Management System. Various types of evaluation have been carried out towards SHARE ITS, they are: student readiness assessment, analysis of factors influencing the use of SHARE ITS, and analysis of factor user continuance of SHARE ITS. However, SHARE ITS has not been optimally utilized by all the departments in ITS. Based on the information from the ITS Academic Director in 2017, there are hundreds of courses from all departments registered in SHARE ITS but only a small number of them are actively utilizing SHARE ITS. Due to the usage of SHARE ITS is still very much dependent on the lecturer. It's an obligation for the students to use SHARE ITS in their learning process if the lecturer actively initiates and uses it. In order to provide the learning service to be optimal, ITS needs to focus on the learning improvement towards its online courses registered in SHARE ITS. The utilization of SHARE ITS is considered not optimal because only a handful of lecturers use

SHARE ITS as a learning media for their students. There's also the absence of policy and resources that can support the utilization of SHARE ITS.

Therefore, the goal of this research is to discover the factors that influence the resistance in utilizing SHARE ITS on the perspective of lecturers. This research uses a conceptual model developed by Lin, Chihung, U-Chun Lin, and Jinsheng Roan that focuses on perceived threat, perceived usefulness, perceived inequity, and behavior intention aspects as factors influencing the resistance to use SHARE ITS to convince the continuous adoption for the learning process.

The result of the research was that perceived threat is one of the factors that's influencing the low level of intention to use SHARE ITS continuously. Threats within SHARE ITS will affect the users of SHARE ITS, thus it will also affect the continuous usage of SHARE ITS by lecturer. Perceived inequity also influences perceived threat, because of inequalities felt by the lecturer in adopting SHARE ITS will also correlate with the threats that might happen in adopting SHARE ITS. Those are the factors may influence the behavior intention in the continuous usage of SHARE ITS.

Keywords:
E-learning; SHARE ITS; adoption; user resistance; perceived threat; perceived inequity; perceived usefulness; behavior intention

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PAPER ID: 114

XBRL based Corporate Tax Filing in Indonesia

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Abstract:
eXtensible Business Reporting Language (XBRL) is a significant new information technology for the electronic communication of business and financial data. XBRL has been implemented by Central Bank of Indonesia and Indonesia Stock Exchange but not yet adopted by Indonesian Tax Authority. As there was no data exchange among the regulators, it may result in inconsistent financial information among these authorities. However, before promoting this G2G sharing, the tax authority has to adopt the XBRL in the first place. This research proposed the XBRL taxonomy, which can be used in the adoption of XBRL for the e-Tax Corporate Filing system. As an applied research, the paper technically demonstrates how to develop XBRL taxonomy called The Corporate Tax XBRL Taxonomy (1771-CTXT). The taxonomy was created based on the iterative approach as the main part of the Design Science Research (DSR) process model. Although this research paper was done based on the case study of corporate income tax in Indonesia, the steps to developing taxonomy document could be applied as well to other countries' tax regulators. In implementing XBRL based data exchange among regulators, the National XBRL taxonomy has to be developed first to provide XBRL elements, which can be re-used among them. The XBRL extensions of the national taxonomy should also be developed for particular reporting domains such as tax and statistics.

Keywords:
XBRL; Tax; Extensible Business Reporting Language; e-Tax Filing

PAPER ID: 115

Analyzing Factors Influencing Students' Perception Towards Digital Library Based on Chang's Model

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Abstract:
Digital library contains digital information that can be accessed by the public or certain communities. Library services must emphasize its users more than its data. That's why, user perception is a primary element in application usage. By understanding the factors influencing user perception one can help manage and provide services, also encourage greater usage of the information and services of Digilib ITS (Digital Library in ITS Higher Education). In this research, to find the factors influencing user perception towards digital library, user perception model developed by Chang Ping Hu, Yuan Hu, and Wei-Wei Yan (Chang et. al. model) will be used with the help of AMOS. This research hopefully helps in understanding the factors influencing students' perception towards Digilib ITS and offer recommendations to design, develop, and manage ITS Digital Library. And the result of this research is: The results of this reseach are that there are 2 hypotheses among 11 hypotheses are not accepted/rejected. Namely: insignificance and positive correlation between Information Organizing Service towards User Perception and significance and positive correlation between Interaction Service towards Individual Service.

Keywords:
AMOS, Digital Library, Information Organizing Service, Interaction Service, SEM, User Perception

PAPER ID: 130

IT and Organizational Agility: A Critical Literature Review

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Abstract:
The significant role of Organizational Agility (OA) on Organizational Performance has been shown in many studies. Wherein the existence of Information Technology (IT) to support OA is proven to be substantial. Previous studies showed that IT and OA indicators and its combinations could vary widely. To be able to comprehend the IT indicators that were used, OA element examined, and reveal the extent of research, literature study required. This study contributes by providing: (i) literature review which includes both quantitative and qualitative research, (ii) the elaboration of IT terms in OA, (iii) OA types that were used, (iv) variables which support OA. The literature review process in this study was done manually on journals related to IT and OA, which was obtained from reputable journal databases. Based on the extraction and synthesis process, four themes were identified, which are: IT on Organizational Agility, IT/IS Alignment/Governance on OA, and Organizational Agility Antecedent and IT Architecture – OA Framework. In each theme, a research question proposed, which can be useful as an insight for future research.

Keywords:
Organizational Agility; Sensing; Response; Organization Performance.

PAPER ID: 134

Blended Learning System Using Social Media for College Student: A Case of Tahsin Education

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Abstract:
Tahsin is a method to improve Al Qur'an recitation in a way that enables reflection and pleasant voice, according to the rules. Learning Tahsin is usually done by face-to-face involving learners and instructors, as also held as extracurricular in STT Nurul Fikri, a higher education institution focusing on IT education and character building. However, several problems occur regarding schedules, many other activities, curriculum, less organized, and low enthusiasm. Thus, the level of participation and time efficiency in learning Tahsin process is low and required improvement. Meanwhile, social media has the potential to tackle this issue through blended learning, bringing the different learning experience to ease the learning process. Naturally, the application of a new learning system is not immediately successful. The continuous evaluation is needed. This background problem motivates this study to conduct a quasi-experimental in applying blended learning to the learning Tahsin. The objective is to produce an optimal learning system consists of a fitted curriculum and learning materials, increased level of participation, time efficiency, and an established supporting organization for the learning process. The research steps include a preliminary study, data collection, learning system design, and several evaluation iterations. As a result, this study produces a blended learning system strategy for learning Tahsin using social media, with several issues to be concerned. They are learning the curriculum and material design, strategy to maintain participants commitments through providing rewards mechanism, and encouraging collaboration in the process, such as reading the Qur'an together. The evaluations show positive results with excellent predicate intervals.

Keywords:
Blended Learning; Social Media; Al Qur'an; Tahsin;

PAPER ID: 141

Risk Assessment and Recommendation Strategy Based on COBIT 5 for Risk: Case Study SIKN JIKN Helpdesk Service

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Abstract:
National Archive Information System and National Archive Information Network (SIKN JIKN) is a national priority program agenda of National Archives of the Republic of Indonesia (ANRI) as an archival institution. To support management and operation of SIKN JIKN, ANRI provides national helpdesk service. A helpdesk application is provided to help their duties, but it is not used optimally that caused the risks such as loss of data and requests or problems submitted by SIKN JIKN members as a user of the system. If the risk is not handled, it will cause losing of potential network node as well as the loss of ANRI. In this research paper, performed risk assessment of SIKN JIKN helpdesk activities was done by referring to COBIT 5 for Risk and COBIT 5 Enabling Process as guidelines, framework, and focusing in domains to support helpdesk activities which is DSS01 domain for operational procedures and APO12 for managing risks. The result of assessment may be used as a recommendation to improve helpdesk service

to support SIKN JIKN implementation. It is also could minimize the risk impact to ensure the sustainability of helpdesk service of SIKN JIKN.

Keywords:
Risk assessment; COBIT 5; helpdesk service; archives

PAPER ID: 142

Risk Management Framework for Distributed Software Team: A Case Study of Telecommunication Company

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Abstract:
Distributed software development (DSD) has grown rapidly over the last few years and present definite risk to the software industry which need to be carefully analyzed and managed. The risks relating to DSD include lack of trust, ineffective communication, time zone difference, cultural differences such as language and corporate culture along with knowledge sharing challenges. Software risk management approach in DSD, however, is still inadequate and needed further attention. The aim of this paper is to identify the components involved in risk management process related to DSD, and finally to enhance existing risk management framework used in the organization to accommodate the distributed nature of the team. The quantitative approach which is survey method has been chosen as an appropriate research method to achieve the objectives of this paper. The results shows that communication is the most prevalent risk faced by the team members in the current risk management practice. The data from the literature and survey were used to expand the list of identified risk in the organization and integrates communication element into the existing framework. The communication element emphasized on the collaboration and commitment of the stakeholders from every site so as to improve risk management in a distributed context.

Keywords:
Software Risk Management, Distributed Software Team; Distributed Software Team Risk; Communication

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PAPER ID: 143

Understanding Theory of Workarounds in Practice

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Abstract:
This study outlines the recent landscape of workaround research as regards the steps of workaround creation by Alter [1] . A workaround happens when a user does a course of actions beyond the formal system to achieve certain goals. The actions could be bypassing internal system procedures or breaking the established policies in response to the perceived system constraints. To this point, one may perceive workaround as an improvisation of the formal system; thus, it introduces both positive and negative outcomes for organisations. Here, the aim of this study is to capture the use of Theory of Workarounds [1] in research to explain the workaround creation. Especially, the application of seven steps mentioned in Theory of Workarounds. For this reason, as suggested by Dennehy and Sammon [2] , we gathered ten top cited articles from 2014 and compare them with other ten most recent articles from Google Scholar. Afterward, we categorised those papers using Theory of Workarounds [1] to

understand the state of the art of the workaround studies. The contribution of this research is that we demonstrate the application of Theory of Workarounds to capture how researchers explain the workaround creation in their papers. In our best knowledge, this is the first study to do so. Also, we contribute to the Information Systems (IS) body of knowledge as to the understanding of post-IS deployment. At the end of the research, we highlight open research areas in workarounds.

Keywords:
Workarounds, Feral Systems, Shadow Systems, Shadow IT, Enterprise Information Systems, Business Process Management, IT adoptions

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PAPER ID: 148

Improving Health Information Management Capacity with Digital Learning Platform: The Case Of DHIS2 Online Academy

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Abstract:
Health information systems (HIS) in developing countries constantly face human resource-related issues such as low capacity and high staff turn-over. When combined with high national demands, it is even more difficult to address with limited capacity building resources such as trainers and financing. This research aims to explore the potentials of digital learning tool as part of a national HIS capacity building strategy, drawing from a case from Indonesia. The country is adopting District Health Information Software (DHIS2) to integrate health data and to promote quality health information use. DHIS2 implementation will be expanded to 496 districts by 2022. As the consequence, the country needs efficient tools and strategies to build capacity to fulfill this need. A joint team consisting of MoH, Universitas Gadjah Mada (UGM) and University of Oslo (UiO) localised a global digital learning platform called DHIS2 Online Academy. The Indonesia version successfully recruited 627 learners and graduated 150 learners. Although approximately half of the responding learners claimed to have no past online learning experience, nor DHIS2 experience, they reported that they found online course convenient for them in terms of time, cost, and learning style, particularly to improve their competencies in DHIS2 implementation. DHIS2 Online Academy Indonesia allows wider delivery of DHIS2 learning materials to health workers, supporting HIS strengthening at district and facility level. Finally, this paper summarises the key principles for localisation of generic learning platform, its integration to national capacity building strategy, and the way forward.

Keywords:
digital learning material; MOOC, health information systems; localised learning; capacity building

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PAPER ID: 153

Pedagogical Discussion Cases in Higher Education: The Role of Knowledge Sharing in Students' Learning

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Abstract:
The research incorporates a knowledge sharing approach, in an undergraduate classroom, using discussion cases to investigate the role of knowledge sharing on students working in

groups to find solutions for the cases. The goal is to provide empirical evidence as well as additional information on knowledge sharing among students in group settings using discussion cases. A survey was adopted to investigate the relationships between the environmental factors, motivational factors, students' individual characteristics, the lecturer's role, the industry representative's role and knowledge sharing - outside and inside of the class – on students' learning experiences and outcomes. The framework was modified from existing frameworks and current literature's lessons learned on knowledge sharing approaches in educational contexts. The results showed that environmental factors positively influenced the students' knowledge sharing motivation. In addition, the industry representatives (case protagonists) active involvement in the classroom had a significant impact on the students' knowledge sharing behavior. This finding contributes to future directions on developing strategies to improve knowledge sharing in higher education classrooms through enhancing classroom environment as well as involving industry representatives when designing the classroom experience.

Keywords:
knowledge sharing; discussion cases; learning; teaching; higher education; problem-based learning

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PAPER ID: 156

The Role of Positive Psychology in Improving Employees'Performance and Organizational Productivity: An Experimental Study

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Abstract:
Employees' productivity has been extensively addressed by psychologists for a long time. With the emergence of positive psychology (PS), positive psychologists started to fill the literature gap which addresses the influence of individual's positive traits on employees' performance and organizational productivity and how it could be improve it by identifying these traits and build organizational policies based on them. Unlike traditional psychology, PS focuses on the employees' positive individuals' traits rather than on curing the negative psychological aspects of the individual. This research identifies three such positive traits, - Optimism, Well-Being and Personal Strength and analyses their impacts on employees' productivity, hence organizational productivity. The research explicitly investigates these three positive traits, their identification and the development of a policy based on these aiming at positive effects on increasing the employees' performance, hence their productivity. The research proposes a "process" and a "framework" which reflect the relationships between Positive Psychology traits, employees' performance and Organizational Productivity. Hypotheses were drawn from the framework and a questionnaire was prepared to collect data to verify the validity of the relationships proposed on the framework. The questionnaire was administered on employee in a selected organization. Each hypothesis was tested and the results were analyzed using statistical approaches. The results demonstrated quite interesting findings which demonstrated that, implementing positive psychology concepts and individual positive traits such as optimism, well-being and personal strength at the workplace increase employees' performance hence organizational productivity, and this was verified by the acceptance of all the hypotheses following the data analysis.

Keywords:
positive psychology; positive traits; employees' performance; organizational productivity; organizational policies

PAPER ID: 159

Effect of social media activities to determinants public participate intention of e-government

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Abstract:
The purpose of this study was to measure the public participation intention of e-government service by integrating between variables of social media activity and DeLone and McLean's Information Systems Success Model. The method used was the structural equation model (SEM). From 9 proposed hypotheses, the results showed that all had positive and significant impacts. The experimental aftereffects of this examination make two ends and significant commitments. In the first place, the impacts of information distribution activities through social media are largely ignored in various e-government studies. This study confirms that information distribution activities with social media have a significant influence on public satisfaction which ultimatelyaffects public participation intention.

Keywords:
Social media activity; DeLone and McLean's Model; e-government

PAPER ID: 160

The antecedent of perceived value to determine of student Continuance Intention and student Participate Adoption of iLearning

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Abstract:
The motivation behind this examination was to quantify student participating adoption of iLearning. This study incorporated perceived value with the Unified Theory of Acceptance and Use of Technology (UTAUT). There were eight hypotheses proposed. The results showed that all the hypotheses were positive and significant. The method used was an empirical study approach and the object of research was iLearning.

Keywords:
Perceived value; UTAUT; iLearning

PAPER ID: 166

Maturity Level Assessment for ERP Systems Investment Using Val IT Framework

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Abstract:
The Enterprise Resource Planning (ERP) system in the last few years has become an important thing for companies to manage business easily and integrated. Likewise, PT Semen Indonesia Distributor, one of the subsidiaries of Semen Indonesia Group, which has implemented an ERP system namely Waru Abadi Information System (SIWA) since 2017. After 2 years running, they took the initiative to measure the ERP system investment performance that they have issued using the Val IT framework 2.0. As we have known, Val IT framework has 3 domains, namely

Value Governance, Portfolio Management, and Investment Management. There are 3 stages carried out by researchers, including data collection by means of in-depth analysis of 5 influential people in IT investment decision making, data validation, and maturity level justification. The results of this study are the maturity level of the ERP system implementation at PT Semen Indonesia Distributor reaches 3.79 (scale 5) based on the Val IT framework 2.0.

Keywords:
IT investment; IT maturity; ERP; Systems; Val IT

PAPER ID: 167

The role of IT on firm performance

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Abstract:
The impact of Information Technology (IT) on firms has been widely discussed in many studies. Regarding the role of IT on Firm Performance, researchers have reported a mixed result. Therefore, it encourages that the essential character of IT from the perspective of firm performance needs to be explored systematically. It was needed to reveal, in what facet of firm performance and under what circumstances IT could play a significant role. This research contributes by providing a balanced perspective on the role of IT on firm performance. The researchers could have a view from the right angle about the role of IT on firm performance. A systematic literature review was conducted to get a comprehensive perspective regarding the role of IT on Firm Performance. The aspects extracted and analyzed were mainly related to: (i). Firm performance attributes, (ii). Domains supported by IT, (iii). IT-Firm Performance Circumstances. Based on these aspects several analysis and conclusions were drawn. First, IT contributes to achieving strategic alignment, organizational agility and provide support for business. Since they were correlated strongly with firm performance. Second, firm performance could be measured based on two perspectives: Financial and non-financial. Third, IT could contribute more effectively in collaboration or combining with other resources. The elaboration of these findings and suggestions for further research were discussed in this paper.

Keywords:
Information Technology;IT Performance; Firm Performance; IT Paradox; IT Productivity Paradox; Role of IT

PAPER ID: 168

40 Years Journey of Function Point Analysis: Against Real-time and Multimedia Applications

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Abstract:
For various project of software development, the size, effort, and cost are essential aspects for planning schedules and control software development to achieve the preferred outcome. These aspects require a method to measure software accurately and reliably. Function Point Analysis is used as a standard method for that purpose. It is now 40 years old since Albrecht founded it in 1979. Bringing its advantages and some of the drawbacks from earlier versions, this method is now faced with current software development needs, namely, the real-time and the multimedia applications. Broadly translated our findings indicate that current software

development does not only focus on system functionality, but non-functional factors also begin to influence the value of a system for the users. Therefore, in 40 years journey of Function Point Analysis, this method is not adequate for current software development, especially in real-time and multimedia applications because of the inability to measure non-functional factors.

Keywords:
Function Point Analysis; Real-time; Multimedia; Application; Software Development; Non-functional

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PAPER ID: 169

Business Continuity Plan: Examining of Multi-Usable Framework

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Abstract:
Business Continuity Plan (BCP) framework is procedural guidance to create plans that prevent, prepare, respond, manage, and recover a business from any disruption. Many organizations have not realized that BCP is essential to their business continuity. Organizations more concern with their main goal (profitability and market growth), rather than business continuity. Regarding the organization awareness of business continuity, many organization recognizes disruptions, but they did not aware of preparing BCP. There were no specific standard or framework for BCP that could use as a best practice. This research is a continuation of previous research, which has proposed with a specific procedure, including all elements and activities. However, this framework still has shortcomings in testing empirical studies. This paper aims to analyze the suitability of the framework with various types of organizations. The framework has been tested in four cases: banking, 2 service-company, and manufacture. The results show that some activities of the BCP require further adjustment. Therefore, researchers need to readjust the BCP framework by changing several activities, to fit all type of organizations. Based on the results of the analysis, improvement is needed by doing some additions or subtractions of activities and elements in the framework, such as adding budgeting. This improvement aims to get a more tested framework that can be used as guidance in the future.

Keywords:
Business Continuity Plan; Disruptions; BCP Framework

PAPER ID: 174

E-Commerce Service Design Readiness using ITIL framework with IT Balanced Scorecard Objective (case study : University E-Commerce)

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Abstract:
The growth of e-commerce in the public sector has become one of the main drivers of the economy. The university X e-commerce program is built on the ITIL framework. The measurement of the success of ITIL service domain design in this study uses the IT Balanced Scorecard (ITBSC). Scientific contributions in this study provide recommendations about the objectivity of each ITBSC perspective for e-commerce universities (Unimart). Further research needs to be done on how the suitability of objective measurement from every ITBSC perspective for e-commerce universities. The results of Unimart readiness measurements based on ITIL v.3 service design assessment have an average value of 2.69. Maturity levels based on the

assessment index have not reached level 3 (defined process). Measurements on ITBSC for each service design domain produce an average score of 2.93. The processes in the service design domain measured include; service management with an average of 2.64, service design principles with an average of 2.65, a service design process with an average of 2.75, service design technology with an average of 2.85, organizing service design with an average of 2.82, design service considerations with an average of 2.49, and service design implementation with an average of 2.66. Procedural requirements in each process must be fulfilled to achieve the expected level of maturity. The score is at an adequate level of effectiveness. Thus, the level of effectiveness of e-commerce universities at the University of X is at an adequate level.

Keywords:
ITIL, ITBSC, Service Design

PAPER ID: 175

The safety city: conceptual of safe city assessment models

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Abstract:
In developing a smart city, it certainly has many aspects that must be met. One of these aspects is the aspect of security in the city which is usually called safe city. The Safe City concept in Smart City provides a new way for the government to develop a city security system. "Safe city concept is one approach and as part of the live concept of the city focusing on the crime problem in urban areas"[2].In other words, Safe City is an idea in a community that uses technology to help governments, communities and businesses reduce the possibility of crime and provide an environment where people feel safe and comfortable. In developing the concept of safe city, the government must first assess how safe the city is. General assessment of the level of city security in the world has been carried out by a leading company in Japan, NEC. In the security campaign conducted by NEC in 2017[15], Indonesia has a relatively low security value compared to other countries. The researchers assessed that the low value of city security in Indonesia is less relevant when viewed from the current state of the city. For this reason, the researchers collect other values that are owned by Indonesia and not owned by other countries to be used as an assessment material that Indonesia has a safe city. In the preparation of the review literature, this will produce a conceptual safe city model to provide a measure of city security assessment in accordance with the characteristics of cities in Indonesia.

Keywords:
Safe City, Smart City, Crime, City

PAPER ID: 177

Information Technology Investment: In Search of The Closest Accurate Method

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Abstract:
In order to improve performance, company allocates significant amount of expenditures for IT investment. Regardless IT productivity paradox phenomenon, the companies certainly expect investment that have been made able to gain various benefits to the company. This research aims to compare five method of IT investment evaluation and find the closest accurate method

according to selected literatures. Analysis was done by comparing: i) tangible and intangible ii) advantage iii) disadvantage iv) object and v) how to use. The result showed that Return on Investment (ROI), and Cost Benefit Analysis (CBA) focus on tangible. While Multi Criteria Decision Making (MCDM) focus on intangible. The method must justify tangible and intangible to get accurate result. Information Economics (IE) and Real Options Analysis (ROA) focus on both tangible and intangible. From both methods, IE was the closest accurate method because it could calculate tangible, quasi-tangible, and intangible, and also calculates the value of an investment based on enhanced ROI, business factors, and risk criteria.

Keywords:
Information Technology, investment, evaluation, accurate, method;

PAPER ID: 178

Analysis of Motivation and Perceived Risk Factors in Open Data Measurement: A Conceptual Model

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Abstract:
This paper presents a conceptual model to analyze motivation factors and perceived risk factors of open data measurement in Indonesia local government. The conceptual model is developed from a theoretical background and literature reviews of related research, which describes open data government, indicators of open data measurement, motivation factors and perceived risks factor in open data. In result, there are eight factors that construct in the model. There are four motivation indicators and four perceived risk indicator that influence open data measurement. For each indicator are determined from the literature review and previous research. In the future, the conceptual model is expected to be able to provide insight to Indonesian local governments on open government data through an analysis of the relationship of identified motivational factors and perceived risks factors.

Keywords:
Data; Open Data Measurement; Motivation; Perceived Eisk; Conceptual Model

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PAPER ID: 181

Assessment of the readiness of Micro, Small and Medium Enterprises in Using E-Money Using the Unified Theory of Acceptance and Use of Technology (UTAUT) Method

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Abstract:
Micro, Small and Medium Enterprises (MSMEs) are often referred to one of the pillars of the economic strength of a region. MSMEs have a very strategic and important role in national economic development. MSMEs have a role in distributing the results of development and also play a role in economic growth and employment. Now innovation in business transactions using ew technology will greatly affect business activities, especially for MSMEs. One of the innovations currently developing is Electronic Money (e-money). The development of e-money technology facilitates retail transactions for both consumers and traders. In terms of MSME actors themselves, their readiness to use e-money technology is not yet known. This study aims to determine the level of readiness of MSMEs in using e-money. The model used to analyze the

readiness of MSMEs in using e-money uses the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Of the five hypotheses proposed, all hypotheses were declared accepted. Based on this research, it can be seen that the concept of e-money can be applied to MSMEs in Yogyakarta.

Keywords:
UTAUT; e-money; Micro, Small and Medium Enterprises

PAPER ID: 182

Indonesia in the Spotlight: Combating Corruption through ICT enabled Governance

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Abstract:
This paper puts Indonesia in the spotlight assessing the country's ability to combat corruption through ICT enabled governance. The research firstly tries to define governance through the different lens of intergovernmental organizations. This is followed by a comparative analysis of different situational characteristics of governance in developing and developed countries. The paper then explores the role of governance in Indonesia, highlighting the existing barriers, and potential drivers to the implementation of ICT in Indonesia. It is concluded that ICT enabled good governance needs to be in place to support the eradication of corruption in Indonesia. Corruption in Indonesia is considered systematic as the practice is prevalent across public organizations in the country. This study contributes to the information systems discipline by offering new insights into the issues of implementing ICT enabled open governance in developing countries such as Indonesia.

Keywords:
Governance, Corruption, E-Governance, Indonesia

PAPER ID: 185

Test Citizens' Physical and Cognitive on Indonesian E-Government Website Design

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Abstract:
E-Government websites are made to make it easier for citizens to access government information and services. Many Indonesians have never accessed an E-Government website because they are constrained by an unattractive design. The design of a website needs to be matched with the physical and cognitive limitations of users so that website usage is more effective. This study aims to conduct experiments by examining the physical and cognitive limitations of citizens in 15 website designs of City and Regency Governments in Indonesia. Physical aspects were tested using Eye Tribe Tracker and cognitive aspects were tested using Neurosky Mindwave. Fifteen website designs were tested on 48 respondents. The research data will be analyzed using One Way ANOVA analysis to get a website that has the highest average value. The contribution of this study is to be able to provide website design recommendations that include layouts, background colours, and typography for City and Regency Governments in Indonesia.

Keywords:
E-Government; Website design; Physical; Cognitive; Eye Tribe Tracker; Neurosky MindWave; ANOVA

PAPER ID: 192

Connecting Intention to Use Online Banking, Commitment to Environmental Sustainability, and Happiness: The Role of Nature Relatedness

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Abstract:
In today's advanced technology, the environment continues to degrade in the constant pursuit of consumer happiness. To promote green banking in such situation, this study experimentally examines the role of nature-relatedness in connecting the intention to use online banking with the commitment to environmental sustainability and happiness. This study has manipulated nature relatedness into two levels, i.e., nature-related and nature-separated, and randomly assigned this to the participants. The results show that the manipulation was successful, as the participants who read the description about nature relatedness perceived that they are more nature-related than those reading nature-separated. Furthermore, the results show nature relatedness influences the intention to use online banking as well as the commitment to environmental sustainability and happiness. These findings suggest that nature relatedness is important for connecting technology and sustainability as well as happiness.

Keywords:
Green banking; nature relatedness; intention to use online banking; commitment to environmental sustainability; happiness

PAPER ID: 199

Analysis of Factors Affecting Behavioural Intention to Use E-Government Services in Rwanda

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Abstract:
E-government application and use is presently a worry for all government administration everywhere throughout the world, from developed to developing countries including Rwanda. Be that as it may, the utilization of those administration services requires numerous components from experts to the clients. It is verifiable that ICT is driving numerous tasks and procedures in both open and private organizations which is a significant feature of globalization. In this paper, we have dissected variables that influence Social norms to use E-government service to support public institutions in Rwanda on the grounds that the stage of e-government eventually diminished the rate residents used to request administration services contrasted with the past. After numerous inquiries concerning such downturn, we have suspected distinguished elements that may be a reason, but we have conceded the investigation of some which are Behavioural intention, Social influence, Trust internet, Trust e-government and Trust Propensity. An organized survey was used to gather information from 92 respondents interested in the investigation. The investigation utilized a review as a strategy for information accumulation. polls sent straightforwardly by means of email and telephone message. The respondents are the native of Rwanda. The poll was made up with two segments A and B

whereby A comprises of demographic questions and segment B comprises of Likert Scale addresses extending from 1-Strongly agree to 5- Strongly Disagree. Therefore, we have proposed a model of five variables from the suspected cause of such downturn. Using PLS-SEM 3 student version to process data, the result is that all dependent variables have direct positive effect to the independent variables to utilize e-government services supporting government organizations while two factors have demonstrated the proper support for hypothesis toward the intention to use e-government driven organizations.

Keywords:
Behavioural Intention; E-government; Rwanda; PLS-SEM

PAPER ID: 206

Communication management plan of ERP implementation program: A Case Study of PTPN XI

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Abstract:
PTPN XI is a former state-owned agribusiness plantation company with core business in sugar production. PTPN XI will implement an ERP system. The ERP implementation program at PTPN XI consists of five projects, namely ERP implementation project, ERP implementation monitoring project, input and report programming project, ERP system and infrastructure provision project, and data provision project. To successfully undertaken these projects, one of the project knowledge areas that must be managed effectively is communication. Ineffective communication can lead to project's failure. Through this research, the author will make communication planning documents for each project in the ERP implementation program at PTPN XI. The communication management plan documents in each project are developed by considering the suitability of project communication activities and the stakeholder needs. The documents template is referred to the PMBOK standard and the needs of each communication activity. The templates produced from this research include meeting agenda documents, minute of meetings, problem reporting, project status reporting, and text and email delivery formats.

Keywords:
Communication management plan, ERP implementation, project management

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PAPER ID: 208

Modelling the Smart Governance Performance to Support Smart City Program in Indonesia

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Abstract:
Every local government in Indonesia is in a race to become the leading innovator of smart city initiatives. The ambitious urban digitization program: "Gerakan 100 Smart City" was initiated in 2017 by the Ministry of Communication and Information, supported by the Ministry of Public Affairs, the Ministry of Finance, the Ministry of Public Works and Housing, and the Ministry of National Development Planning. Although the urban digitization program of smart city sounds promising, the implementation is lacking since there is neither specific national standard nor guidance to assist local government undertaking the smart city initiatives. With

respect to the smart governance dimension that serves as an important foundation for delivering government related services, there is limited indicators and the related formula to measure its performance. This research fills the gaps by modelling indicators and formula in the smart governance dimension to support the smart city program. The research was conducted by identifying the smart governance purposes, mapping the current related governance indicators, and developing a model for smart governance performance. The model was then validated by two experts in smart city initiatives and implemented in Surabaya City as a case study. The proposed model results in 29 indicators in three different domains and seven aspects of assessment. The model can serve as a reference for smart governance performance evaluation to support smart city initiatives in Indonesia.

Keywords:
Smart City; Smart Governance; Evaluation; Performance

TRACK: SPECIAL TRACK: BPM

PAPER ID: 101

Predictive Business Process Monitoring – Remaining Time Prediction using Deep Neural Network with Entity Embedding

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Abstract:
Most process mining study focuses on analysis of past data. This differs from predictive process monitoring, which, as a part of operational support, has as one of its focuses the prediction of a running case [1]. Although there are several measures of interest that can be provided, in the present study, we focused on the remaining time of a running case. Results produced by Deep Neural Network (DNN) [2], despite its acknowledged power for various problems, typically are no better than those of other supervised algorithms with problems involving categorical variables in tabular data [3]. Because the dataset extracted from event logs that contain categorical variables can be constructed and categorized in tabular form, it is unwise to use only ordinary DNN. In this study, we showed that we can increase the accuracy of DNN on tabular data that contains categorical variables by using a technique known as Entity Embedding. To show the robustness of the method, we conducted experiments with two types of dataset, synthesis data and real-world data, and also compared its performance with other supervised learning algorithms for regression problems. The experimental results showed that it is true that the proposed method can increase the accuracy of DNN predictions on remaining time prediction problem involving categorical variables and beats all baseline methods used as comparison.

Keywords:
predictive process monitoring; deep neural network; entity embedding;

PAPER ID: 126

Inter-dependencies on BPM Maturity Model Capability factors in deriving BPM Roadmap

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Abstract:
Business Process Management (BPM) Maturity Model captures the “as-is” condition of the organisation’s Process Capabilities (PC). Once an organisation has defined their “as-is” condition, they are the best positioned to establish their BPM roadmap. The organisation can then clearly plot which of the thirty process capabilities they need to improve or enhance to deliver the most overall value to the organisation. The analysis determined that particular PC’s are not mutually exclusive but rather, interrelates with other process capabilities to drive greater operational maturity in organisations. Thus, this research study aims to provide an analysis in the interrelationship of each process capabilities and leveraging it for the future state of the organisation. Each process capability, in the BPM Maturity Model, is analysed by utilising a Dependency Matrix, a dynamic causal model that establishes the relationship between process capabilities. Authors compiled a lexical definition of process capabilities, in terms of what it means for it to be in a state of “achieved”. By utilising the lexicon, predecessors

and successors of process capabilities were identified and captured in a matrix grid. The result of the research is an identification of interrelationships between Process Capabilities. A Dependency Matrix which represents the interrelationships and contains the Predecessor and Successor to measure the effort for each Process Capabilities. Furthermore, the dependencies among the capabilities will empower organisations implementing BPM Maturity Model by providing them with a richer understanding of where they need to invest their focuses when creating their roadmap.

Keywords:
BPM Maturity Model; Process Capabililty; Interrelationships; Dependency Matrix; Roadmap

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PAPER ID: 170

Business Process Maturity Level of MSMEs in East Java, Indonesia

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Abstract:
The purpose of this research is to evaluate the degree of Micro, Small and Medium Enterprises (MSMEs)'s in East Java using business process maturity model. McCormack model is fine to use for assessing the MSME's business process that brings out the business process maturity level of MSMEs. On the ninth element of information systems support on BPOM model, we try to adjust the questionnaire items based on the condition of MSMEs in Indonesia which still lagging in the implementation of IT, so it is directing to the concept of IT readiness model by combining the state of IT infrastructure and application of MSMEs. This research also assessing the IT readiness of MSMEs and analyze the result by comparing with the level of maturity. The findings result from this research shows that the maturity of MSMEs in East Java are varying. Yet, the IT readiness of these MSMEs presents high score that indicates there seems to be a strong connection between IT usage, leadership and the maturity level of business process within the organization and explained how business process maturity is relevant to MSMEs.

Keywords:
Micro Small Medium Enterprises; BPOMM, IT Readiness;

PAPER ID: 172

Analyzing linkage between Business Process Management (BPM) capability and information technology: a case study in garment SMEs

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Abstract:
Business Process Management (BPM) and Information Technology (IT) have received a lot of attention. However, the research mainly focuses on the application of BPM and the value of IT to support business processes and has not yet linked BPM capabilities and IT usage. The aim of this study is to define the linkage between BPM capability and IT needs for garment SMEs in order to ensure that the application of IT can be aligned with the organizational business objectives. This study used a qualitative method with a case study approach on a single garment SMEs in Jember Regency, East Java. The informants in this research is the SME's owner. Data collection was conducted through interviews and direct observation. The results showed that the garment SME needs BPM related to several aspects, i.e process definition and documentation, process measurement and management, market or customer orientation, and

supplier perspective. BPM capability would define the appropriate IT requirements for garment SME. Therefore, the application of IT reliably supported organizational business processes. This finding is expected to give contributions to garment SMEs in order to develop and implement IT and eventually enhance the performance and competitiveness of garment SMEs.

Keywords:
Business Process Managementm; Information Technoloy; Garment SMEs; Case Studies.

PAPER ID: 180

Impact of Alignment between Social Media and Business Processes on SMEs' Business Process Performance: a Conceptual Model

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Abstract:
The development of information technology highly affects various business sectors including Small and Medium Enterprises (SMEs). Social media implementation, as one of the most widely used IT application, is expected to support SMEs' performances. Many research in social media have focused on the impact of its implementation on the performance of an organization at a macro level. Research that investigates the linkage between social media and how the company perform their business process are lacking in the literature to date. This study aims to fill this gap by conducting a literature review on social media implementation particularly in SMEs. The result of this study is a conceptual models that follows the proposition of Task-Technology Fit in exploring the impact of social media on SMEs business process performances. As a technology, social media functionality must fit the tasks that SMEs must perform. The model proposed social media alignment with business process domain based on the Process Classification Framework (PCF). The performances are measured at a business process level using four indicators i.e. cost, time, quality and flexibility of business process.

Keywords:
Social Media; SMEs; Information Technology; Task-Technology Fit; PCF.

PAPER ID: 191

Antecedent and Business Process Management Non-Technical Capabilities in Social Media Implementation for Micro, Small and Medium Enterprises: a Conceptual Model

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Abstract:
Micro, small and medium-sized enterprises (MSMEs) play a key position in economic development. One of the MSMEs technology innovations adaptations to achieve competitiveness in the global market is the implementation of social media, so it is important to identify antecedent factors related to the MSMEs social media implementation. Previous research indicated that the Technology-Organizational-Environment (TOE) structure has become a common model for examining different dimensions of IT development and discovering antecedent factors in the information system (IS) domain. In relation to social media implementation, the existence of Business Process Management (BPM) aims to maintain the effectiveness and efficiency of the MSMEs activities. The implementation of BPM is a complex process and requires many technical and non-technical aspects. This research is

intended to define non-technical process that influence the MSMEs social media implementation. The study began by identifying the problem, reviewing the literature, and examining previous research gaps on the subject of this study. Findings from the literature are analyzed and synthesized. Result of this study is a proposed conceptual model that combines the TOE framework with the BPM non-technical process capabilities.

Keywords:
social media; MSME; non-technical process; TOE.

PAPER ID: 195

Trace Clustering Exploration for Detecting Sudden Drift: A Case Study in Logistic Process

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Abstract:
Handling concept drift in process mining is one of the challenges tasks to construct the process model. Process model discovery, as the crucial perspective of process mining, should consider concept drift to discover the changes of a business process over time from execution trace. Many previous works have been dedicated to detect the drift using approaches from process discovery. As a matter of fact, there are many statistical parameters involving in the existing approaches that could be a barrier to construct the representative model. Unsupervised learning (i.e., trace clustering in process mining) could be the option to understand the changes of a process through learning the sequential patterns. However, there was a limited study on using trace clustering to detect the concept drift. This study attempts to explore the use of trace clustering techniques (i.e., profiles) to deal with change process discovery as the one of categorization of concept drift in process mining. The results of various trace clustering approaches were compared to the ground truth determined by both domain experts and existing concept drift approach. To verify the results, a dataset from logistics process was used. The case study in logistics process shows that partition-based clustering could be used to understand the concept drift.

Keywords:
Process Mining; Concept Drift; Trace Clusterting.

PAPER ID: 197

A Conceptual Model for the Use of Social Software in Business Process Management and Knowledge Management

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Abstract:
Companies are required to have good management, systems and performance in order to survive in today's competitive business. BPM (Business Process Management) and KM (Knowledge Management) implementation can help organizations improve their capabilities through the use of individual knowledge resources and better organizational collective knowledge. In unstructured and constantly changing processes, traditional BPM often encounters problems because of the deviation between the model process and the reality of its implementation, as well as failure to improve ideas and innovation to the end user of the BPM process. This problem can be solved by encouraging various stakeholders to participate actively

to BPM implementation. Using social software on BPM initiatives can actively involve all relevant stakeholders and assist in the knowledge management process. This research follow several steps i.e. reviewing the literature, formulation problems, analyzing results from the literature and finally proposing a conceptual model. The results of this paper is the conceptual model for using social software that will affect Business Process Management and Knowledge Management. This conceptual model is expected to open opportunities for further research in the field of social software, BPM and KM.

Keywords:
Social Software, Business Process Management, Knowledge Management, Business Process, Conceptual Model

TRACK: SPECIAL TRACK: CYBER SECURITY

PAPER ID: 68

Privacy Preservation Quality of Service Model for Data Exposure

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Abstract:
Mobile applications and smartphones are closely related to each other. Mobile application plays a crucial role among smartphone users. It has gained enormous support from the smartphone users ranging from young to elder generations. It is very common to download and install desired mobile applications from application store to aid in completing particular tasks with ease. However, this behavior exposes user towards privacy risk as it has become a concern in smartphone usage. In this research, we propose a mathematical model named Privacy Risk Model (PRiMo) that measures the risk score of a user in smartphone usage. We are approaching the privacy issues in mobile applications from the individual's perspective. We conduct studies on different categories of mobile applications to determine the risk posed by the mobile applications. There is no standardization for residual risk. Therefore, by using the proposed model, we are exploring and creating a standardization for residual risk that becomes a benchmark for user to accept and live with that risk.

Keywords:
Privacy Risk Score; Sensitive Data Risk; Sensor; Mobile Application; Residual Risk

PAPER ID: 70

A Systemic Cybercrime Stakeholders Architectural Model

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Abstract:
The increased of cybercrime incidents taking place in the world is at its perilous magnitude causing losses in term of money and trust. Even though there are various cybersecurity solutions in place; the threat of cybercrime is still a hard problem. Exploration of cybercrime challenges, especially the preventions and detections of the cybercrime should be investigated by composing all the stakeholders and players of a cybercrime issue. In this paper; an exploration of several cybercrime stakeholders is done. It is argued that cybercrime is a systemic threat and cannot be tackled with cybersecurity and legal systems. The architectural model proposed is significant and should become one of the considered milestones in designing security control in tackling cybercrime globally.

Keywords:
Big data, Internet of Things (IoT); Cyberspace; Routine Activity Theory; Systemic

PAPER ID: 81

Will Users Keep Using Mobile Payment? It Depends on Trust and Cognitive Perspectives

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Abstract:
The rapid growth of mobile payment as the part of Financial Technology (FinTech) could lead to empirical problems (e.g. hacker attacks, privacy violation, etc) that results low cognitive based trust and lower loyalty among users. Hence, there are some proclivities for users' continuance intention on trust and its cognitive perspective regarding their funds that has been transferred to mobile payment platform. In order to understand the proclivity, we collect primary data from 165 users of mobile payment platform in Jakarta Indonesia and develop the hypotheses regarding the continuance intention that depends on trust and cognitive perspectives. To test the hypotheses, this study employs Partial Least Square – Structural Equation Modeling (PLS-SEM). The findings show that the cognitive based trust dimensions such as information quality and privacy are insignificant on continuance intention. On the other hand, perceived security protection shows positive influence. Simultaneously, only information quality and security protection have significantly and positive influence on trust, while privacy perception are insignificant on trust and continuance intention. This study also shows that trust has more determining role toward continuance intention than the cognitive perspective. This study contributes in specifying cognitive dimension and trust on continuance intention. Therefore, it suggests the mobile payment companies to improve quality, reliability, and information updates. Furthermore, they also need to improve the security protection that refers to personalization among users of the mobile payment to gain more trust and achieve customers' retention.

Keywords:
Information quality; Perceived Security Protection; Perceived Privacy Protection; Cognitive Based Trust; Trust; Continuance Intention; Mobile Payment

PAPER ID: 90

Web Vulnerability Assesment and Maturity Model Analysis on Indonesia Higher Education

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Abstract:
College websites are websites that are used as media and means of campus information. Since the website is widely accessible, the level of security on the website must always be maintained. To see the level of web security, it can be done by testing the security vulnerability of the web. The test results using the tools Nessus and Skipfish, on the websites of several universities in Jakarta, show that there are still several vulnerabilities. This vulnerability will affect the maturity level of the web site security. The results of vulnerability testing show that as many as 60% of the total 33 web sites have a maturity level below number 3. This indicates that the level of vulnerability on the web site is still high.

Keywords:
Web site, Vulneraiblity assesment, Maturity level

PAPER ID: 107

Web Application Security: An Investigation on Static Analysis with other Algorithms to Detect Cross Site Scripting

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Abstract:
Among web application vulnerabilities, XSS is the most frequently occurring. Where a web application accepts a user-input, it is possible for such vulnerability to inject malicious scripts. The greater part of the literature concentrated on the application of static analysis in order to locate XSS vulnerabilities. The reason for this is its capability of achieving effectively a 100 percent code coverage and observing every path of the program. Nevertheless, the main restriction of static analysis, being the false positive rate shown in the results, continues. Consequently, researchers began to merge static analysis with other algorithms, such as genetic algorithm, machine learning and pattern matching. This is to improve the XSS detection results as well as the static analysis run time. This essay defines the algorithms which formerly improved the static analysis outcomes regarding XSS vulnerability detection. Furthermore, each method's restriction was mentioned in which the studies continue to lack an efficient detection of XSS vulnerability in PHP web application.

Keywords:
Cross Site Scripting; Secuirty; Security Vulnerability; Software Security; Vulnerability Detection; Web Application Security

PAPER ID: 111

Protecting Facebook Password: Indonesian Users' Motivation

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Abstract:
Facebook is one of the social networking services that have users around 1.86 billion active users spread all over the world. To be able to enjoy various services from Facebook, a user is required to have a Facebook account. In the registration process to create a new Facebook account, the user is prompted to create a password to protect his account. The password policy service applied by Facebook requires all users to create and use a password for their Facebook account in accordance with the policies. This study aims to analyze user behavior with case study of Facebook account by using 12 construct variables adapted from Protection Motivation Theory (PMT). Data collected from Facebook users of 300 respondents. Data analysis method used is Structural Equation Modeling (SEM) analysis. From the research result, the factors that influence Facebook users' intention to protect their account are perceived vulnerability, fear, response efficacy, response cost, subjective norm, prior experience with safety hazard, threat susceptibility and personal responsibility. Meanwhile, they ignore the threat sverity, coping self-efficacy and securitysupport from others while protecting their Facebook account.

Keywords:
intention, structural equation modelling (SEM), facebook, protection motivation theory (PMT)

PAPER ID: 112

Preliminary Insights in Security Warning Studies: An Exploration in University Context.

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Abstract:
Security warning is a form of message that is designed to imitate authorized security alerting function to notify, warn and advice user about the consequence of an action by allowing random applications to run on the computer system. On the other hand, regular computer users tend to ignore the security warning that conveys excessive technical messages which are difficult for them to understand and lead to lack of motivation for decision making. Consequently, an online survey has been utilized by a group of 250 participants to gain general insights based on the user's understanding of security warning. This paper describes one main finding utilizing the Chi-Square test. From the finding, it can be suggested that 2 hypotheses were statistically significant in terms of user's understanding and their assessments towards computer security warning. On the other hand, variable of gender indicates with the highest significant values with three statistically significant 0.004, 0.017 and 0.000 respectively The overall results from the test given indicate that for each variable were connected between computer user's skills and their understanding in order to improve security warning in the future.

Keywords:
Security Warning; Chi Square; Human Computer Interaction, usable security, usability

PAPER ID: 113

A Review of Usability and Security Evaluation Model of E-commerce website

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Abstract:
Electronic commerce (E-commerce) websites have grown significantly over the years. However, due to security and usability issues, only 29% of users convert their online search into a purchase. The aim of this study is to provide an overview of the strengths and weaknesses of the existing evaluation models in the aspect of usability and security dimensions for an e-commerce website. This study reviewed the evaluation models that have been applied to E-commerce from the year 2000 to 2018. The study reviewed 11 models and listed the usability and security elements evaluated by each model. The strength and weakness of each model was highlighted. This study found that there is a lack of one comprehensive model that is able to measure all the usability components together with the security components. There is a need to design an evaluation model that will be able to evaluate usability and security together for e-commerce website in order to improvise the e-commerce website.

Keywords:
E-commerce; usability; security

PAPER ID: 124

Risk Assessment Using NIST SP 800-30 Revision 1 and ISO 27005 Combination Technique in Profit-Based Organization: Case Study of ZZZ Information System Application in ABC Agency

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Abstract:
Risk management is a practical step in handling risk scenarios in an organization, including in the field of information security. There are many techniques used to carry out information security risk assessments. One of them is a combination technique using ISO 27005 and NIST SP 800-30 revision 1. Previous research proved that the combination technique could be implemented in a non-profit organization (government). However, the detailed risk assessment steps are not explained clearly yet. Thus, raising the question of whether this new approach can be utilized in a common organization or not (not only non-profit but also profit organization). This research focuses on information security risk assessment by implementing the combination technique in a profit organization using semi-quantitative methods. The result, the combination technique can be used in common organizations both profit and non-profit with clear step by step translation.

Keywords:
risk assessment; combination technique; information security

PAPER ID: 135

Information Security Policy Compliance: Systematic Literature Review

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Abstract:
The growth of research in information technology security has enlarged in recent years. Investigations in Information security besides discussing technical problems but also consider policies, behavior and user compliance issues. Therefore, a systematic review is needed to inform the development of research in compliance with information security policies. This literature review aims to find the challenges and explore the current state-of-the art of information security policy compliance. We identified 305 research papers published on topics of information security policy compliance between 2014 and 2019 and extract 53 documents from discussing with inclusion and exclusion criteria. This literature review found there is a lack of study about an evaluation of information security policy compliance using specific metric and need to enhance the model of information security policy compliance with organizational theories.

Keywords:
Information security policy; Compliance; Literature review; Evaluation

TRACK: SPECIAL TRACK: INTERNET OF THINGS

PAPER ID: 16

Evaluating on User Experience and User Interface (UX/UI) of EnerTrApp a Mobile Web Energy Monitoring System

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Abstract:
The EnerTrApp mobile web application prototype was designed and developed where consumers can monitor the energy consumption of the home appliance using their smartphones through the mobile website of the system. The prototype was implemented and the mobile web application user interface of the prototype was evaluated through usability testing to asses for its effectivity, efficiency and user satisfaction. From the analysis of the data, it was found out that EnerTrApp mobile web application user interface is 100% effective as all tasks were completed by all participants. It is efficient based on the time-base efficiency measure and overall relative efficiency. Statistical data shows that testers as satisfied with the user mobile web app user interface. Based o the results consumers and will likely use and recommend the mobile web application as a tool to help reduce energy consumption in their household.

Keywords:
Home Energy Monitoring, Usability Testing, Mobile Web Application, Mobile Web Usability Testing

PAPER ID: 37

Smart Tracking and Fall Detection for Golden Age's Citizen

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Abstract:
Senior Citizen is an elderly human in a golden age who has many limitations. The number of older people is increasing in almost every country, including in Indonesia. One of the diseases that were suffered is senile or known as Dementia. Therefore, to protect the elderly, the special care is needed in order to be able to monitor the located and to see the condition of the elderly when they are travelling outside the home. Based on that condition, a prototype of the detector is proposed in this paper namely Smart tracking for the Golden Age's Citizen. This system consists of a GPS module, a vibration sensor, a GSM Module, and a voice recorder module. GPS module will detect the location, and the vibration sensor will detect the vibration if the elderly falls. The GSM module will send the information in the form of SMS to the family. The voice recorder module is used to record and play the recorded sound. Based on the results of the prototype test, the prototype is successfully detecting the location if the elderly is outside the range. The testing was concluding that the older people position can be tracked approximately around 2-5 meters from the determination in google map application and send an SMS in 3-5 seconds, if the user falls or lost.

Keywords:
Smart tracking; Elderly; Fall Detection; Senior Citizen

PAPER ID: 39

IoT Security Risk Management Model for Secured Practice in Healthcare Environment

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Abstract:
The emerging of Internet of Things (IoT) technologies for unified and interconnected medical devices and sensors has changed the scenario in the healthcare industry. However, with the 'openness' of the distributed environment and medical devices, IoT will be the point of a breach where attackers are able to identify vulnerabilities and subsequently launch their attacks. This becomes high risk to the healthcare environment which may cause a big impact on its security measure. Nonetheless, the benefits of IoT solution in healthcare are undeniable. To address this issue, this study proposes an IoT Security Risk Management Model for Secured Practice in Healthcare Environment. This study reviewed all IoT risks from related works and has selected one Malaysian government hospital as a case study. From the findings, a model was formulated which consist of three parts, the Healthcare IoT Risk Management, the Hospital Performance Indicator for Accountability (HPIA) and the implementation phases. As a result, a priori model was successfully developed and yet to be validated by the case study participants in the next stage.

Keywords:
internet of things; security risk model; IoT challenges; healthcare IoT

PAPER ID: 40

Chief-Screen 1.0 as the Internet of Things Platform in Project Monitoring & Controlling to Improve Project Schedule Performance

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Abstract:
The adoption of digital technology in the construction industry is required to improve project performance. The aim of this research is to evaluate schedule performance improvement using the IoT platform and to propose a new Chief-Screen 1.0 model. The Value Engineering method combined with qualitative analysis using NVivo software is used. The research involved group interviews with 27 respondents from the construction industry, and interviews with four experts related to the project case study. The results of the IoT platform evaluation show that it improves schedule performance by 29.5%, by helping users to collect data and undertake information exchange with optimal processes, efficiency and improvement in validity. IoT platform users are more productive, as they have more time to identify problems and find solutions. The use of IoT can improve schedule performance from the weakness of fast-tracking acceleration and balanced matrix organization. Chief-screen 1.0 is a platform to omit digital technology disruption in the construction industry.

Keywords:
Industrial Revolution; Internet of Things; Industrial Building Project; Fast Tracking; Balanced Matrix Organizational; Virtual Project

PAPER ID: 59

Integration of Haptics Tactile Feedback into Heart Disease Monitoring Mobile Application: A Conceptual Model

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Abstract:
Heart disease is one of the most prominent silent killers in the world. Treating the heart disease health problems is considerably costly. In the era of the 4 th Industrial Revolution (4IR), heart patients are now able to monitor their heart conditions using heart disease monitoring applications on any mobile devices. Usability factors such as ease of use, ease of learning, efficiency, flexibility and the attitude of users towards the applications are deemed important in determining the usability of such mobile applications. This paper employs a systematic literature review method in analyzing 1,339 relevant articles. Based on the review, this paper theoretically contributes by proposing a conceptual model that integrates haptics tactile feedback into heart disease monitoring mobile applications with the aim of enhancing the usability of the heart disease monitoring mobile applications. This is expected to lead to ease of health monitoring by both patients and health professionals, and potentially reduce the frequency of visits to hospitals and the cost of medical expenses. This paper also investigates the potentials of haptics tactile feedback in the forms of vibration, pressure, touch, texture, and movement when users are interacting with the applications.

Keywords:
Heart Disease; Usability Factors; Health Monitoring Application; Haptics Tactile Feedback

PAPER ID: 63

Usability Study and Users' Perception of Smartwatch: Study on Indonesian Customer

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Abstract:
Smartphones have become embedded in much Indonesian daily life. However, a smartwatch as an extension of a smartphone experienced a different thing. This study aims to investigate the relationship between usability, brands, and prices towards the perspective of consumers in Indonesia on smartwatches. We surveyed 116 smartwatch users and interviewed ten of them to get a complete understanding of their perceptions. This study reveals that the usage of smartwatches is less significant in influencing consumer perceptions, while brands and prices are strongly influencing the perception of consumers who have used smartwatches. Besides, this study also revealed that most respondents chose the smartwatch brand based on its smartphone brand. Xiaomi smartwatches were more affordable than other brands. Following Apple and Samsung, which ensured that they still have a safe place in the hearth of Indonesian customers.

Keywords:
Smartwatch; Usability; Brand; Pricing; Indonesia

PAPER ID: 85

Using Engeström's Activity Triangle Model to Design and Develop a Technology-based HIV Intervention for the Youth

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Abstract:
Recent reports claim there is a significant decline in terms of new HIV infections recorded among adults and children. In spite of this global decline, the Philippines continue to face an increased number of new HIV cases, especially among the youth. HIV testing, an important step towards HIV detection and medication, can be aided with mobile technology specifically smartphones. Given the advanced capabilities of smartphones and its wide reach among the youth, it can be a potential tool for delivering HIV health care intervention. This paper outlines how TimesApp - an Android-based prototype for anonymously scheduling an HIV counseling and testing appointment was developed using Engestrom's second generation activity triangle model.

Keywords:
HIV; mHealth; activity theory; activity triangle model; smartphone app

PAPER ID: 86

mHealth Medical Record to Contribute to NonCommunicable Diseases in Indonesia

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Abstract:
NonCommunicable Diseases (NCDs) have been the public concern worldwide, both in developed and developing countries. The issues are not only about the number of mortality but also the economic implications caused by the diseases. This paper aims to exploit the mobile technology potential by developing an mHealth medical record to assist the prevention and controlling of diseases in Indonesia, particularly in the West Papua Province. Design Science Research (DSR) methodology in Information System (IS) is employed to guide these research activities. This solution enables the medical data to be deposited by a person directly and personally utilising the developed mHealth application installed in the smart phone. By the time that person needs a further health examination for the NCD symptoms, the deposited data allows a General Practitioner (GP) making decision relatively easier at the first place. Some issues have been identified: data integrity and reliability as well as the manual assessment by the GP. Therefore, further evaluations are sought.

Keywords:
mHealth, NonCommunicable Diseases (NCDs), West Papua Province Indonesia, Design Science Research

PAPER ID: 94

A Generic Evaluation Framework of Smart Manufacturing Systems

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Abstract:
Many studies have discussed the different characteristics and technologies associated with Smart Manufacturing System (SMS), however, little attention has been devoted to study a configuration evaluation and selection challenges while establishing a new SMS that requires pre-implementation planning and assessment. Few interesting frameworks/models have been recently proposed by literature to tackle these challenges, but unfortunately these studies overlooked the importance of identifying evaluation and selection criteria to come out with coherent framework for measuring the effectiveness of SMS configurations prior to implementation. To fill up the gap, this study aims to formulate an evaluation and selection framework for of SMS configurations. To do so, this paper reviews existing SMS configuration assessment framework, simulation models, and evaluation and selection criteria and Subsequently Identifies the framework phases and the model of each phase. Finally, a digital twin-based simulation model is introduced for future development.

Keywords:
avoidance time; smart manufacturing systems; industry 4.0; configuration, evaluation framework; evaluation criteria.

PAPER ID: 121

Survey on Trust Calculation Methods in Internet of Things

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Abstract:
The Internet of Things (IoT) is widely affecting our daily lives in many different activities and applications. IoT devices are ranging from a tiny wearable device to large industrial applications. Wide variety of IoT applications have been developed and deployed involving many devices and produced huge data. In IoT applications, privacy, security, and trust play an important role in the success of IoT implementation. Trust can be defined as a key property to establish trustworthy and connectivity among devices to ensure secure services and applications. This paper addresses a survey of trust calculation models for IoT systems, i.e., what are available models or methods used by researcher to compute trust in IoT system. In addition, classification is also developed to categorize trust calculation model using five parameters including trust metric, trust source, trust algorithm, trust architecture, and trust propagation. Furthermore, some research challenges and directions are identified within the topic of trust- based security in IoT.

Keywords:
Group activity recognition; Smart building; Neural network; Face recognition; trust calculation; trust evaluation; trust classification; internet of things; IoT

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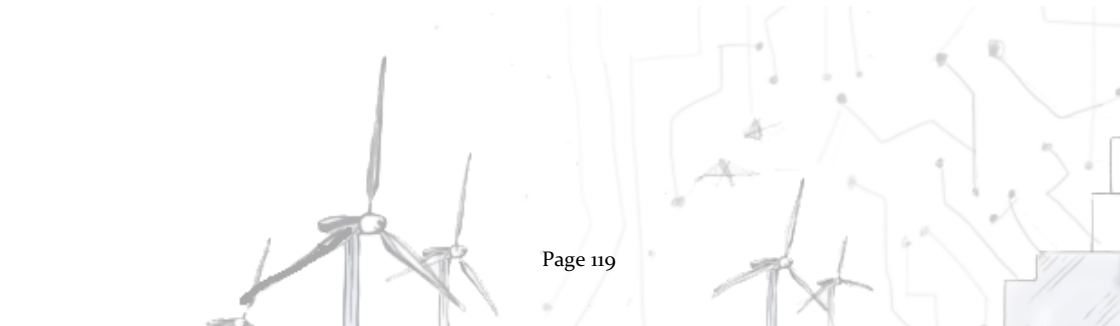
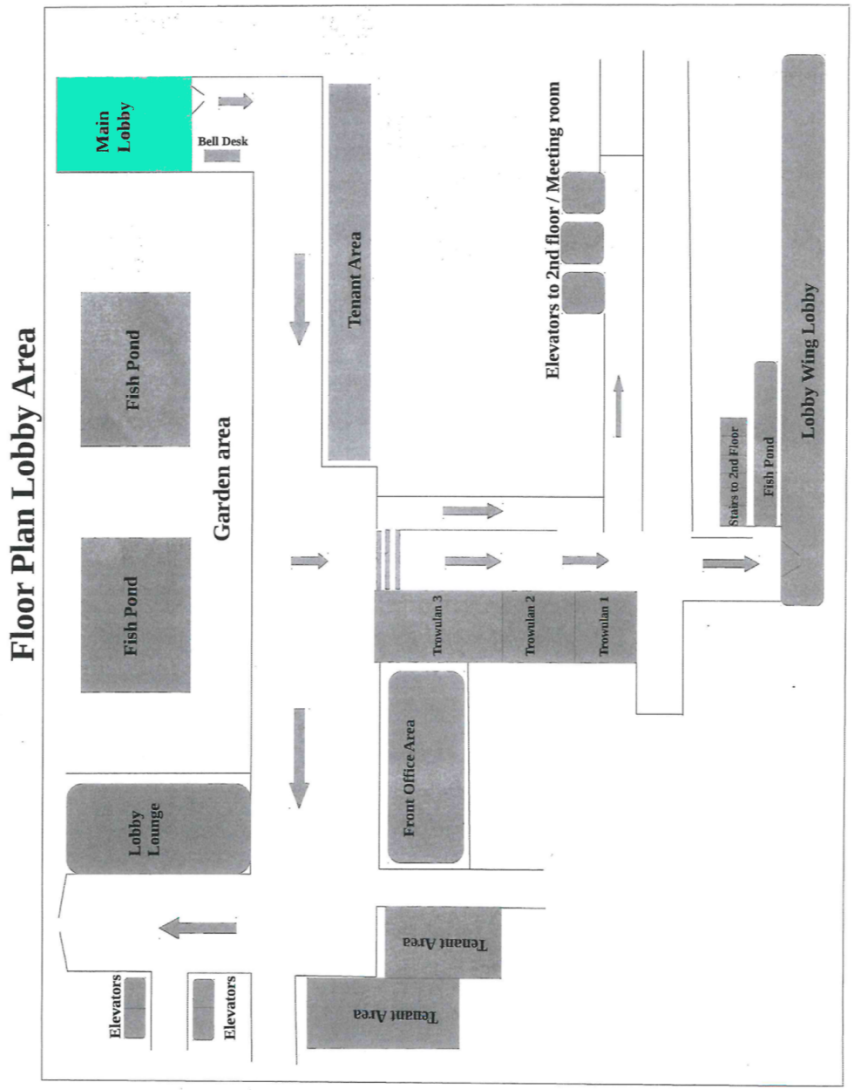
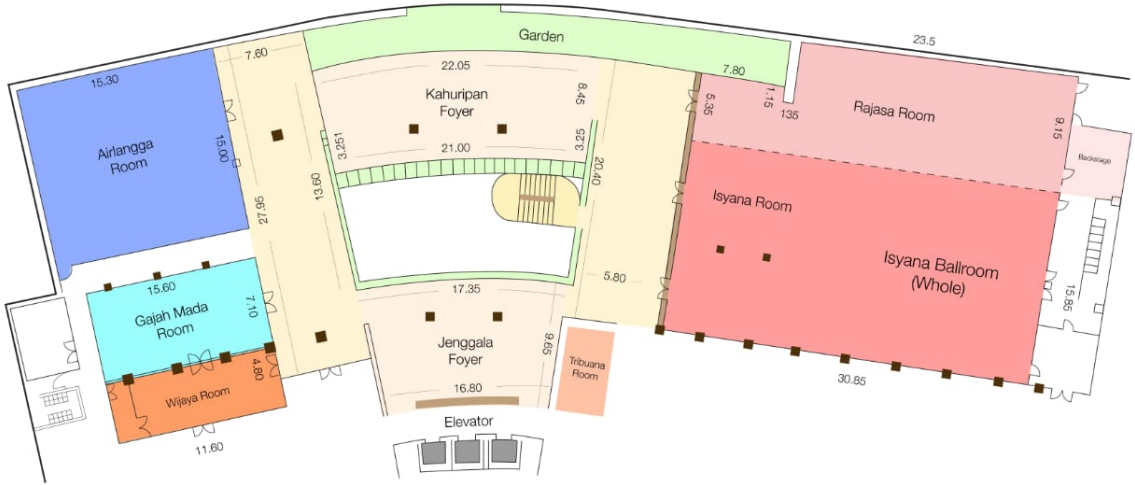


VENUE MAP


Floor Plan Lobby Area
Main Lobby
Bell Desk
Tenant Area
Elevators to 2nd floor / Meeting room
Fish Pond
Garden area
Fish Pond
Stairs to 2nd Floor
Fish Pond
Lobby Wing Lobby
Trowulan 3
Trowulan 2
Trowulan 1
Front Office Area
Lobby Lounge
Tenant Area
Tenant Area
Elevators
Elevators



Function Room
Floor Plan

- Isyana Ballroom & Isyana Room
- Rajasa Room
- Airlangga Room
- Gajah Mada Room
- Wijaya Room
- Tribuana Room
- Backstage
- Gardens
- Kahuripan Foyer
- Jenggala Foyer
- Elevator
- Pre Function

Bumi Surabaya
CITY RESORT

ABOUT US

Established in 2001, the Information Systems Department currently managed two Study Programs: Bachelor (S1) and Master (S2) in Information Systems. The undergraduate study program is accredited A from Indonesia Higher Education National Accreditation Board (BAN PT), while the master study program is accredited B. In addition to national accreditation, the Information Systems Department has obtained ASEAN University Network (AUN) certification.

Both the Bachelor and Master Program in Information Systems are carried out with a credit system (semester credit unit). The Bachelor of Information Systems Program consists of 144 credits and is designed to provide students with relevant competencies required for a career as:

- Information and Data Engineer
- Systems Analyst
- Project Manager
- Business Analyst
- IT Business Initiator

A master program student took at least 36 credits including 28 credits of taught courses and 8 credits master's thesis. The master program is scheduled to be completed in 4 semesters.

Recently relocated to the centre of Institut Teknologi Sepuluh Nopember main campus, the department has five research laboratories namely: Data Acquisition and Information Dissemination, Data Engineering and Business Intelligence, System and Information Technology Infrastructure, Management of Information Systems and Enterprise Systems.

In 2019 Academic Year, the Information Systems Department also offers an International Undergraduate Program (also known as IUP). IUP is a bachelor program that implements English as the language of instruction. The program offers regular undergraduate curriculum and provides opportunities for students to take part in international activities in the form of:

1. Study excursion

2. Internship in an international or multinational company
3. Student exchange
4. Summer/short course
5. Joint degree

We currently have active collaboration with several partner universities including Pusan National University (PNU), Hankuk University of Foreign Studies (HUFS), National Taiwan University of Science and Technology (NTUST), National Chen Kung University (NCKU), King Mongkut University of Technology Thonburi (KMUTT) and Fontys University.

We are eager to expand our networks and are open for academic collaboration in the forms of joint or dual degree, student and staff exchanges and internship as well as research partnership.

For more information about the department please contact: sisteminformasi@its.ac.id.

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