



ICORIS 2022

The 4th International Conference on Cybernetics and Intelligent System

Kampus
Merdeka

UNIVERSITAS POTENSI UTAMA



04th

Conference **ON**

08-09 OCTOBER
2022

VENUE: HOTEL KHAS PARAPAT, LAKE TOBA
NORTH SUMATERA - INDONESIA

ICORIS

INTERNATIONAL CONFERENCE

HOST



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SUPPORTED BY



ICORIS 2022 Program BOOK

WELCOME MESSAGE FROM UNIVERSITAS POTENSI UTAMA RECTOR



Bismillahirrahmanirrahim Assalamu'alaikum Wr. Wb.

Allow me to greet all conference participants by first praying our thanks and praise to Allah for His blessings, grace, and mercies that have enabled us to gather in this international conference in excellent health and condition. This is the fourth event of the International Conference on Cybernetics and Intelligent Systems (ICORIS) 2022, which is being held 8-9th October 2022 on hybrid mode by CORIS and Universitas Potensi Utama. We would like to extend a warm welcome to all delegates and participants in Parapat, North Sumatera, Indonesia. I am extremely grateful for this collaboration in organizing an international event. The honorable keynote speakers, distinguished guests, and participants, we are nearing the end of the Covid-19 pandemic era, and the pandemic

has simply enabled us to enter a world through technology. The COVID-19 situation has heightened the importance of digital strategies. While there have been some positive disruptions or transitions, the extent of technology's unique involvement in this crisis stands out. Yesterday, nearly half of executives said that cost reduction was a top priority for their digital strategies. According to a McKinsey survey, only 10% of people now have the same attitude toward technology; in fact, more than half claim to be investing in technology to gain a competitive advantage or reorganizing their entire company to take advantage of digital technologies. The goal of the 4th International Conference on Cybernetics and Intelligent Systems (ICORIS) 2022 is to strengthen collaboration and provide a forum for academicians, professionals, and researchers to discuss and exchange research results, innovative ideas, and experiences in order to advance the field of Information Technology, Information Systems, and Electronic Engineering in the modern world. The conference provides a forum for scientists, engineers, non-governmental and intergovernmental organizations, as well as the public and commercial sectors, to interact with others, present their latest works, and strengthen collaboration among academicians, researchers, and professionals who are responsible for building a better life and safety in society by applying knowledge to transform our sources into products and services. I believe that all of you will gain a lot from this conference, and that your contributions as speakers and participants will have an impact on the development of innovative technology during disruptions or transitions after Covid-19. I wish you a successful and enjoyable conference. Thank you kindly.

Wassalamu'alaikum Wr. Wbt.

Dr. Rika Rosnelly, M.Kom

MESSAGE FROM THE ICORIS 2022 CHAIRMAN

Assalaamu 'alaykum warahmatullahi wabarakaatuh,



After three successful sessions of ICORIS's conference, we are proud to present the fourth edition of ICORIS. We believe that ICORIS 2022 is an excellent and exceptional opportunity which enables researchers to present and discuss the latest innovations, results and developments in their research topics. This years' theme is "Build a trusted infrastructure system with blockchain technologies for society 5.0". The conference is expected to strengthen collaboration and provide a forum for academicians, professionals and researchers to discuss and exchange their research results, innovative ideas, and experiences to advance the field of Information Technology, Information Systems and Electronic Engineering in the modern world. The event will incorporate extensive discussions and consist of

additional workshops, guest speaker sessions, and scintillating social events that will help our future leaders develop networks and transform their ideas into actions.

The ICORIS 2022 is in the general area of communication and information technology. It provides a forum for presenting and discussing the latest innovations, results, and developments in IT Management & organizations, IT Applications, Cyber & IT Security, and ICT. We present several tracks that are separated into nine thematic areas, each ICORIS 2022 track is a carefully curated selection of sessions and activities focused on an important current or emerging issue. There is 282 papers submission and only 106 papers are accepted to be presented in this Conference. The accepted papers will be presented in one of the regular sessions and will be published in the conference proceedings volume. All accepted papers are submitted to IEEEExplore. IEEE Conference Number: #56380.

On behalf of the ICORIS 2022 committee, we wish to extend our warm welcome and would like to thank all Keynote Speakers, Reviewers, Authors, and Committees, for their effort, guidance, contribution and valuable support.

Wa billahi taufiq wal hidaayah.

Wallahul muwaffiq ila aqwamit-tharieq.

Wasalaamu 'alaykum warahmatullahi wabarakaatuh.

Husni Teja Sukmana, Ph.D

MESSAGE FROM THE ICORIS 2022 CO PROGRAM CHAIR

Assalamu'alaikum warahmatullahi wabarakatuh,



Alhamdulillah, let us praise Allah SWT who has given His blessings and guidance, so that we can all be here in good health. We thank Allah for the implementation of the ICORIS 2022 International seminar activity organized by Potensi Utama University in collaboration with ICORIS and the IEEE Indonesia section in North Sumatra, Medan at KHAS inna hotel parapat lake toba on 8-9 October 2022 where this activity is carried out in a hybrid way namely offline and online via zoom meeting and youtube. With the theme "Build a trusted infrastructure system with blockchain technologies for society 5.0". This conference is expected to strengthen collaboration and provide a forum for academics, professionals and researchers to discuss and exchange research results, innovative ideas, and experiences to advance the fields of Information Technology, Information Systems and Electronic Engineering in the modern world.

This year, the presenters in ICORIS 2022 come from various regions in Indonesia and from several countries as well as from various universities consisting of elements of teaching staff, practitioners, students and the general public. The participants who registered were 282 participants who came from several universities from within and outside the country, where the papers received from abroad consisted of the National Taiwan University of Science and Technology, Sri Lanka Institute of Information Technology Malabe, Taiwan Yuan Ze University. From the number of submitted papers as many as 282 papers, Bina Nusantara University is one of the most submitted papers, namely 151 papers. The status of papers received at ICORIS 2022 amounted to 138 papers. 106 papers with the status accepted and presented at the ICORIS 2022 seminar will be published on ieeexplore and also Scopus only three months after the conference ends. We hope that by participating in the International Conference - The 4th International Conference on Cybernetics and Intelligent Systems (ICORIS) 2022, participants will receive fresh and insightful material about the latest research.

thanks to the Chairman of Potensi Utama foundation, Founder of the CORIS, IEEE Indonesia Section, Rector of Potensi Utama University, Chairman of ICORIS 2022, Co-Host, Sponsor, all keynote speakers, presenters, participants, reviewers, moderators, Conference organizers for their involvement and cooperation at the International Conference - The 4th International Conference on Cybernetics and Intelligent Systems (ICORIS) 2022

On behalf of the committee, I apologize if during the 2022 International Conference - The 4th International Conference on Cybernetics and Intelligent Systems (ICORIS) there will be things that are not pleasing to you. Thank you, and we look forward to the participation of participants and presenters at the International Conference - The 5th International Conference on Cybernetics and Intelligent Systems (ICORIS) 2022 next year with other university organizers.

Wassalamu'alaikum Wr. Wbt.

Helmi Kurniawan, ST, M.Kom

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Keynote Speaker



JIANN-LIANG CHEN Prof. Chen was born in Taiwan on December 15, 1963. He received his Ph.D. in Electrical Engineering from National Taiwan University, Taipei, Taiwan, in 1989. Since August 1997, he has been with the Department of Computer Science and Information Engineering of National Dong Hwa University, where he is a professor and Vice Dean of Science and Engineering College. In August 2009, Prof. Chen joined the Department of Electrical Engineering, National Taiwan University of Science and Technology. He is now a Distinguished Professor and dean. His current research interests are directed at cellular mobility management, cybersecurity, personal communication systems, Internet of Things, and AI applications.



ASSOC. PROF. Dr. NORMI SHAM BT. AWANG ABU BAKAR is a Professional Technologist based at International Islamic University Malaysia (IIUM) since 2021. Apart from that she is also an Associate Professor (DS54), Kuliyyah of Information and Communication Technology since June 2020 till present, and a Deputy Director in Academic Management and Admissions Division since August 2021.

She holds a Ph.D in Software Engineering, Australian National University, since 2011 and received her habilitation in Degree at UUM in 1998, and Master of Science in Real-time Software Engineering at UTM in 2022. She currently teaches, consults, and conducts research in Software Engineering and is also interested in the emerging information technologies.



PROF. ZAINAL ARIFIN HASIBUAN, Ph.D, Ph.D was born in Pekanbaru on 24th December 1959. He received his Ph.D in Indiana University, USA. He earned degrees from several faculties, a bachelor degree majoring in statistics at Bogor Agricultural Institute (IPB), a master of information science at Indiana University and there he continued his Ph.D degree studies majoring in information storage and retrieval systems. He has joined the management of APTIKOM headquarters in the core management as the general secretary. He is also a Professor of Computer Science at the University of Indonesia (UI) and also as chairman of the Indonesian digital library conference.



DR. KYUNG OHH LEE has received his Doctor of Computer Science at Seoul National University, Korea in 1999. Since 1999 to present, he has been a Professor of Computer Science at Sun Moon University. He has been the Director of Ethics Council on Internet since 2004 to present and is also a Vice Chairman of the Korean Information Processing Society since 2007. In 2014-2017, Dr. Kyung Ohh Lee was the Dean of International Affairs and Director of Korean Language Institute at Sun Moon University. He was a Co-chair of International Conference on Computer Applications and Information Processing Technology-CAIPT from 2012 to 2018. His area of research interests cover Mobile Sensor Networks, Internet of Things, Online Education and Big Data.

PROGRAM STRUCTURE ICORIS 2022 Saturday, 8th October 2022

Venue: HOTEL KHAS PARAPAT, LAKE TOBA, NORTH SUMATERA - INDONESIA

07.00-08.00	<p>REGISTRATION (virtual room opened)</p> <ul style="list-style-type: none"> • Video profile UPU • Video bumper ICORIS • Video profile Sponsored • Video Lake Toba • Reminder 10 minutes before starting
08.00-09.15	<p>CONFERENCE OPENING</p> <ul style="list-style-type: none"> • Opening Event By Master of Ceremony • Indonesian National Anthem • Pray • Conference Report (Chairmant of the comittee) Helmi Kurniawan M.Kom • Welcoming Speech <ul style="list-style-type: none"> ○ Welcoming Speech 1 Dr. Djoko Soetarno (Founder CORIS) ○ Welcoming Speech 2 Dr. Ing. Wahyudi Hasbi (IEEE Indonesia Section) • Opening Speech <ul style="list-style-type: none"> ○ Opening Speech 1 (UPU) Dr. Rika Rosnelly, S.Kom., M.Kom (Rektor) • Video Opening ICORIS 2022
09.15-09.45	<p>KEYNOTE I</p> <p>Theme : Build Trusted Infrastructure System With Blockchain for Society 5.0 Prof.Ir Zainal Arifin Hasibuan MLS., Ph.D</p>
09.45-10.15	<p>KEYNOTE II</p> <p>Theme : The 4th Industrial Revolution and the Status Of the Robot Industry In Korea Prof. Lee Kyung Ohh</p>
10.15-10.45	<p>KEYNOTE II I</p> <p>Theme : Leveraging Blockchain Technology For Sustainable Community Assoc.Prof.Dr.Normi Sham Bt Awang Abu Bakar</p>
10.45-11.15	<p>KEYNOTE II</p> <p>Theme : On the Spot Prof. Jiann-Liang Cheng</p>
11.15-11.50	<p>Q&A</p>

12.00-13.00	<p>LUNCH AND SHOLAT</p> <ul style="list-style-type: none"> • Video role of the conference • Video bumper • Prepare Breakout Room
13.00-14.45	<p style="text-align: center;">ROOM 1 - ROOM 10 Session 1 (7 Presenter each room)</p>
14.45-15.00	<p style="text-align: center;">Session Break</p>
15.00-16.45	<p style="text-align: center;">ROOM 1 - ROOM 10 Session 2 (7 Presenter each room)</p>
17.00-18.00	<p>CONFERENCE CLOSING</p> <ul style="list-style-type: none"> • Reminder 10 minutes before starting • Closing Ceremony • Best Paper Announcement (Chairmant of the CORIS 2022) • Closing Statement (Chair of technical Program Committee)

ICORIS 2022 PARALLEL SESSION SCHEDULE

DAY	Time Session	TIME	ROOM 1		ROOM 2		ROOM 3		ROOM 4		ROOM 5		
			Session Chair : Sandy Kosasi		Session Chair : M. Eva Rosalina		Session Chair : Taqwa Hariguna		Session Chair : Seni Syahputri Lubis		Session Chair : Simbren Kaur		
			Assisten Moderator : Ade Puspita Sari + Indah Indrawani Savira		Assisten Moderator : Cindy Dwi Syafitri + Fadhila Rahma Handayani		Assisten Moderator : Fiore Arayu Hutagalung + Nafisah		Assisten Moderator : Sekar Kinanti Rahajeng		Assisten Moderator : Siti Aulia Rahmi		
Saturday, 8 Oct 2022	Session 1: 13.00-14.00	13.00-13.15	ISM	2	ISM	9	ISM	20	ISM	22	ISM	30	
		13.15-13.30	ISM	263	ISM	57	ISM	62	ISM	68	ISM	70	
		13.30-13.45	ISM	81	ISM	88	ISM	93	ISM	137	ISM	98	
		13.45-14.00	ISM	104	ISM	108	ISM	131	ISM	26	ISM	153	
	Session 2: 14.00-14.45	14.00-14.15	ISM	4	ISM	13	ISM	21	ISM	69	ISM	32	
		14.15-14.30	ISM	52	ISM	58	ISM	67	ISM	97	ISM	79	
		14.30-14.45	ISM	85	ISM	89	ISM	94	SPA	281	ISM	103	
	14.45-15.10			TIME BREAK									
	Session 3: 15.10-16.10	15.10-15.25	ISM	105	ISM	111	ISM	132	SPA	289	RC	112	
		15.25-15.40	SPA	44	SPA	187	SPA	224	SPA	209	RC	114	
		15.40-15.55	SPA	136	SPA	188	SPA	226	RC	202	RC	130	
		15.55-16.10	SPA	78	SPA	222	SPA	239	RC	240	RC	86	
	Session 4: 16.10-16.55	16.10-16.25	SPA	186	SPA	244	SPA	241	RC	164	CP	295	
		16.25-16.40	SPA	251	SPA	274	SPA	249	RC	181	CP	293	
		16.40-16.55	SPA	45	ISM	182							

DAY	Time Session	TIME	ROOM 6		ROOM 7		ROOM 8		ROOM 9		ROOM 10		
			Session Chair : Vina Evelyn Aulia Panggabean		Session Chair : Tiara Fahira Putri Army		Session Chair : Zalfa Nabilah		Session Chair : Rama Annisa		Session Chair : Adilla Amanda		
			Assisten Moderator : Anjelianta Ginting		Assisten Moderator : Aprillia Kemalasari		Assisten Moderator : Syafrida Sari		Assisten Moderator : Rima Aulia Fayi		Assisten Moderator : Rahayu Syafitri		
Saturday, 8 Oct 2022	Session 1: 13.00-14.00	13.00-13.15	ISM	173	ISM	183	ISM	265	ISM	205	ISM	272	
		13.15-13.30	ISM	287	ISM	242	ISM	185	ISM	255	ISM	171	
		13.30-13.45	ISM	46	ISM	7	ISM	247	ISM	72	ISM	234	
		13.45-14.00	ISM	159	CP	259	ISM	121	ISM	167	ISM	273	
	Session 2: 14.00-14.45	14.00-14.15	ISM	298	CP	163	ISM	248	ISM	221	ISM	212	
		14.15-14.30	ISM	264	CP	201	ISM	113	ISM	269	ISM	225	
		14.30-14.45	ISM	195	CP	253	ISM	168	ISM	172	ISM	235	
	14.45-15.10			TIME BREAK									
	Session 3: 15.10-16.10	15.10-15.25	CP	256	CNSB	38	ISM	124	CP	260	SPA	197	
		15.25-15.40	CP	296	CNSB	71	CP	288	CP	254	ISM	203	
		15.40-15.55	CP	299	CNSB	123	CP	292	CP	250	RC	270	
		15.55-16.10	CP	294	CNSB	135	CP	262	RC	286	CNSB	278	
	Session 4: 16.10-16.40	16.10-16.25	RC	189	CNSB	155	CP	261	SPA	280	CP	267	
		16.25-16.40	ISM	145	CNSB	217	CP	252	CP	250	ISM	215	

Paper Abstract

THE EVALUATION MODEL OF THE TRAVEL APPLICATION AS THE IMPACT OF THE COVID-19 PANDEMIC AND ITS ADAPTATION SIMULATION

Wahyu sardjono, Astari Retnowardhani

Abstract - This study aims to determine the impact of the COVID-19 pandemic on ticket sales flight at Tiket.com company. This is because the number of people infected with the Corona Virus is increasing more and more days making it difficult for people to travel during the pandemic. This research belongs to the type of quantitative research due to the data collection method used is a questionnaire method. The population of this study was taken randomly using a questionnaire that where the determination of the object is done by random sampling method. The method used is factor analysis and regression analysis for the model to be built. The results show that at the Tiket.com company there has been a decline in air ticket sales due to the COVID-19 pandemic. The results of the study indicate that there are Smart online booking, Product convinience, Excellent services and Easy access that need to be a concern for the tiket.com online travel agency. The success of the tiket.com online travel application can be carried out by maintain the Smart online booking, Product convinience, Excellent services and then increase the forth factor Easy access.

Keywords: evaluation model, travel application, covid-19 pandemic, online travel agent, adaption

BANYAN: GENERATING MICRO, SMALL, AND MEDIUM ENTERPRISES THROUGH AUGMENTED REALITY

Regina Carmelita Kristofani, Yudhistya Ayu Kusumawati, Mardhatillah Shanti

Abstract - In this era of globalization, all things were required with information that can be accessed quickly and practically. Moreover, the development of information technology can help the several sectors by increasing the selling value. In addition to the increasingly competitive level of business competition. MSME contributes to about 53.4% of economic expansion. Members of the MSMEs are mainly from the handicraft sector, such as bag and wallet manufacturers. Besides the great potential, sometimes they struggle in their growth when they face new technologies. This research aims to create mobile application to connect MSMEs with consumers through Augmented Reality. Banyan is an e-commerce application that contains local products. Banyan is here to help MSME players find suitable consumers throughout Indonesia. Banyan also opens opportunities for MSME actors so that their products have a high selling value. Banyan has the Augmented Reality feature which makes consumer easier to see the products offered. Augmented Reality itself is a technology that can combine the virtual world with the real world. This research used design thinking method to describe graphical user interface design process. Hopefully this application can be developed in order to help economic sector more productive especially during pandemic..

Keywords— augmented reality, e-commerce, graphical user interface, mobile application, MSMEs

WorkEv: Development and Evaluation of a Web Based Electronic Human Resource Management using Delphi Method

Niccosan , Ray Tommy, Christian Kurniawan, Brilly Andro Makalew

Abstract - This research is aimed to develop and evaluate an Electronic Human Resource Management (E-HRM) system called WorkEv to assist in monitoring and improving employee's performance. The application was developed based on Website using Django and Bootstrap framework. The evaluation process was conducted using Delphi method. Based on the results of the User Acceptance Test (UAT) with the Delphi method, the WorkEv application can be accepted by the target user because the design and development results meet the expectations of the target user's needs, namely easy-to-use navigation and control, simple and clear User Interface (UI) design, and the existing functions and features are effective in helping small to medium scale businesses/businesses in performing human resource management (HR).

Keywords—Web Application, Electronic Human Resource Management, Human Resource

Systematic Literature Review on Machine Learning Predictive Models for Indoor Climate in Smart Solar Dryer Dome

Karli Eka Setiawan, Gregorius Natanael Elwirehardja ,Bens Pardamean

Abstract - Precise predictions of indoor climate conditions are required in the implementation of Smart Solar Dryer Dome (SDD). Trend development of prediction models is discussed in this review from 15 selected research papers (2018-2022) on indoor climate prediction which was obtained from research paper databases. The output shows that the most used model for predicting indoor climate is Artificial Neural Network (ANN), especially Recurrent Neural Network (RNN) such as LSTM and GRU. However, there are some potential methods such as Transformer, Combined Support Vector Machines (SVM)-Deep Learning, and sequence-to-sequence which could outperform other commonly used models. Based on findings various opportunities exist to improve the precision of indoor climate prediction, which can bring power consumption efficiency and others benefit to Smart SDD users. Such studies may further be explored to produce more accurate machine learning models.

Keywords— Solar Dryer Dome, Deep Learning, Indoor Climate Prediction

Web Development of Direct-to-consumer Genetics Testing

Kians Azizatikarna, Deby E. Parung, Dian Amirullah, Alam A. Hidayat, Tjeng W. Cenggoro, Arif Budiarto, Simon Wong and Bens Pardamean

Abstract - As the cost of genetic testing becomes more affordable each year, direct-to-customer (DTC) genetic testing services witness rapid market growth. This has encouraged the development of an easy-to-use website application to optimize potential customers to obtain informed choice regarding the offered DTC genetic testing as well as purchasing information. We present a wireframing process as a part of the agile software development process to build a web portal prototype for an Indonesia-based genetic testing service called DNAku. The approach in building the prototype used in this case is a part of the Agile Software Development Method. In brief, the wireframing stage resulted in this work consists of three main important outcomes. The first one is the use case diagram as a blueprint of this web-based system. A site map is then proposed as an extended version of the use case diagram which visualizes the whole pages with the links. Finally, based on this site map a series of page mock-ups are designed using Hyper Text Marking Language (HTML) and Cascading Style Sheets (CSS). The result of the prototype can be used as the basis for the next development stage, which is the coding stage based on the collected feedback from users. Considering the continuous application development via the wireframing method by taking into account the cycle of feedbacks from involved parties, this approach can strengthen the infrastructure to sustain DTC genetic business model, which has a niche market in Indonesia.

Keywords—agile, genetic testing, prototype, website development, wireframing

Digitizing Farmers' Land Data Collection Systems in Indonesia with the Use of Tani Millenial Apps

Mohammad P. Bimantio, Dian P. Putra, Teddy Suparyanto, Amallia Ferhat, Nanda S. Nugraha, Alam A. Hidayata, Bens Pardamean

Abstract - In this era of digital world information, farmers face challenges about information management of huge data and the complexity of processes in precision farming. The data collection carried out so far can cause several difficulties, especially if the data is needed by the government or academics to support decision-making. Agricultural data collection applications only cover 12% of the market share of Android-based agriculture-based applications. In this study, Tani Milenial application is present as an alternative to support agricultural data collection activities in Indonesia. This application encourages farmers to be active and contribute independently to their role as subjects of agricultural development and is accustomed to digitally recording their agricultural activities. In this developed application system, the community, especially farmers and farmer groups, will find it easier to get information about agricultural potential data around where they carry out agricultural activities and can access this information online. Tani Milenial works as a guide to help farmers and transform agriculture but still have some gaps which should be checked and removed. The data collected can be used by various parties for research and decision-making. The app can be further improved to develop new features related to education, market information, and goods.

Keywords—Agriculture, Data Collection, Farmers, Information System, Mobile Application

A Diversity Inventory Monitoring System of Riparian Vegetation

Dian Pratama Putra, Nanda Satya Nugraha, Teddy Suparyanto, Alam Ahmad Hidayat, Digdo Sudigyo, Bens Pardamean

Abstract - To strengthen conservation efforts for preserving biodiversity in a conservation area, forest inventory is important to understand the natural succession process in the area and to establish a monitoring strategy. Further, tree inventory aims to monitor the output yielded in the area. More specifically, the tree inventory in the watershed area plays a key role to achieve Sustainable Development Goals (SDG), especially in riparian zones which are also vital parts of green zones in forests. However, the traditional inventory approach is time-consuming and laborious therefore the development of an expert system to assist in inventory monitoring is required. In this study, we develop a monitoring system via a mobile application to collect, analyze and visualize tree inventory data. The application includes algorithms required to compute tree biodiversity, distribution, and richness for the given input of the data of all tree species in a conservation area. For the model validation stage, we compare the traditional inventory approach with our proposed application-based approach to compute diversity inventory in two riparian locations: Klaten Conservation Park and Wonosobo Conservation Park. After the three-day data collection in the areas, we obtain that the accuracy of reading data of our proposed system can achieve more than 90% in comparison with the manual approach. This demonstrates that the system can assist forestry workers to perform more efficient tree inventories in different locations.

Keywords—Biodiversity, Forestry, Information System, Monitoring System, Tree inventory

Systematic Literature Review: Machine Learning Prediction Model for Covid-19 Spreading

Faulinda Ely Nastiti, Shahrulniza Musa, Eiad Yafi, Ritu Chauhan

Abstract - The dataset, methods, and machine learning prediction framework on the Covid-19 theme have been published widely and complex. Special publications on the spread of virus infection 19 in the form of a time series need to be mapped more comprehensively. This literature review aims to identify and analyze research trends, datasets, and methods used in predicting Covid-19 with Machine Learning Engineering research between 2019 and 2021. Identifying the need, specifying the research question evaluating review protocol, searching for papers, scanning papers, and reporting results are the eight major steps of this systematic literature review. The most critical aspect of systematic analysis is defining the research questions. The PICOC techniques are used to identify research questions. Journal candidates were filtered out using inclusion and exclusion criteria techniques to shrink the SLR scope area. based on a literature study it was found that research in 2019-2021 on the Covid-19 distribution prediction system used variables: susceptibility, infection, mortality, geography, weather, and patient clinical data to be processed into ANFIS machine learning prediction models and neural networks are several models. A classification model that is widely used for hybrid processing in calculating covid-19 infection prediction. The datasets that are often used do not fully meet the epidemiological aspects that trigger the spread of COVID-19 infections. ANFIS and NN are several classification methods that are widely used for hybrid processing in calculating predictions of the spread of COVID-19 infection

Keywords—machine learning, PICOC, SLR, classification, prediction, covid-19

The Technology Behind Genomic Database

Joko Pebrianto Trinugroho, Anzaludin Samsinga Perbangsa, Bens Pardamean

Abstract - In this digital era, we are exposed to a large amount of data. This includes biological data, which stores information about living organisms, including Deoxyribonucleic acid (DNA), genes, and proteins. With the development of information technology and information system, most of available biological data are stored in an online public database. Many of the databases are free-access and easily used, which helps the users, especially researchers, to make use of the data. Among the known public biological databases are the University of California Santa Cruz (UCSC) Genome Browser Database and the Rat Genome Database (RGD). These two databases provide access to the biological data from different organisms. This paper aims to describe the technology of public biological databases. Also elucidated in this paper are the differences features between UCSC Genome Browser Database and the RGD. Our results showed that the UCSC contains much more biological data and features than the RGD. However, the genome browser of UCSC has a complex display, while the RGD has a simple display. Overall, both databases give the users the option to choose the most suitable database for them

Keywords—public database, UCSC Genome Browser Database, Rat Genome Database, biological data

Web-based Application for Searching the Event Organizers with Provided Audiences by Using Recommender System Method

Budi Yulianto, Rita Layona, Yovita Tunardi

Abstract - An obstacle that is often faced by event owners (such as TV show) is finding a suitable event organizer that can provide many audiences at once. Some examples of events that require large audiences are talk shows, reality shows, game shows, fashion shows, variety show, exhibitions, and bazaars. These audiences are generally paid-audiences recruited by the event organizer. Large audiences are needed to show the high enthusiasm of the community for the event being held. The purpose of this research is to develop a web-based application that allows event owners to find an event organizer who can also provide large audiences through the recommender system method. The application development method used is Waterfall, and the data collection methods used are questionnaire, observation, and interview. The conclusion of this research is that this application makes it easy and helps event owners to find an event organizer that can also provide large audiences with certain criteria

Keywords— event owner, event organizer, tv show, paid audiences, recommender system

Generalization of Public Key Cryptosystem Based on Singular Matrix Using Ring of Integer Modulo

Maxrizal Maxrizal, Baiq Desy Aniska Prayanti, Sujono Sujono

Abstract - In this research, we modify the cryptosystem from a ring over an integer to an integer modulo m . In the previous research, the researcher used a singular matrix over integers so that the plaintext and ciphertext spaces became relatively large. For this reason, in this study, we limit the ring over the integer to the ring over integer mod m . We provide proposed modifications and simulations of key generation protocol, encryption and decryption. The results show that the proposed public key cryptosystem can work well and remain safe from mathematical attacks that hackers may carry out. The use of modulo m can also limit the plaintext and ciphertext space. In addition, the concept of modulo m makes the message more random and difficult to guess

Keywords—singular, singular matrix, singular cryptosystem, ring cryptosystem

Air Quality Monitor In Hospital Based On Fog And Cloud Computing

Candra Ahmadi, Juan Constantine, Desti Syuhada, Nisya Kintan Qumari

Abstract - Monitoring of air quality can help the community to prepare themselves if they have to move outside by wearing a mask or cancel plans to leave the house, especially for patients who are in hospital, because these patients are still in the healing phase. This is important considering the dangers of fine particles in the air, especially those whose size is 2.5 microns or known as PM 2.5 pollutants. Its small size makes pollutants with these standards can enter the lungs and cause problems in human health such as respiratory problems. In this research, a system will be created that can monitor air quality so that we can get an early warning. In this system using esp32 combined with several sensors. This research uses fog and cloud systems so that they are always under monitoring. The results obtained are that we can see and measure air quality, humidity, temperature and oxygen levels in real time and the results will be sent to us via the telegram application.

Keywords—IoT, ESP 32, Fog and Cloud Computing

Elevating Thematic Branding through Social Media Content: A Visual Concept of Kayutangan Heritage's Instagram Feed

Ivana Rosaline Tejakusuma, Yudhistya Ayu Kusumawati, Anindya Widita, Faishal Hilmy Maulida, Fransiscus Asisi Agung Dwi Prasetyo Prasetyo

Abstract - Tourism is one of the main economic sectors of the nation. Malang Raya is a region with various tourism destinations. Malang City, in particular, has announced and started developing a thematic tourism destination called Kayutangan Heritage, located in Kayutangan area. The smart tourism concept, based on integrated communication and technology and tourism has been adopted by several countries, including Indonesia. Through the concept, tourism organizations and institutions utilize technological innovation to elevate attractions and enrich tourism experiences for the visitors, both domestic and international. This paper aimed to rebrand the visual concept and social media content of the Kayutangan Heritage, especially on Instagram to be more appealing and in line with the destination character. Design thinking and data collection methods through online questionnaire (n=32) were used. The respondents were young adults/university students in Malang chosen using purposive technique. A new visual and content concept for Kayutangan Heritage's Instagram account was created to elevate the Heritage image and brand. Providing the new visual content and brand is hoped to support the development of tourism destination of Malang and moving forward to a 'smart' approach through optimization of technology features and application. The proposed design presented an informative, communicative, relevant, unique, fresh, and modern impression for the thematic brand of Kayutangan Heritage. Informational and educational content relevant to the brand are necessary to support the social media brand and content.

Keywords— Digital Branding, Kayutangan Heritage, social media content, tourism, Instagram

Automated Essay Scoring Using Machine Learning

Jason Sebastian Kusuma, Kevin Halim, Edgard Jonathan Putra Pranoto, Bayu Kanigoro ,
Edy Irwansyah

Abstract - Abstract— Essays are frequently employed in the educational system to gauge students' comprehension of particular subjects. However, marking essays requires a lot of time and work and could be prejudiced. In order to save time, lessen human effort, and eliminate biased scoring, automated essay scoring tries to automate scoring. Due to its lack of transparency, limited language support, and requirement for tagged data for the target prompt, which is not always available, AES is still not frequently utilized. This study's goal is to examine automated essay scoring methods. The PRISMA Flow Diagram is used in this study to conduct a systematic literature review. Studies that were released between 2016 and 2021 were found. Information pertinent to the research topics is taken from these studies and then processed to provide a response. Datasets, methods, and models are found in the publications. The performance score of models utilizing the same dataset is then used to compare them. According to the study, AES uses feature engineering and deep learning as its two core methodologies. More scholars are currently researching the deep-learning methodology. CNN, LSTM, and BERT are a few examples of neural network models used in the deep learning method. Most studies use the average QWK and the ASAP dataset as performance metrics. SBLSTMA (Siamese Bidirectional LSTM Neural Network Architecture) and BERT + handcrafted-features, both with 0.801 average QWK, are the models with the highest performance score on the ASAP datasets

Keywords—Automated Essay Scoring, AES, Deep Learning, Feature Engineering

Application of Design Thinking in the Creation of UI/UX on E-learning Websites

Eko Setyo Purwanto, Elena Bianca Jap, Eugene Salim Wijaya, Ryan Juwanda , Azani Cempaka Sari

Abstract - The emergence of the e-learning culture has taken the world by storm, and its trend has only increased with the COVID-19 pandemic. Being confined at home, students and educators are forced to transition to online learning no matter their familiarity or skill level with technology. One such issue is when a website is not designed effectively, making it needlessly complicated. On the other hand, taking away the complexity of a site may cause it to lack the information presented. To overcome this, an e-learning website should be designed using a design thinking approach that centers around creative problem solving to better innovate a solution. This paper aims to delve deeper into how the design thinking approach may improve an e-learning website's design. The results of the research that we have done show that the application of design thinking in our e-learning has the highest score in the navigation aspect and is also user-friendly, with a score of 8.1 (out of 10). While the lowest score is in the use of color with a score of 6.9 (out of 10), from these results, we need to improve in aspect use of color. This proves that the application of design thinking in e-learning is necessary to facilitate and assist users in using the application

Keywords— E-learning, Design Thinking, User Interface.

New Student Prediction Using Algorithm Naive Bayes And Regression Analysis In Potensi Utama University

Elsa Aditya, Zakarias Situmorang, B. Herawan Hayadi, Muhammad Zarlis, Wanayumini
Wanayumini and Cindy Paramitha Lubis

Abstract - Potensi Utama University has various study programs, and also has various facilities to support student learning activities. However, the main obstacle in higher education is the uncertainty of the interest of students who register, so that sometimes the facilities are inadequate. To overcome these problems, there must be activities to predict prospective new student applicants to improve facilities and interest of prospective students to choose to study at Potensi Utama University. Forecasting is the most important thing that must be applied to a company. With this forecasting, companies can see the opportunities that exist to generate sales predictions in the future based on the results of past sales data. Naive Bayes is a classification using probability and statistical methods, the Naive Bayes algorithm can be used in scientific fields, one of which is predicting future opportunities based on previous experience. Linear regression method can be used for forecasting with the assumption that the correlation between variables will continue in the future. Linear Regression is a Regression Method where the resulting equation is linear. Based on the resulting equation, predictions can be calculated by entering the values of the predictor variables in the equation. Based on this process, the predictive value of the response variable can be generated. In this study, the author explains more about how to determine new student predictions using a combination of the two algorithms where the Naïve Bayes algorithm is used to state which study programs have a lot of interest in the coming year, and the Linear Regression algorithm is used to show which study programs are most in demand based on the number of students who registered in the previous year, In the description that has been stated above, the author makes a paper with the title: "Predictions of New Student Registration Using the Naive Bayes Algorithm and Regression Analysis at Potensi Utama University".

Keywords— Prediction, New Student, Naive Bayes, Regression

The Influence of Consumer Interest on the Use of UI and UX in the E-Commerce Application

Abraham Aditya Sudjatmoko, Alfonsius Adrian Susanto, Jeremy Andrew Jayaseputra, Eko Setyo Purwanto and Azani Cempaka Sari

Abstract - UI and UX are one of the important elements in a digital application. Implementing a good UI and UX can help and simplify the process of interaction between applications and users which then leads to a positive user experience. However, if an application is not implemented using a good UI and UX, the opposite will happen, namely the inhibition of the information interaction process between the application and the user, which in turn creates frustration on the user's side. Currently, UI and UX are applied in every type of application development, one of which is an e-commerce type application. Good UI and UX implementation in e-commerce applications is expected to add value to the user experience that can compete with other similar e-commerce applications to get consumer attention or engagement.

This study aims to see how big the role or impact of UI and UX in influencing consumer interest in e-commerce applications. In this case, the research object of the e-commerce application used is Shopee. This type of research is quantitative research methods conducted through a questionnaire as a source of research data. The questionnaire was randomly assigned to 30 people who met the criteria, among others, aged between 15 to 25 years, using existing e-commerce applications for more than 3 months, and using e-commerce applications for at least the past month. The result is to redesign a high-fidelity prototype from Shopee that is in accordance with the UI and UX rules and principles from the results of research data sources. The results of the Shopee redesign will then be carried out a second data collection as a form of validation.

The result is that as many as 63 percent of respondents said that the display of the redesign is better than the current version of the Shopee application. It can be concluded that applying good UI and UX principles in e-commerce applications can increase consumer interest in using these applications

Keywords—UI, UX, e-commerce, consumer, interest, redesign, Shopee

NetDet: Concept of Integrating Basic Computer Network Learning into Game Mechanics

Febrianta Surya Nugraha, Ciske Mulyadi, Lilik Sugiarto and Nurhidayanto Nurhidayanto

Abstract - A computer network has similarities with a game, which must meet several rules to achieve its goals. The process of finding the source of the problem and how to solve it on the network is similar to detective's work, namely looking for clues that will lead to a conclusion. This research tries to design and create an educational game concept about computer network learning that integrates learning materials into game mechanics. The stages of the research carried out are Inception which consists of: determining the target user, platform, genre and background story; Elicitation which consists of determining the type of gameplay and interaction; and Elaboration which is the stage of determining the objective of the game and the level stage. Integration of learning materials into game rules and mechanics can be done, especially on the subject of basic computer network learning. Computer networks that follow the rules to run and function can be poured into game mechanics. This integration can be accommodated in casual game genre types, point & click interactions and with stage levels. Concepts and ideas in integrating learning into the rules and mechanics of a game have several limitations, namely not all subjects and learning materials can be converted or changed into a form of game mechanic rules and delivery of material in a little time

Keywords—concept, game mechanics, education games, Basic Computer Network Learning

Design and Development of Web and Unity3D WebGL Based Immersive Virtual Exhibition Application

Sinjiru Setyawan, Cuk Tho

Abstract - Information Technologies have been significantly improved and affect human life in many aspects. One of the significant improvements is in 3D application technologies. This paper presents the development and implementation of 3D application technologies that can bring the real world to a virtual world, such as bringing the exhibition into a virtual exhibition that many people in many places can enjoy. The development focused on producing a web and Unity 3D WebGL-based application that can display exhibition objects in 3D and simplify creating virtual exhibitions. The reason for the development of the application is to accommodate exhibitions in the Pandemic era. Spiral model as an application development method was used in this development, and evaluation was conducted by using black-box testing and user interface evaluation. The result shows that both the application and 3D object run and are displayed smoothly

Keywords— exhibition, virtual, unity 3d WebGL, web application, 3D application

Augmented Reality Design Using the ADDIE Model as An Introduction to Kindergarten Interior Interactive Elements

Anneke Anggala, Teresa Teresa, Yovinne Hendro Cipta, Fairuz Iqbal Maulana, Ida Bagus Ananta Wijaya.

Abstract - In today's era, technology continues to experience rapid development. Quite a lot of technology applications are found in education that can support the learning process to increase interaction in the process, one of which can be applied is kindergarten. Kindergarten is an institution where children can grow and develop behavior and thinking skills. High interaction during the learning process can make children feel bored and can increase children's productivity. This interaction can be obtained through AR technology, which is a technology that combines virtual objects with things as if they were real. This study uses the ADDIE method, namely Analysis, Design, Development, Implementation, and Evaluations, because it is considered more rational and easier to understand. The trial results show that the longer the marker tracking test is, the farther away the marker is. However, the tracking speed will increase as the distance between the marker and the camera narrows. It takes about 0.018 seconds on average to detect a marker. All identified markers display 3D objects with exact matches at a distance of 20cm to 80cm, and test tilt angles from 15° to 45°. This application helps kindergarten instructors with its knowledge and 3D interactive Augmented Reality

Keyword: augmented reality, marker-based, addie, kindergarten, 3d object

FADCOVNET: Fast Automatic Detection Covid-19 Based on Inception-Resnet-V2 Model

Tinuk Agustin, Siti Rihastuti, Moch. Hari Purwidiatoro, Afnan Rosyidi

Abstract - Covid-19 is still a threat to human health. Initial handling in detecting the status of positive COVID-19 patients or not through the IT sector is still very much needed to help the government control the covid-19 outbreak. This study offers a new framework of deep learning classification to help radiologists work in auto-detecting cases of COVID-19 by processing patient X-Ray chest (we call it FADCOVNET). By combining pre-processing techniques with a modified Inception Resnet V2 trained network on the Fully Connected layer and by adding pre-processing data. To control overfitting, the data augmentation method is used. The FADCOVNET model will be compared with the transfer learning model (Resnet50, Inception V3, Inception-Resnet-V3). The dataset used in this study is chest X-ray data for COVID cases as many as 4369 total data. In addition, this study also tested the performance of FADCOVNET on the Covid and healthy chest CT-Scan dataset of 8467 total data. The test results show that the performance of FADCOVNET on the accuracy, sensitivity, specification, precision, and F1-Score are 97%, 98%, 97%, 95%, and 96%, respectively. The results obtained outperform other transfer models. while the accuracy obtained from testing with the CT Scan dataset is 97%. This proves that the FADCOVNET model that we have built can ensure the generalizability of the model very well. From this test, it can be concluded that the proposed CNN architecture works very well in detecting COVID-19

Keywords— Convolutional Neural Network, Detection Covid-19, Chest X-ray, Resnet-Inception-V2

REGION GROUPING BASED ON SALES RESULTS USING K-MEANS ALGORITHM AT PT RMK

Fathur Muhammad Haekal, Indrajani Sutedja

Abstract - In the development of the business world which is always evolving and full of competition, the business actors must always think about how to continue to survive in developing their business scale. PT. RMK is a company engaged in the distribution of mobile phone credit vouchers, PT RMK wants to develop their business by identifying the sales area which their good at. Therefore, to support the company's business development, this study aims to help PT RMK to find out the potential sales areas in Bogor Regency using data mining. The stages of data mining work from data collection, data selection, modeling stage using the K-means clustering algorithm, and evaluation to the implementation phase. The results achieved are based on the K-Means Algorithm clustering of Cluster 2 which results in the sub-districts of Gunung Putri and Cileungsi being the areas with the most superior potential. It can be concluded that Gunung Putri and Cileungsi sub-districts are the sub-districts that display the most superior potential graph. The conclusion is the k-means algorithm clustering method can be used in grouping potential sales areas in sub-districts in Bogor district based on total sales transaction data

Keywords— K-Means, CRISP-DM, Business, Data Minings

Object Detection on Bottles Using the YOLO Algorithm

Fathi Sei Pahangai Akbar, Steven Yanuar Prasetyo Ginting, Giovanna Cheryl Wu, Said Achmad, Rhio Sutoyo

Abstract - Object recognition is a tool that is often used in today's digital era. Object recognition can identify an object. However, we cannot identify every single object unless the object has been tagged and studied by the machine. Our goal in this research is to create a program that can detect bottles with the YOLOv3 and COCO datasets and a simple architectural model that can be easily practiced. In this research, we will use YOLO, and the dataset is taken, or the objects that can be identified are only objects in the COCO dataset. Then we do object recognition of the bottles that we collect ourselves as a real case data test. We found that YOLOv3 is better at detecting objects than YOLOv2 with the same dataset

Keywords— Object detection, YOLOv3, COCO dataset, Object recognition, Bottle

Using Strategy Video Games to Improve Problem Solving and Communication Skills: A Systematic Literature Review

Alvin Lie, Anthony Stephen, Louis Ricardo Supit, Said Achmad and Rhio Sutoyo.

Abstract - Video games have been perceived negatively by society. It is used as a medium for entertainment, popular among children and young adults. This causes a common stigma in society, stating that there are no benefits applicable in real life gained from playing video games. However, depending on the design of the video game, it can be considered a tool to improve a particular set of skills. This study aims to investigate video games' benefits in improving problem-solving and communication skills, which are essential areas. In order to fulfill the purpose of the study, 351 papers with related keywords were collected and sorted, resulting in 33 papers most relevant to this study. This study concludes that video game play of a challenging genre, like strategy, can improve a player's problem-solving skills, while the collaborative aspect improves communication skills over time

Index Terms—video games, strategy, problem-solving, communication

Using Image Upscaling Methods in Digital Platforms to Reduce Internet Usage

Willy Lau, Josia Sean Audric Santoso, Ignatius Ronald, Eko Setyo Purwanto, Azani Cempaka Sari

Abstract - Image scaling has played an essential role today, especially in file sharing, such as on social media. Image scaling is a process for changing the size of a digital image. There are a lot of methods in image scaling that are being used in digital platforms. The standard image scaling being used is the upscaling method. Image upscaling also requires a lot of time to process, making it slower to finish upscaling the photos. This paper has proposed an optimized upscaling method where the upscaling process only focuses on the object in the images. By using the Object Detection AI, the Image Upscaling Method will only focus on the object inside the picture. Theoretically using image upscaling can reduce the time needed to finish the upscaling process. Before implementing this object-focused AI in the image upscaling method, there will be done a comparison of several upscaling methods to determine which upscaling method has the best quality. The results of comparison between some image upscaling method shows that the waifu2x has the best image quality. Not only the image quality, this waifu2x also has one of the smallest image size produced by the algorithm compared to the others. In this experiment, there is a limitation in experimenting the algorithm because using waifu2x requires CUDA Hardware Acceleration by Nvidia. Without using CUDA, the time needed to finish the upscaling process requires longer time.

Keywords— Image Scaling, Image Upscaling, Optimization, Object Detection AI, Waifu2x

Factors Influencing the Intention to Use Peduli Lindungi Application Among Indonesians During COVID-19

Ibnu Darmawan and Assed Lussak

Abstract - A COVID-19 pandemic struck a major section of the world's population in 2020, causing governments in various countries to put in place a range of tracking measures to identify and locate persons afflicted with the virus. While the government installs PeduliLindungi, a tracking application, there are always concerns over the reliability, personal information and data privacy recorded in the system. People might also be reluctant to use technology because of the ease of use. The purpose of this research is then to investigate the factors that have an impact on the likelihood that Indonesians will use the PeduliLindungi application. The UTAUT2 Theory was used as the overarching framework for this research. This theory takes into account a number of different aspects, some of which are performance expectancy, effort expectancy, social impact, an enabling environment, habit, and perceived privacy credibility. Purposive sampling, as well as a quantitative (survey) technique, were used in this study. In this technique, online questionnaires were issued to Indonesian residents who were aware of or had heard about the PeduliLindungi monitoring initiative, yielding 89 valid responses. The data show that the intention to use the PeduliLindungi application has a favorable and strong relationship with four variables. Social influence, facilitating conditions, habit, and perceived privacy credibility are examples of these characteristics. However, it was discovered that performance and effort expectations had no association with the intention to use the specific tracking instrument. This work adds to the field of media information technology studies by presenting the concept of perceived privacy credibility as a key construct for developing the UTAUT2 Theory in respect to the Internet of Things (IoT). This theory provides relevant ways for tracking suspicious patients for government authorities, medical professionals, and healthcare providers.

Keywords— intention to use, pedulilindungi, application, COVID-19, UTAUT2

Investigating Cloud-Based Educational Technology Adoption in Advancing Learning Performance

Michael Siek, Ivana Wijaya

Abstract - In the era of emerging digitalization and automation, the usage of cloud-based collaborative tools to support educational learning processes has become common and essential necessity. A variety of educational technologies and computer applications have been developed and utilized by the educators and learners. One of well-developed and widely used cloud-based educational systems is Google Workspace for Education that comprises of many different applications. This paper aims to identify and analyze the determinants influencing the educational technology adoption in advancing learning performance, specifically on the user acceptance of Google Workspace for Education among university students. A proper modified quantitative research framework was developed to better analyze the factors determining the usage of such educational application and its contribution towards the learning performance. Furthermore, the PLS-SEM method was employed for analyzing response data collected via well-defined questionnaires. The data analysis results with modified research framework indicate that the learners are satisfied with the usage of Google Workspace for Education in their learning processes and its adoption can increase their learning performance. This cloud-based educational technology adoption is highly impacted by the perceived usefulness with the beta value of 0.818, which increases the willingness of users to keep using the applications leading to advancement in learning performance.

Index terms - partial least square, structural equation model, technology acceptance model, quantitative research, software as a service collaborative tool

UI/UX Design of e-Wallet Application Using Design Thinking Approach

As'ad Syafrizal Addany, Nanda Ihsan Pradana, Satria Perdana Putra Prabowo, Ina Sholihah Widiati

Abstract - Along with the development of the times, new innovations in payment instruments in the form of electronic money are unique and very different from payment instruments using cards. The increasing growth of online transactions has led to the emergence of various new technologies, one of which is a digital wallet. The development of electronic payment tools starting from pulses and online game vouchers, now many users are millennials or even just to save money. The development of this application uses a Design Thinking approach. In Design Thinking, user experience is prioritized. The first stage is to identify users in general so that they can determine the priority of application features to be developed. The next stage is define, ideate, prototype and test. Each stage prioritizes the app's user experience. The UI/UX design developed on the e-wallet application prototype is in accordance with the design thinking approach.

Keywords : Design Thinking, UI/UX Design, e-Wallet

Impact of Robots, Artificial Intelligence, Service Automation (RAISA) Acceptance, Self-efficacy, and Relationship Quality on Job Performance

Nurul Sukma Lestari, Dendy Rosman, Syafrizal Chan, Lenny Christina Nawangsari, Hana Desy Natalina, Freddy Triono

Abstract - Service Robots, Artificial Intelligence (AI), and Service Automation have shown to be increasingly advantageous to hotel businesses. Especially, during the COVID-19 pandemic, hotels are starting to adopt artificial intelligence (AI) and robotics to increase the quality of their service. There are several studies that have examined the costs and benefits of implementing these smart technologies, but only a few of them have investigated the impact on hotel employees' job performance. The purpose of this study is to investigate whether hotel employees' self-efficacy, their attitude on technology adoption, and their relationship quality with supervisor can affect their job performance. A convenience sample method was used to select respondents. The survey was distributed to employees of five- and four-star hotels in Jakarta who worked with technology equipment daily. There were 171 research participants involved in this study. Primary data was gathered using a questionnaire survey and analyzed quantitatively using SmartPLS to test for causal relationships in the data. The outcome of this research found that there is a positive significance relationship between employees' self-efficacy and their job performance, employees' relationship quality and their job performance, and also with their attitude on smart technology adoption and their job performance. These findings contribute to the impact of smart technology adoption literature, particularly in smart technology adoption in the hospitality industry.

Index terms - smart technology, Robots, Artificial Intelligence, service automation, hotel employees

Smartphone-Based Virtual Reality Systems (SBVRs) as a Promotion Tools for Foodservice Industry

Dianka Wahyuningtias, Dendy Rosman, Eka Diraksa Putra, Farah Levyta and Ryonaldi Maulana

Abstract - Virtual Reality (VR) has been increasingly popular in the consumer market in recent years, allowing the customers to fully immerse in a virtual environment. This technology has become one of important communication tools that expectedly transform the way the businesses present their products and services to the potential customers. This study aims to investigate how Smartphone-Based Virtual Reality Systems (SBVRs) perceived usefulness and enjoyment influence customers' future intention to make a restaurant reservation. Past study in hospitality found that the adoption of SBVR positively improves potential consumers' booking intentions. Therefore, the current research aims to examine whether SBVR utilization has similar effect in foodservice industry, particularly how it would impact potential customers' purchase intention. This study used convenient sample that consists of 128 respondents. The current study made use of the Statistical Package for the Social Sciences in order to examine the data (SPSS). A correlation analysis was done to investigate the relationship between the research variables. The finding of the study indicate that the perceived usefulness and enjoyment of a restaurant virtual reality application has a positive influence on the user's intention to make restaurant reservation in the future.

Keywords— Smartphone-Based Virtual Reality Systems (SBVRs), Virtual, Restaurant. Booking intention, Smart technology

IMPLEMENTATION OF UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT) MODEL FOR EVALUATING THE USE OF E- GOVERNMENT SIDJP NINE IN INDONESIA

Levana Dhia Prawati, Martinus Hanung Setyawan, Afriana Lukita Sari, Mahda Karina

Abstract - E-government implementation is improving the quality and accessibility of public services through the implementation of online public services. SIDJP Nine is one of the E-Government in Directorate General of Taxes. The purpose of the research for determine factors affecting the interest and behavior in the use of SIDJP Nine at tax office in Indonesia. The research uses a model of the UTAUT. Respondents of this research are tax officers that using the SIDJP Nine application. The method used is quantitative with the data collected using a questionnaire. Data are analyzed by Structural Equation Modeling approach Partial Least Square (SEM-PLS). The result in this study is that Performance expectancy has no significant effect on behavioral intention, Effort expectancy has a significant effect on behavioral intention, Social influence has no significant effect on behavioral intention, Habit has a significant effect on behavioral intention, Behavioral intention has a significant effect on use behavior.

Keywords— SIDJP NINE, Performance Expectancy, Effort Expectancy, Social Influence, Habit, Behavioral Intention, Use Behavior

Modify Linear Congruent Generator Algorithms Using Inverse Elements of Modulo Multiplication for Randomizing Exams

Sujono Sujono, Maxrizal Maxrizal, Syafrul Irawadi, Baiq Desy Aniska Prayanti

Abstract - Linear Congruent Generator randomization results are pretty easy to predict. In addition, improper parameter selection in LGC will make the LCG period predictable, and randomization results will repeat quickly. To overcome the weakness of LCG, researchers have developed LCG and hybrid variants, such as CLCG, dual CLCD, RSA hybrid, Hybrid ECC and Fibonacci hybrid. Although LCG variants and combinations produce better random results, the computational level is more complex than LCG. In this study, we propose a modification of LCG by adding an inverse element to the multiplication mod m . Like CLCG, this research is an LCG which is continued by calculating the inverse element of the multiplication mod m . The results showed that the resulting modified LCG worked well, and the randomization effect was more random than the original LCG

Keywords—LCG modification, inverse element, pseudo-random number generation, LCG, mod m

A Review of Optical Text Recognition from Distorted Scene Image

Oliver Oswin Sumady, Brian Joe Antoni, Randy Nasuta, Nurhasanah Nurhasanah, Edy Irwansyah

Abstract - The growing number of images with text taken from a natural position increases the amount of text distortion. Some challenges come because of distortion, curvature, or blur which occur when images are taken from a natural position. Scene text recognition has made significant progress and improved in accuracy. However, issues arise from the nature of several images. This paper aims to review algorithms used for scene text recognition that focus on the accuracy and consistency of scene text recognition on various common datasets and compare them. In addition, to find the weakness and inconsistencies of various scene text recognition algorithms between different datasets. A PRISMA method flow diagram applies to conduct the review. The results show Convolutional Neural Network (CNN) is the most adopted approach to creating scene text recognition programs. The highest accuracy is the CA-FCN algorithm used for the SVT dataset. However, the consistency of algorithm performance varies from one dataset to another. Most algorithms struggled with the IC15 irregular or SVT regular dataset and performed best using the IC03 dataset.

Index Terms—scene text recognition, distorted image, PRISMA, CNN, CA-FCN

Smart Lighting System for Children's Therapy to Prevent Nyctophobia Syndrome at Bedtime

Andi Pramono, Badrul Munir, Muchammad Farchan, Satrio Arif Budiman, Baskoro Azis, Wahyu Waskito Putra

Abstract - Everyone has a fundamental desire for sleep. By sleeping, humans can conserve energy and replenish their stamina to optimal levels. Lighting is one component that influences the quality of a person's sleep. One of them is a person who sleeps with the lights on, suffers from nyctophobia, has poor sleep quality, and may be responsible for several illnesses. This study aims to develop a smart lighting device that will aid in treating youngsters with nyctophobia to get used to sleeping with the lights off to improve their sleep quality. The case study methodology used in this study entails the development of a prototype. This method employs an oximeter as a heart rate detector and a sensor comparison as the measurement device. Arduino Uno circuit and heart rate sensor are the main devices in this research. At the same time, the NRF 24L01 is a communication medium between the two Arduino Uno boards. The experimental measurements in normal conditions indicate that the heart rate sensor was nearly the same as the value displayed by the oximeter. Similarly, after running for 1 minute, both devices produced almost identical results, with an average difference of 1 Beats Per Minute (BPM). According to experiments with a heart rate sensor, the switch-off condition can be activated if the heart rate hits 90 BPM. In this case, the light will switch off once the heart rate hits 70 BPM, which might be used for sleeping individuals

Keywords— Nyctophobia, Pulse Sensor, Smart Lighting, Sleep Quality, Stage of Sleep

Students Experience Testing in the Implementation of the “Gather Town” Meeting Platform as an Alternative Learning Media other than Zoom Cloud Meeting Application

Eko Setyo Purwanto, Danielson, Khawen Flawrenxius, Bryan Anderson, Azani Cempaka Sari

Abstract - The COVID-19 pandemic has limited the mobility of everyone in the world. Education is one of the most affected sectors because education systems have been done face to face. Most educational institutions switch to online learning by using online meeting platforms. We discovered an online meeting platform called “Gather town” which looks more attractive in increasing learning motivation and may be an alternative solution for online education. This paper aims to test student experience using “Gather Town” as a new learning medium and compare the effectiveness with Zoom Meeting Application. We compare the User Experience of both applications by letting respondents try the application and ask for feedback from our questionnaire. The result from the questionnaire shows that Gather Town has excellent potential as an alternative new learning media.

Keywords— gather town, zoom meeting, e-learning, virtual class, student

Smart Trash Cans for Waste Management Using NodeMCU and Ultrasonic Sensor

Julian Alifirman Wardana, Andros Clarence Chen, Rahmat Syifana Jaelani, Leonardo Leonardo, Budi Juarto

Abstract - Poor waste management and lack of public awareness of environmental cleanliness, especially disposing of waste in its place, causes garbage to accumulate and emit a foul odor which can be a source of disease transmission. The lack of information technology for waste management by cleaning staff causes waste handling to be slow. Based on these problems, it is necessary to have an automatic trash can that sorts organic and inorganic waste according to the type of trash and adds an IoT (Internet of Things) function that can quickly provide initial information that the trash can is full. The smart trash can use node MCU, or it can be called ESP8266, to control the system and the connection between the device and WiFi. Ultrasonic sensors detect the presence of humans or objects who come into the trash and the height of the trash. The Servo to control the trash can door. The result of making the tool is shows that the trash bin system we created has an accurate level of volume measurement, as evidenced by R2, which has a value of 0.80 with a correlation value of 0.89, which means that the sensor measurement value and the actual measurement are not much different. In the future, this tool will develop a camera module to distinguish organic and non-organic waste. So that there will be a notification if the garbage entered is the wrong type of garbage

Keywords— IoT, smart trash can, waste management, ultrasonic sensor, ESP8266

A Blockchain-Based Framework Gamification for Securing Learners Activity in Merdeka Belajar-Kampus Merdeka

Henderi Henderi, Muhamad Yusup, Po Abas Sunarya, Ninda Lutfiani, Efa Ayu Nabila

Abstract - In the life of Education 4.0, information is very vulnerable to security. Assessment is an integral part of learning. In addition to attendance, assignments are the main point in determining the graduation of a course. However, there are some safeguards for student activity assessment input platforms, which are dangerous, and data leaks can occur. Taking advantage of its open-source, transparent, and immutable or immutable nature can help secure the various platforms used. The University's need for various information makes the application of Blockchain technology a very appropriate thing to use. With the use of Blockchain, the security of student activities is more guaranteed, and it is easier to control by the Lecturer Board. This study aims to secure student activities from forgery and fraud when inputting activities using Blockchain technology. The framework created also uses gamification as something that motivates learning activities. The author has analyzed the security needed for activity verification in the form of levels on several applications, one of which is a platform-based application used for the Merdeka Belajar-Kampus Merdeka platform. The method used in this research is descriptive research in the form of a literature study that prioritizes gamification in a platform framework. The urgency of this research is to secure the Merdeka Belajar-Kampus Merdeka platform for students who need more security in their data storage. If security is increased, student confidence and learning motivation towards the activities carried out will increase so that learning motivation will be better so that the quality of learning will be better.

Keywords: Blockchain, Gamification, Kampus Merdeka

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Novel Framework to Define Extended & Mixed Reality for Online Learning

Bhupesh Rawat, Ankur Singh Bist, Untung Rahardja, Eka Purnama Harahap, Rafly Ananda Dwi Septian

Abstract - COVID-19 has taken educational protocols to different track. Online education is the way to execute process smoothly. There are various tools that are providing services to fill the pain points. Role of emerging technologies can't be denied. Extended and mixed reality plays a vital role here. Our purpose is to analyze the same in this paper. Second objective of this paper is to develop novel framework to define extended and mixed reality for online learning. Testing has been done on four Indian universities and schools to identify the effectiveness of proposed framework.

Keywords: Extended Reality, Mixed Reality, Online Learning

Self-Sustain Smart Aquaponic Using Embedded System

Jonathan Axel Benaya, Cecilia Valenda, Syahazna Balqis Renzaputri, Stanley Wisely, Mochammad Haldi Widiyanto

Abstract - The world population continues to increase rapidly due to urbanization resulting in fewer land available for farming. If this problem is not immediately anticipated, then one day people will run out of land to grow crops and raise livestock. This will be dangerous because people will find it difficult to meet their needs in the future. There is a solution, named aquaponic, it's an efficient method that combines both aquaculture and agriculture. This research aims to design an embedded system for aquaponic so that the aquaponic system could run automatically with minimum human interference. The system will help humans by giving information and maintaining the plants and fishes. The scope of this research is to be able to feed fish automatically and ensure the humidity level is right for plants to thrive. The result at the end shows the sensor can work accurately to measure surrounding conditions. The value of RMSE for both auto feeder and auto humidifier systems are 0.34 and 1.09, while the value of R-Squared for these two systems are 0.9989 and 0.9960.

Keywords—Smart Aquaponic, Embedded System, Auto Feeder, Auto Humidifier, Smart Farming, Urban Farming

Sentiment Analysis towards Face-to-Face School Activities During the COVID-19 pandemic in Indonesia

Oei Angela Christabel Gunawan, Denny Alvito Ginting, Rionaldo Alviansa Handoyo, Andrew Willy, Samuel Chandra, Fredy Purnomo, Risma Yulistiani

Abstract - As the COVID-19 pandemic took place, many face-to-face activities have been stopped to suppress the spread. However, in the last few months, many of those activities including learning activities have started to switch from online back to face-to-face. One of the major activities is face-to-face learning activities which involve millions of students all over Indonesia. Consequently, this study focuses on analyzing public sentiment through Twitter tweets which were obtained through scrapping by using Tweepy. The tweets were labeled using a semi-automatic process, using TextBlob and manual annotation. Next, we trained an IndoBERT model to conduct sentiment analysis and found that public sentiment was dominated by a mix of both negative and positive sentiment, followed by neutral sentiment. Our model obtained an accuracy of 40.79% on unseen data.

Keywords—COVID-19 analysis, face-to-face activities, IndoBERT, sentiment analysis, Twitter

Smart RFID System for Locker Cabinet Security Using Android App

Kristianto Wijaya, Jonathan Audris Heriyanto, Davis Inde Satya, Jovianto Godjali, Rissa Rahmania

Abstract - Crime rates have gone higher from year to year, especially crimes related to thievery. It is one of the issues that traditional security devices failed to handle, due to their weaknesses and inability to inform the owner about the status of the lock. Technology has advanced to another level, where it has enabled devices to communicate with one another with the use of the internet. This technology can be used to complement traditional security system weaknesses. The purpose of this research was to propose a prototype of a Smart RFID System for Locker Cabinet Security Using an Android App. The prototype utilizes WeMos D1 R2 with ESP8266 Wi-Fi module as the microprocessor. Blynk app is used to monitor and control the microcontroller. First, the WeMos D1 R2 will be connected to actuators and sensors, such as a servo motor, LCD, and RFID reader. Therefore, it can control the functionality of each component, followed by android application which can be used by the admin to identify the UID of the card being tapped by the user and give permissions to open the locker. When the admin chooses "Accept", the cabinet will be unlocked and when "Deny", the lock stays shut. The prototype is able to work as intended, while it also spark researcher to improve the prototype by implementing a database system, better application development, and applying artificial intelligence to the system.

Keywords—RFID, Internet of Things, Embedded System, Security System, mobile app, ESP8266, Blynk

Analyzing AI and the Impact in Video Games

Leonardo Jose Gunawan, Brandon Nicolas Marlim, Neil Errando Sutrisno, Vincentius Jonathan Elroy, Jason Leonardo Sutioso

Abstract - As technologies advance, so is the AI. Progress in AI is routinely measured in isolation. However, it is also crucial to benchmark an AI progress not just in isolation, but also in terms of how it helps humans perform certain task. AI has been a great help to humans in many industries. One of them is the gaming industries. This paper examines different algorithm that are used in a game that contains AI. Our methods when constructing this paper are literature review and we gather people's thought using questioners and we analyzed the answer that they submitted. Our result shows that a games with more complex AI more popular than other games without AI. Our conclusion is that game with complex AI tend to be more popular because it is more challenging and fun to play.

Keywords— Technologies, AI, Games, Behavior, Computers

How Information Technology Literacy Moderated Factors Affecting Quality of Computer-Based Audit

Ang Swat Lin Lindawati and Bambang Leo Handoko

Abstract - The times require auditors to change, auditors no longer carry out the audit process using a manual system, but must switch to computer-based auditing. Especially in the era of the Covid-19 pandemic, which forced auditors to conduct remote audits, which of course had to be computer-based. Our research focuses on what factors can influence computer-based audit quality and what factors can moderate these factors. Our research uses independent variables, namely remote audit implementation, auditor performance and professionalism and in addition to using information technology literacy as a moderating variable. Our research is a quantitative study, using primary data distributed through questionnaires to auditors working in public accounting firms. For statistical data processing, we use the ordinary least square. The results of our study indicate that remote audit implementation, auditor performance and professionalism have a significant effect on computer-based audit quality and information technology literacy is able to moderate and strengthen the influence of these three variables

Keywords—Computer-based, audit, professionalism, remote audit, performance, information, technology

Sentiment Analysis for Financial News Using RNN-LSTM Network

Kelvin Leonardi Kohsasih, B. Herawan Hayadi, Robet, Carles Juliandy, Octara Pribadi, Andi

Abstract - Identifying financial sector sentiment, primarily through the financial news, is crucial in financial investment decisions. Financial Sentiment Analysis (FSA) significantly affects the secondary market and provides a significant contribution. Long Short-Term Memory (LSTM) is a deep learning model, especially Recurrent Neural Network (RNN), a reasonably popular model designed for long-term constraints. Various methods have been proposed in previous studies, but the performance generated by the model in previous studies is still below 90%, so it has the opportunity to be improved. This study aims to present a sentiment analysis model by implementing the RNN-LSTM. The results showed that the model used for sentiment analysis of financial news reached 92.23% precision, 91.54% accuracy, 90.99% recall, and an f1 score of 91.61%. The model we built is helpful for understanding trends and opinions for making financial and other investment decisions.

Keywords—Sentiment Analysis, Financial News, RNN, LSTM, Deep Learning

Encrypted Message Hiding On GIF Image Using the Gifshuffle Algorithm

Yusfrizal Yusfrizal, Mutiara Sovina, Faisal Amir Harahap, Helmi Kurniawan, Rubianto Rubianto, Frans Ikorasaki

Abstract - This paper implements steganography application with Gifshuffle algorithm in the GIF image. The development of information technology gives a chance for people to share message and communicate through Local Area Network (LAN), internet, email, and mobile internet. To balance the rapid communication, some safety aspects are needed in sending the message. This study was purposing to hide the secret message by randomize the message's content. By using the Gifshuffle algorithm and Vigenere Cipher technique in hiding the message show the GIF image, the result was confronted with four aspects of steganography evaluation, such as: Imperceptibility, Fidelity, Recovery, and Robustness. As a result, the program was able to fulfill the recovery aspect besides its necessity for essential improvement in fulfilling the Imperceptibility, Fidelity, and Robustness aspects. Immediate implications are needed for the development of the algorithm Gifshuffle in the animated GIF image.

Keywords—Data security, Cryptography, Steganography, Gifshuffle Algorithm

Factors Influenced User Interest in Payment Transaction of ShopeePay Digital Wallet Application

Bambang Leo Handoko, I Gusti Made Karmawan, Lilis Meliana

Abstract - The value of transactions has increased along with the dangers involved due to technological advancements, but because each Digital Wallet Application provides a guarantee of the performance of the payment system, it is in the interest of Indonesian users to support the growth of the financial system because the country desperately needs a secure and efficient payment system. This study's goal was to identify the variables that affect users' interest in payment transactions for the ShopeePay digital wallet application. The study is grounded in the technology acceptance model (TAM). Users of applications from the millennial to generation z age group, ranging in age from 16 to 50 years, were given questionnaires to complete in order to gather the research data. Multiple linear regression analysis was used to analyze the data, and IBM SPSS Statistics 25.0 software was used. The findings demonstrated that perceived utility, perceived security and perceived usability had an impact on customer intention, however perceived risk, and perceived rewards, had no bearing on the intention of customers using ShopeePay Digital Wallet. According to the findings of these research, learning the system is simple, and users can profit from higher production as well as more efficacy and efficiency. Users of the ShopeePay Digital Wallet application may feel differently as a result.

Keywords—Shopeepay, e-wallet, customer intention, perceived security, rewards

Development of Papaya Plant Automation Systems with the Internet of Things Concept Using Fuzzy Logic

Ni Luh Gede Pivin Suwirmayanti, Ricky Aurelius Nurtanto Diaz, I Komang Agus Ady Aryanto, Gede Angga Pradipta, Ida Bagus Maha Indra Prasada

Abstract - Papaya plantations in Bali are actually not fully cultivated in the actual appropriate climate or weather, so the life expectancy of papaya plants is very less, therefore efforts are needed in maintaining papaya plants, one of which is by creating an automatic papaya plants maintenance system. This maintenance includes watering, rain protection dan pest repellent. Therefore, through this research, a papaya plant maintenance system will be created that will be integrated with a website. This system uses NodeMCU ESP32 as the main controller in carrying out maintenance, receiving and sending data and orders via the MQTT protocol. Sensors used such as soil moisture, rain meter and PIR. For watering results, it will be compared first using Mamdani Fuzzy Logic to get control output to the pump. All results and controls can be accessed through a website interface whose maintenance and monitoring functions have an average response time of 15.2 seconds and can be accessed from anywhere provided that they are connected to the internet network. The system can perform all the automated maintenance functions as desired and is capable of passing device durability tests

Keywords— Plantation, MQTT, Fuzzy Logic, Internet of Things

E-Passport COVID-19 Adopting RFID Implants based on Microservices

Ardian Rianto, Marchel Tombeng, I-Shyan Hwang, Andrew Tanny Liem

Abstract - COVID-19 has spread throughout the global and has restrained humans in all aspects of life including society, economy, education, etc. The first Corona virus appeared in China on 2019 and had mutated into several variants such as B.1.1.7 (Alpha), B.1.351 (Beta), E484Q (Delta), and BA.2 (Omicron). In order to block the virus to mutate and spread in the communities, we proposed a design of E-Passport by adopting RFID Implants with integrated Microservices technology. Our concepts is we design an android application (E-passport) that will be used by every institution on public places to stop the positive patients getting inside the public space to spread the virus. The checker in every public places need to scan the RFID implants on every humans hand by using NFC technology embedded on android phone with installed E-Passport to determine whether can enter or forbidden to enter. The RFID Implant stored a unique code that can be read as the reference of the person's data information stored in cloud database based on Microservices infrastructure. Our proposed design and architecture are dedicated to stop the COVID-19 virus to spread among public communities

Keywords — COVID-19, RFID Implants, Microservices, NFC

Sentiment Identification System for E-Commerce Mobile App Reviews Using Single Layer Neural Network

Semmy Wellem Taju, Edson Yahuda Putra, Green Ferry Mandias

Abstract - In the technological era, e-commerce offers business opportunities, particularly through the simplicity of the process of buying or selling products through the Internet. The upkeep of the customer experience must be recognized by e-commerce service providers as a top priority for businesses. Customers can access the global market, compare prices across regions, and even easily compare the services of various e-commerce apps. Online customer reviews on e-commerce mobile apps play an important role, which can be used as personal recommendations for other customers. Because customers rely on the opinions of other customers, negative reviews from customers will deter potential users from downloading the e-commerce mobile app in the future. The system described in this paper uses a single-layer neural network to automatically predict and analyze customer sentiments from online customer reviews. The proposed sentiment identification system model achieved the best performance among the algorithms; it attained an overall sensitivity of 96.2%, specificity of 93.8%, accuracy of 95.0%, and MCC of 0.90. Additionally, the researchers developed a fast and reliable web-based system for identifying sentiment from customer reviews

Keywords—sentiment analysis, sentiment identification system, e-commerce, machine learning, single layer neural network, perceptron

Evaluation Of Elearning Using The Human Organization Technology (HOT) Model

Erfan Hasmin, Nurul Aini

Abstract - In its implementation, e-learning requires development to make it easier for users, in this case, lecturers and students, to use e-learning in the online learning process. So that the use of the Human Organization Technology (HOT) evaluation model Fit model is a complete model and most appropriate to the conditions of the problems in this study. The main focus of research is directed at the relationship between the human (human) aspect as a user consisting of system use and user satisfaction, the organizational part consisting of organizational structure and environment, technology aspect consisting of system quality, information quality, and service quality, the results of this study show that the relationship between the Organization (ICT Unit) as an e-learning service provider has interacted quite well with users in the context of developing e-learning systems. It is necessary to develop further the relationship between the Organization (ICT Unit) and e-learning users (students and lecturers).

Keywords: HOT, elearning, evaluation

Analysis Of Determination Of Items Ordering Patterns By Using Apriori Method

Bob Subhan Riza, Hendra Nusa Putra, Ahmad Zamsuri, Lusiana Efrizoni, Sarjon Defit

Abstract - This study is entitled Analysis of the Determination of Ordering Patterns of Items Using Apriori Method Case Study of Universitas Potensi Utama. The research conducted by the author uses data mining and uses the Apriori method which divides arranged items into two so that the more detailed types of items are often ordered so that it can help inventory to increase the stock of items needed by the staff of Universitas Potensi Utama. Ordering items is one of the activities carried out at the Universitas Potensi Utama which is usually used to process work activities in the office. The test results using a priori algorithm and a system built using 2 item sets showed 94% confidence results that have met the needs in determining the pattern of ordering items based on the tendency of ordering items carried out by each department.

Keywords—Big Data, Data Mining, Rule Association, Apriori, Item Set

The Development of A Medical Chatbot Using The SVM Algorithm

Ryan Matthew, David Agustriawan, Mario Donald Bani, Muammar Sadrawi, Nanda Rizqia Pradana Ratnasari, Moch Firmansyah, Arli Aditya Parikesit

Abstract - Technology development has rapidly increased in every division, especially in healthcare. Hospital management started to improve by incorporating technological tools and systems in this era. With the system prepared from the hospital, patient data can be saved and prepared systematically to be used as a queue line of appointments. It could be improved by using a chatbot which increases the efficiency of healthcare services, supported by natural language processing (NLP). The support vector machine (SVM) method is used as an optimal classifier that learns the classification hyperplane in a space map that has the maximal distance (margin) to the training examples. The SVM will predict the suggested specialist based on the given symptom and comorbidities by the users

Keywords—Chatbot, SVM, NLP, Medical Chatbot

Development of IoT Implementation in Heart Rate and Glucose Monitoring System

Gabriel Flavianus, Marcello Octavio Anugrahanto, Dani Suandi, Farrel Nelson Veriano, Daevan Martana, Davy Ronald Hermanus

Abstract - In order to prevent various diseases that are difficult to detect with human abilities alone, such as early prevention of heart disease and diabetes. Medical devices using IoT with the ability to constantly monitor patients are being developed. The discussion in this paper uses the literature review as the main axis of discussion regarding the development of IoT in heart rate and patient glucose monitoring. We reviewed 27 research papers from various sites like Research gates, PubMed, IEEE Xplore, and google scholar that are related to our research topic. This study was formed to analyze and compile various information regarding the development of an IoT based patient monitoring system. The establishment of this review paper is aimed at obtaining a definite form of IOT for healthcare and getting to know IOT in the form of heart rate analysis and patient glucose monitoring. After our analysis and review we are able to document the progress on the development of IoT for patient monitoring from multiple sources.

Keywords—Internet of Things, heart rate, glucose monitoring, disease

Web e-learning: Automated Essay Assessment Based on Natural Language Processing Using Vector Space Model

Syaharullah Disa, Purnamawati Purnamawati, Andi Muhammad Idkhan

Abstract - Automatic essay assessment aims to determine the value of essay and provides feedback based on a computer system. Using a computer-based system can make essay assessments more objective so that the students are more satisfied with the results they get. The assessment of the learning outcomes is very important for web e-learning systems. The application of the right algorithm can provide the right assessment results. This article aims to develop a web e-Learning system with the automatic essay answer scoring application based on natural language processing (NLP) with the text processing. It consists of tokenizing, stopword removal and stemming by using a vector space model algorithm to calculate the word weights. The feasibility validation test phase of application system was carried out by comparing between manual assessment and automatic assessment. The results of manual calculation shows the similarity with a percentage of 82%. while the level of similarity of the automatic calculation system is 81.6%. The calculation value of similarity to all sample questions tested has a significant proximity

Keywords: Automatic Essay Assessment, Natural Language Processing, Vector Space Model, Algorithm

The impact of Instagram's Suggested Algorithm on the learning behavior of the students of the Faculty of Computer Science, Universitas Klabat

Reynoldus Andrias Sahulata, Jimmy Moedjahedy Jody Joseph, Ryan Jose Dickson

Abstract - : Instagram is a social media whose users are presently increasing. The Instagram Suggested Post feature is one of the features created by Instagram to increase interest in using the application. Focus on this feature; it is necessary to test and determine the influence of the Instagram Suggested Post Algorithm on the learning behavior of Klabat University students using the Theory of Reasoned Action (TRA) model concept. The objective of the present study is to investigate the influence of Instagram's suggested post algorithm on the learning behavior of students from the faculty of computer science at Klabat University. The results of this study show that the three hypotheses proposed, namely the first hypothesis of the Use Attitude (SP) of the Instagram Suggested Post Algorithm, have an influence on Learning Interest (MB) with a t-count value of 6.800 > t-table 1.98580 with a Sig value. < 0.05. While the second hypothesis Subjective Norm (NS), influences MB with a t value of 7.302 > t table 1.98580 with a value of Sig. <0.05 and the third hypothesis MB affects Learning Behavior (PB) with a t-count value of 7.407 > t-table 1.98580 with a Sig value. < 0.05, then the three hypotheses have a significant relationship; thus, these three hypotheses are accepted

Keywords: Suggested Post, Instagram, Student, Behavior, Theory Reasoned Action

Learning Vector Quantization (LVQ) For Colorectal Cancer Identification Based on Microscopic Network Image

Heri Gunawan, Soeheri, Deny Adhar, Hardianto, Linda Wahyuni, Charles Bronson Harahap

Abstract - Colorectal is a type of malignant cancer that occurs on the surface of the large intestine (colon) and the lower part of the intestine to the anus (rectum) due to environmental influences and unhealthy lifestyles. The main function of the large intestine is to reabsorb water and to secrete mucus which serves to lubricate and help expel feces and gases. Colorectal cancer malignancy can attack anyone, from toddlers, teenagers, and adults. Identification of colorectal cancer is still using hispathological examination. Where this examination is a diagnostic act carried out by taking samples of cells or tissues for analysis in the laboratory. The examination is still done manually, namely using a microscope. In this way, a doctor who has the knowledge, thoroughness and accuracy is needed. This inspection takes time and effort. Therefore we need a way to help doctors identify colorectal cancer through microscopic images of colorectal cancer so that the identification results obtained are more efficient and have a better level of accuracy than manual identification. The identification process using input data includes the number of epohs as much as 100, the number of hidden layers of 3, the learning rate of 0.05. The test in this test uses colorectal tissue image testing data with the IMG18 filename. Produces Normal identification results with an accuracy of 60%, meaning that img18 is identified as normal colorectal.

Keywords: Identification, Colorectal, GLCM, preprocessing, LVQ

Classification of Papuan Batik Motifs Using Deep Learning and Data Augmentation

Suhardi Aras, Arief Setyanto, Rismayani Rismayani

Abstract - Papuan Batik motifs began to appear in 1984 and are only known in general with one designation, namely Papuan batik, even though these various motifs can be classified according to the area of origin of manufacture, culture and flora and fauna that have meaning. local wisdom of the community. The ability to recognize every batik motif from Papua requires experience and knowledge from certain circles, so that knowledge and meaning are maintained, a tool is needed that can classify various batik motifs from Papua. This study uses four classes of datasets, namely Cendrawasih Motifs, Raja Ampat Motifs, Tifa Honai Motifs and Asmat Motifs which are non-geometric. It is proposed to classify these motifs using deep learning using Vgg16 and Resnet50 architectures with fine tuning, to add data with various combinations in order to obtain better performance. The test results showed that without data augmentation on the VGG16 architecture, an accuracy of 78.79% was obtained and the Resnet50 architecture obtained an accuracy of 81.82% with several combinations of augmentation techniques giving the same better results without data augmentation with the results on the VGG16 architecture giving 84 results. ,85% and on the Resnet50 architecture it gives a yield of 87.88%.

Keywords—deep learning, transfer learning, data augmentation, Papuan batik

“A Lone Burglar” Stealth Game Development Using Rapid Application Development

Ivan Gananjaya, Jesse Owen Theodore Chandra, Johann Felix Alexander Christanto, Mochammad Haldi Widiyanto, Jesslyn Audrey

Abstract - Making the Game "A Lone Burglar" by focusing on the stealth game category because stealth game-based games are still rare. This game aims to test the use of the rapid application development (RAD) method in developing a stealth game. The research method used in this research is requirement analysis, game design, testing, and launching. Rapid application development (RAD) is a quick software development method that focuses on development that refers to user feedback for improvement and adding features to the developed software. A survey evaluates user requirements, and a user acceptance test (UAT) to obtain user feedback regarding the developed game. The result can be concluded that users are satisfied with an 86,49% score UAT. So it is proven that the application is very satisfying to the user. But just like making games, it also has weaknesses that will be further researched, such as the number of levels being reproduced, various levels and the use of Artificial Intelligence (AI).

Keywords— Game Development, Rapid Application Development (RAD), Stealth Game, User Acceptance Test (UAT)

Motion Detection Application to Measure Straight Leg Raise ROM Using MediaPipe Pose

Hustinawaty Hustinawaty, Tavipia Rumambi, Matrisnya Hermita

Abstract - The straight leg raise test is one of the most common neurological tests of the lower limb tests in which the patient lies on an examination table with both legs extended. This test, also known as the Laségue sign, is considered positive if there is pain when applying pressure to the piriform muscle and its tendons, especially when the hip is bent at a 90° angle and the knees are extended. The Straight leg raise test movement can be recorded using a webcam that can detect movement and track the position of the joints of human body supported by MediaPipe poses and an OpenCv library, in order to show the Straight leg raise movement by forming an image in the form of lines on both legs that make up the ROM and calculate the size angular as well as save in the database. The application display contains a new record menu where the respondent (patient) must fill in their identity, can see in the form of video recordings containing raw images and images that can detect ROM on SLRT movement then the results are in the database and exit the application. This application is expected to be used by medical practitioners, especially in the field of rehabilitation, by understanding the angle magnitude information in real time, quickly and accurately that, as a consequence, it can support the diagnosis of low back pain.

Keywords— Straight Leg Raise, ROM, angle, detection, mediapipe

The Antecedent of E-Learning Adoption

Indriana Indriana, Doni Purnama Alamsyah, Andreas Chang, Ivan Diryana Sudirman

Abstract - This study aims to examine the factors that can explain the psychological motivation of students in online learning at universities. There are factors studied from IT infrastructure, perceived ease of use and e-learning adoption from students. The study focuses on student behavior in adapting online to the concept of e-learning. The research method used to examine student behavior as users is a quantitative survey. Survey to students with online questionnaires, where a total of 151 respondents were collected. Data from respondents were tested through SmartPLS by testing research hypotheses. The test results found that perceived ease of use and e-learning adoption were important factors in increasing the psychological motivation of students in online learning. Another finding is that IT infrastructure is not able to support student motivation, this is possible because technology is not the main thing that needs to be considered when learning e-learning. This research has benefits for universities in evaluating the concept of e-learning

Keywords—IT Infrastructure, Perceived Ease of Use, E-Learning Adoption, Psychological Motivation

Development of Techniques for Speech Emotion Recognition (SER) In the Context of Deep Learning

Budi Triandi, Herman Mawengkang, Syahril Efendi, Sawaluddin Sawaluddin

Abstract - Understanding emotions from voice signals is a crucial yet difficult aspect of human-computer interaction (HCI). Many methods, including many well-known speech analysis and classification methods, have been used to extract emotions from signals in the literature on speech emotion recognition (SER). Deep learning methodologies have recently been presented as a replacement to traditional SER procedures. This paper presents an overview of deep learning algorithms for speech-based emotion recognition and evaluates some recent work that makes use of these methods. The review discusses the databases used, the emotions retrieved, the advancements made in voice emotion recognition, and its limits.

Keywords: SER techniques, deep learning, literature on speech emotion recognition, classification methods

Development of Internet of Things-Based Instrument Monitoring Application for Smart Farming

Mochammad Haldi Widiyanto, Bryan Ghilchrist, Gerry Giovan, Rachmi Kumala Widyasari, Yovanka Davincy Setiawan

Abstract - Indonesia is an agricultural country where most of the population works in the agricultural sector. Nevertheless, there are some problems within the sector. One of the problems in the agricultural sector is the lack of maintenance of plants which can lead to crop failure. Therefore, Internet of Things (IoT) technology is needed to help monitor plants. The application of Internet of Things (IoT) technology that the author uses utilizes the Wemos D1 R2 (ESP8266) microcontroller and a Wi-Fi Router Modem as a medium for exchanging data to be collected at Thingspeak.com. This system reads environmental conditions such as soil moisture, the intensity of sun exposure, air temperature, and humidity. The sensors used in this system are Capacitive Soil Moisture Sensor, DHT22, and Photoresistor Sensor. It is hoped that this technology can help in the care and maintenance of plants so that they are always more monitored and reduce the percentage of crop failure.

Keywords— Technology, Agricultural, IoT, Router, Wemos, Thingspeak, Soil Moisture Sensor, DHT22, Photoresistor

Empowering the Smart Lighting System in the Office Rooms to Enhance the Worker's Productivity

Salsa Nabillah, Andi Pramono, Delly Minita Asnathasia, Ribka Xantia Kusuma, Yohanes Raynaldi Pereira, Stanley Santoso Sandiawan

Abstract - The environment in the office, including the temperature, the air quality inside, and the lighting, impact comfort. Users will experience discomfort from inadequate and excessive lighting, significantly harming workers' productivity. This study aims to improve worker productivity by enabling the co-working space's smart lighting system. In order to conduct this study, a co-working facility in Malang City, Indonesia, was used as the single case study. The existing condition of the room is measured using a light meter software in the mini Aula and meeting room to determine light distribution. The results of the observations revealed that the two rooms lacked light. This study offers recommendations in the form of an appropriate lamp design for the two rooms, ensuring that both have the essential lighting needs. The suggestions proposed were simulated using the Dialux Evo software and obtained numbers that met the lighting standards in the room. This study also recommends using technology in the form of smart lighting for energy efficiency in buildings.

Keywords— Co-working Space, Dialux Evo, Energy Saving, Smart Lighting, Office

Designing an Optimization Model For Dynamic Facility-Location Problem at Post-Disaster area Considering Uncertainty

Lili Tanti, Syahril Efendi, Maya Silvi Lydia and Herman Mawengkang

Abstract - Indonesia is ranked 38th out of 181 countries most vulnerable to disasters. There were 2,2021 disasters in Indonesia with 2,491,572 people killed and 478,308 facilities damaged by June 2022. After the disaster, post-disaster emergency response management is needed in the form of distribution of logistical assistance. The most basic logistical problem is the problem of facility location. Constraints in the problem of the location of facilities after a disaster occurs, namely the uncertain nature of the disaster, uncertain parameters can affect the performance of humanitarian logistics planning. Parameters under uncertainty environment are demand, facility capacity, cost, transportation time and vehicle. Logistics is also the most expensive activity of any humanitarian aid. Based on the study, it is estimated that the logistics costs for disaster management are around 80% of the total costs in humanitarian assistance. Therefore, a model for optimizing facility location problems in disaster logistics management is needed. The facility location problem model includes determining the dynamic location of emergency facilities and distribution routes for relief items from the facility location to the point of request for disaster victims. This model has two objective functions, namely minimizing the cost and time in the distribution of relief goods to disaster victims. The design of this model can solve the opening of emergency facility locations by using a clustering algorithm in machine learning with a minimum distance objective function, the formation of distribution routes using deep learning algorithms and optimal routes with mixed integer non linear programming to produce two objective functions that minimize the total system cost and time. The results of the design model for dynamic facility location problems in post-disaster areas in uncertainty resulted in reduced costs and time of distribution that had been carried out by the National Disaster Management Agency and had faster computational times in generating route optimization and opening distribution centers.

Keywords—Model Design, Facility Location Problem, Disaster, Deep Learning, Uncertainty

Rice Plants Disease Classification Using Transfer Learning

Felix Pherry, Gregorius Gregorius, Jonathan Kristanto and Felix Indra Kurniadi

Abstract - A crucial part of the crop protection system in the early and accurate identification of healthy and unhealthy plants. The orthodox methods of identification involve either visual inspection or laboratory testing. Visual inspection involves experience and can vary depending on the individual, which could lead to an error, but laboratory testing takes time and might not be able to give the results quickly. Therefore, in this paper, we propose an image-based machine learning technique to recognize and classify healthy and unhealthy plants. In this work, we have focused solely on the rice plant (*Oryza Sativa*). The original dataset is available on Kaggle, which includes images of both healthy and unhealthy rice plants. Dataset consists of 501 healthy rice plants and 505 unhealthy rice plants. After validation, we obtained a total of 900 images, including both healthy and unhealthy rice plants. There are 4 models that we use in this experiment: VGG16, VGG19, ResNet50, and InceptionV3. In this project, we tried data augmentation and regularization to improve the performance of our program. After regularization, the results that were obtained improved. However, the results we got when we included data augmentation were worse, so we opted to solely apply regularization. The model that provides the best accuracy for the loss model is VGG19 with 84.4% accuracy and 55.1% loss. The early identification of healthy and unhealthy rice plants using this model could serve as a preventative measure as well as an early warning system. It might also be expanded to create a model for identifying rice plants' health in the actual agricultural fields.

Keywords—Machine Learning, Transfer Learning, Rice Plants, Classification, Data Augmentation, Regularization

Application of Line Reactors and Harmonic Filters in Electric Power Systems are Integrated Renewable Energy in Mesh Topology

Langlang Gumilar, Arif Nur Afandi, Denis Eka Cahyani, Eli Hendrik Sanjaya, Ahmad Asri Bin Abd Samat

Abstract - Now electric power providers are starting to reduce the use of fossil fuels and add renewable energy to the power system. Generally, the integration of renewable energy into the electric power system uses a mesh topology. The goal is to reduce air pollution and save fossil fuels, so that fossil fuels can be used for other needs. Most renewable energy utilizes the electronic power device to optimize the renewable energy output power. Power electronic devices that include nonlinear loads can increase harmonic distortion if there are too many of them in the electric power system. The purpose of this paper is to reduce harmonic distortion in the electric power system by using a line reactor and harmonic filter. Several simulation conditions were created to show evidence of a decrease in harmonic distortion after using a line reactor and harmonic filter. The first condition, harmonics on the object of the electric power system without harmonic filters and line reactors. The second condition, the reduction of harmonic distortion on the same object using harmonic filters. The third condition, the reduction of harmonic distortion using a combination of harmonic filters with a line reactor. The first condition result in THD-V value of 10.67% and THD-I value of 4.01%. The second condition gives value of THD-V 6.91% and THD-I 3.16%. The third condition is able to give result of THD-V 3.17% and THD-I value of 1.64%. The third condition gives the most favorable results compared to the previous conditions.

Keywords—harmonic distortion, renewable energy, line reactor, harmonic filter, mesh topology.

Human Brain Wave Concentration Pattern Prediction Design Concept

Iwan Fitrianto Rahmad, Muhammad Zarlis, Ade Candra, Saib Suwilo

Abstract - By not concentrating on someone while driving or working this can lead to serious accidents, with the increasing number of road accidents becoming one of the most important problems that cannot be ignored. Traffic accidents are one of the leading causes of death in Indonesia, with human error playing a major role. According to Police data on the electronic media site kominfo.go.id, it is stated that in Indonesia an average of 3 people die every hour due to traffic accidents. Therefore, using the concept of predicting the concentration pattern of human brain waves to reduce the accident rate while driving by using a machine learning approach. To detect a person's concentration, it can be done by measuring existing brain waves using sensors, there are several waves found in the human brain including alpha, beta, delta, theta, gamma waves. features using the frequency method and time method as well as a combination of frequency and time after using the PCA method to select features, so that the input from the classification method will be better.

Keyword— brain waves, concentration, frequency, pca Introduction

Blockchain Security and Corporate Governance

Mochammad Fahlevi, Moeljadi, Siti Aisjah, Atim Djazuli

Abstract - Economic globalization is a new challenge, especially for developing countries like Indonesia, because everything is interrelated and has a special impact such as the occurrence of a crisis that is evenly distributed in every country. For this reason, improving corporate governance is important. This study aims to determine the attitude of Indonesian investors in adopting Blockchain Technology as an effort to improve corporate governance in public companies in Indonesia. This study involved 170 investors and businesspeople who directly interacted with the benefits of corporate governance in a company. The data analysis of this research uses a structural equation model with SmartPLS software. The result is Perceived ease of use, Perceived usefulness, and Security have a significant influence on attitude in adopting blockchain in corporate governance, but if examined more deeply it can be seen that the coefficient and t-statistic value of security have the greatest results, so it can be said one of the important elements of blockchain adoption in the implementation of corporate governance must emphasize the high security factor, because agency theory and agency conflict which are classic problems in corporate governance are the main problems that can be solved with the presence of blockchain to reduce fraud, earnings manipulation, and earnings management.

Keywords—Blockchain, Corporate Governance, Perceived ease of use, Perceived usefulness, Security.

Analysis of Customer Product Interests using the Market Basket Analysis Model with Hash-Based Algorithm and Association Rules

Berlilana, Taqwa Hariguna, Andhika Rafi Hananto

Abstract - The Market Basket Analysis method can be used for analyze pattern shopping consumer. With take advantage of later data processed for get information from transaction dataset that. Supermarkets are business businesses engaged in the sale needs tree. Shop this not yet knowing pattern shopping on cart shopping consumer. Algorithm used that is hash-based algorithm because algorithm this reduce amount candidate itemset at the start of. Research results this namely found 2 Frequent itemset namely bread and butter with support 96 ago eggs, bread and butter with support 97. Based on results in implementation hash-based algorithm and association rules, we can conclude that the manager of the supermarket can start use same way for knowing customer interest in something product with product other. With this manager can more focus with product the for reduce loss caused products that are not behavior.

Keywords—Data Mining, Market Basket Analysis, Association Rules, Hash-Based algorithm.

Prediction of Students Final Project Values Based on Errors in Scientific Writing Using Data Mining Classification Algorithms

Taqwa Hariguna, Berlilana, Andhika Rafi Hananto

Abstract - College databases are quickly amassing more and more data. Some data, which has not been used to raise the caliber of student performance, includes secret information regarding student performance. Data mining is used to examine accessible educational data and reveal any hidden information that may be there. This study uses a data mining classification model to develop rules that can forecast the final project value of program students' information management based on course values that aid in the final project's preparation. The study's analysis of student performance in courses that help them prepare for their final projects will also be included. According to the subject that underpins their final project, this prediction is supposed to assist in determining grades. Predictive analysis employing ID3 has an accuracy of 65.54%, CHAID 70.67%, and Nave Bayes 73.13%, According to research that has been done, the competition from the Naive Bayes algorithm has succeeded in being slightly superior to other algorithms.

Keywords— Educational Data Mining; Machine Learning; CHAID Algorithm; ID3 Algorithm.

Semantic similarity of Indonesian sentences using natural language processing and cosine similarity

Reza Fauzan, Muhammad Ikhwanul Atha Labib, Joshua Oktavianus Tarung Johannis, Herlinawati Herlinawati, Syamsudin Noor, Saifullah Saifullah

Abstract - Natural language processing is a commonly used method for processing text input. The text is widely used in many ways, such as determining hoaxes, concluding sentences, sentiment analysis, and measuring similarity. Many other studies in English have carried out measurements of similarity between two sentences. However, there are still few studies that use Indonesian sentences. This study proposes an approach to assess the similarity between two Indonesian sentences. The motivation of this research is to prove that the proposed approach can be applied. Similarity assessment uses a combination of natural language processing and cosine similarity. Natural language processing begins with POS tagging, tokenization, stemming, and similarity measurement between words using WordNet and Wu Palmer. The results showed that the accuracy value is 86,67%. Therefore, this study can be used as a preliminary process in natural language processing with more complex objectives.

Keywords—cosine similarity, Indonesian sentence similarity, natural language processing, sentence similarity

Blockchain Security and Corporate Governance

Mochammad Fahlevi, Moeljadi, Siti Aisjah, Atim Djazuli

Abstract - Economic globalization is a new challenge, especially for developing countries like Indonesia, because everything is interrelated and has a special impact such as the occurrence of a crisis that is evenly distributed in every country. For this reason, improving corporate governance is important. This study aims to determine the attitude of Indonesian investors in adopting Blockchain Technology as an effort to improve corporate governance in public companies in Indonesia. This study involved 170 investors and businesspeople who directly interacted with the benefits of corporate governance in a company. The data analysis of this research uses a structural equation model with SmartPLS software. The result is Perceived ease of use, Perceived usefulness, and Security have a significant influence on attitude in adopting blockchain in corporate governance, but if examined more deeply it can be seen that the coefficient and t-statistic value of security have the greatest results, so it can be said one of the important elements of blockchain adoption in the implementation of corporate governance must emphasize the high security factor, because agency theory and agency conflict which are classic problems in corporate governance are the main problems that can be solved with the presence of blockchain to reduce fraud, earnings manipulation, and earnings management.

Keywords—Blockchain, Corporate Governance, Perceived ease of use, Perceived usefulness, Security.

The Role of Gender in Moderating The Effect of Teachers Empathy, Reputation and System Quality on Student Satisfaction Online Learning Program

Mochammad Fahlevi, Lily Leonita, Aries

Abstract - Over the past few years, technology adoption in education has increased significantly. Most universities like to invest in modern forms of learning, therefore it can be seen for the rapid growth of e-learning. This study aims to determine a comprehensive model in determining online learning student satisfaction during the Covid-19 pandemic with the role of gender as moderation. The sample in this study was 239 Binus Online Learning students. The data analysis technique in this study used a structural equation model (Structural Equation Modeling, SEM) with SmartPLS 3 software. The results of this study found that instructor empathy, higher education reputation, and system quality had a significant influence on student satisfaction, especially in the context of online learning on Binus Online Learning which simply used high technology to support the Learning Management System. Gender has no role in moderating exogenous to endogenous constructs in this research model, so it can be said that the technology used in Binus Online Learning has high student satisfaction because the system is good enough to carry out online learning

Keywords— Instructor Empathy, Reputation, System Quality, Student Satisfaction, Gender

E-messenger in Telecommunication Platform

Evi Triandini,Wayan Cahya Ayu Pratami, Agnesia Candra Sulyani, Riza Wulandari, I Gusti Ngurah Satria Wijaya, Sugiarto, I Ketut Putu Suniantara

Abstract - Today's communication that takes place in short messages and in fast time is a result of the development of advances in internet and smartphone technology. This makes companies that build applications, competing to develop instant messaging applications in a fast time. Competition in the use of messengers and use in a business environment, is unavoidable. This situation became the main concern of the researcher. The purpose of study is to analyse customer and user preferences on messenger as a platform using a qualitative method in Indonesia refers to the development of the IS Success Model indicator. This study uses a qualitative approach to find symptoms when using the platform as a messenger for users and customers. Primary data weared in this research with two in-depth interview techniques for collecting the data. The informant data is mapped to find the answer of preferences for using messenger as a platform which is analyzed using Miles and Huberman interactive data analysis. The result from this research is a usage preference for Platform as Messenger that considered customer and user. For the customer preference, aspects that need to be considered for development are accessibility, flexibility, effectiveness, and additional chat history. Meanwhile, for the user preference, factors that need to be considered consist of responsiveness, user-friendly appearance, performance personal needs, personal data privacy and security, and excellent service.

Keywords— Messenger, Platform service, Platform messenger, Customer preference, User preference

Integrating Philanthropy System in Indonesia Using Service-Oriented Architecture

Dewi Khairani, Husni Teja Sukmana, Patriot Muslim, Herlino Nanang, Tabah Rosyadi, Amri

Abstract - In Indonesia, the most extensive philanthropy is related to zakat (obligation for Moslem to help poor people). The potential for zakat that continues to grow is not accompanied by the realization of zakat collection in the field. Based on the actual data on zakat collection, the zakat potential in 2015 is predicted to reach Rp. 286 trillion, in realization, only reached Rp. 3.7 trillion or less than 1.3 percent of its potential. One of the problems is the lack of system and institutional arrangements for zakat, limited synergy, integration, and cooperation in managing zakat nationally. The purpose of this research is to build integrated media by providing web services as an effort to increase synergy and cooperation between zakat institutions. The web service to be built uses a Service Oriented Architecture (SOA). In contrast to traditional point-to-point, which requires similar technology between provider and receiver, SOA is independent of any particular technology or protocol. The results of this research are web services that can be called with different protocols and message formats

Keywords— Zakat Integration, Zakat Web Service, Service Oriented Architecture

Integrating Ambulance into GIS in Smart City: Problems and Prospect with P-Median Model

Rafiqa Dewi, Tulus Tulus, Muhammad Zarlis, Erna Budhiarti Nababan

Abstract - Among the main pillars of a smart city is smart health, and part of smart health is the availability of accurate and fast ambulance services. This study proposes an ambulance system that is integrated with GIS in a smart city with a number of problems that are solved by the P-Median model, namely determining the location of the patient, determining the location of the ambulance, and recommending the destination hospital. The scope of this project starts from the patient making a call accompanied by sending the patient's location point and incident information to the ambulance authority server through the patient application interface. Then the authority will receive the patient's identity, location and incident information through the authority's application interface. Through the authority application, a map of the available ambulance will be shown and the one that best suits the patient's condition. Next the authority will contact the recommended ambulance by sending the patient information. The simulation results of this project show that the proposed system can solve the problem in an acceptable time.

Keywords—smart city, smart health, ambulance, p-median, GIS

Forest Fire Forecasting Application Implementation Using the Linear Regression Algorithm

Muhammad Khoirul Wiro, Dendi Anggriandi, Sal Sabila Wijayanti, Ariel Yonatan Alin, Maie Istighosah and Kusrini Kusrini

Abstract - Forest fires often occur in Indonesia. Climate, temperature, wind, and humidity are some of the variables that cause forest fires. The likelihood of forest fires can be predicted using previous data. This study aims to predict the likelihood of forest fires occurring based on historical data. The stages or methods used include data collection, analysis, design, implementation, and testing. It was possible to utilize the test's results to make predictions about forest fires because they had RMSE values of 0.491, MSE values of 0.241, and R2 scores of 0.0336 when they used the UCI forest fire dataset. The output produced is a website that can be accessed by the general public regarding fire predictions. The general public can only use the site by entering the location they want to predict and the date of the incident. This research is expected to help the general public in detecting fires before they occur and reducing the negative impacts of forest fires.

Keywords—linear regression, prediction, forest fire

Impact of Interline Power Flow Control in Wind Power Plant Integrated with Distribution Network

Langlang Gumilar, M. Wahyu Prasetyo, Herpri Melinia

Abstract - Countries that have great wind energy potential tend to utilize wind power plants to meet electrical energy needs. Wind power plants can be used as Distributed Generation (DG) to minimize power losses in the process of distributing electrical power. Therefore the output power of the wind power plant can be directly distributed to the distribution network. When on a bus there is a large load increase and results in a lack of power, it is necessary to transfer power from other wind power plants. The purpose of this paper is to provide a solution to this problem by controlling the flow of power in the interline network. The device needed to carry out this strategy is Interline Power Flow Control (IPFC). IPFC is installed between two distribution lines connected to wind power plants and loads. So that it can flow power more flexibly to buses and loads that are experiencing a lack of power. The results of this study that the placement of IPFC can help increase the voltage value of the bus until it reaches its safe operating range margin. The more IPFC is placed in the electric power system, the higher the output power of the wind power plant.

Keywords—wind power plant, distribution network, power flow, distributed generation, IPFC

Fire Detection based on Smoke Image using Convolutional Neural Network (CNN)

Jefri Zulkarnain, Mohammad Rezza Pahlevi, Yustikamasy Astica, Widi Pangestuti, Kusrini

Abstract - Forest fire is a natural disaster that is difficult to control and has a very wide scope that threatens forest ecosystems[1]. In Indonesia itself, forest area decreases every year, one of the causes of the reduction in forest area in Indonesia is forest fires and illegal logging. On this basis, a remote fire detection system is designed and can monitor large forest areas so that problems caused by fires can be minimized. The existing technology in computer vision is a combination of image processing and pattern recognition. The results show that the convolutional neural network has good performance in the field of image processing and obtains architectural optimization in its area. In the smoke image detection research, the accuracy results are very good, namely 99.72% using the Convolutional Neural Network method.

Keywords—Convolutional Neural network, Smoke, Detection

Development a 3D Catalog Application as a Presentation Means of Glovic Cafe and Bakery Jember Design by Using Augmented Reality

Althea Adeltrudis Harjo, Lenny Suwondo, Veronica Livianty, Fairuz Iqbal Maulana, Ida Bagus Ananta Wijaya

Abstract - This research uses AR technology by inserting it into the Interior 3D Catalog so that this catalog can become more real with the presence of 3D objects in it. This study aims to produce an application that can display 3D interactive object models so that it can help attract Glovic Cafe and Bakery Jember customers to visit and experience the interactive objects at Glovic Cafe and Bakery directly and will make it easier for the Glovic Cafe and Bakery Team Cafe and Bakery marketing does this. Promotion to consumers. Unity software is used to create 3D objects using Sketchup Software and create programming applications (Coding). This 3D Catalog application is made through several stages: making 3D objects, making markers, and designing applications. The results consist of two forms, namely in physical form (print media in the form of a catalog), which contains markers on several pages, and an Android-based Augmented Reality application in the form of .apk which is then installed on a Smartphone, where both complement each other. The results of the questionnaire to a total of 30 respondents show that this application is interesting to use. In addition, 17 respondents out of 30 respondents said that this application is easy to use. To develop this application in the future, it is necessary to make it more interactive and have supporting audio.

Keywords— Catalog, Cafe, Augmented Reality, 3D Object

U-Net Tuning Hyperparameter for Segmentation in Amniotic Fluid Ultrasonography Image

Putu Desiana Wulaning Ayu, Gede Angga Pradipta

Abstract - Ultrasound Amniotic Fluid (AF) images generally have image quality similar to other 2-D ultrasound images, which have noise, blurry edges, artifacts, and low contrast. Some of the confusing factors in pocket AF segmenting comprise (a) reverberation artifact, (b) AF mimicking region, (c) floating matters, and (d) incomplete or missing boundary. Obtaining the Region of Interest (ROI) area of amniotic fluid requires a segmentation method that can identify each object in more detail. Based on the problems in AF segmentation, the contribution of this research focuses on the development of segmentation methods in AF using the U-Net semantic segmentation model using the architecture of the Roosterberger. This paper analyzes several uses of hyperparameters to determine the performance of the U-NET model architecture, especially for segmenting AF. The hyperparameter tuning is in the optimizer, loss function, learning rate, and the number of epochs. The best performance of U-Net in segmenting amniotic fluid with a combination of RMSprop optimizer parameters, the Loss function is Binary cross entropy, learning rate value is 0.00001 with Epoch of 33 with DSC of 0.88 and IoU of 0.79, the accuracy of 0.87, precision of 0.93, recall of 0.88.

Keywords—Amniotic Fluid, Segmentation, U-Net, Tuning Hyperparameter

Modification of Attractiveness and Movement of the Firefly Algorithm for Resolution to Knapsack Problems

David David, Edy Victor Haryanto S, Ronny Ronny and Tri Widayanti

Abstract - Knapsack problems pertain to selections of a number of items stored in order to obtain optimal storage. A container can accommodate these items with weight and values through the consideration of the capacity of the storage media. In this research, strategy on attractiveness and movement of the firefly algorithm was proposed to solve knapsack problems. This algorithm was tested through the comparison of the others, namely the original firefly algorithm, the firefly algorithm with attractiveness modification, the firefly algorithm with movement modification, and the firefly algorithm with a modified combination of attractiveness and movement. Applying each of them, there are differences of time and results of completion. Compared to the original firefly algorithm, the one with a modified combination of attractiveness and movement has the best convergence behavior and global optimization efficiency. It is found that the more iterations and the number of fireflies are, the longer the processing time will be. Despite this, the original firefly algorithm requires short time.

Keywords—Firefly Algorithm, Movement, Attractiveness, Optimization, Knapsack Problems

Media and Information Literacy: Quantitative exploration of the Burden of Information Needs in Librarian Users

Irmawan Rahyadi, Dwi Ramadhona, Masyhur Dungcik, Rara Sativa, Matthew Austin Naibaho

Abstract - The increasing awareness of the importance of information literacy as a life skill is balanced with skills in accessing information. But in reality, not everyone can accept these technological advances. This can be seen from the data which states that there are several students who are not aware of the importance of information literacy. Therefore, this study aims to explore more about information literacy skills and the factors that influence the level of information literacy skills of student based on the five standards of the Association of College and Research Libraries (ACRL) which is Know, Access, Evaluate, Use and Ethical/Legal. To achieve this goal, observation, questionnaire, and interview techniques were used as data collection techniques taken from 261 library users as respondents. By using a descriptive method and using a qualitative approach, the results of the study show that: (1) the information literacy skills library users based on the Association of College and Research Libraries standards are categorized as good. However, it still needs to be improved, especially in the access and ethical/legal sub-variables, (2) One of the factors that affect the information literacy skills of users is the age factor.

Keywords—Information Literacy, Students, Awareness, Questionnaire, Quantitative

Classification of Indonesian Music Genres Using the Support Vector Machine Method

Yuni Yuniar, Doni Purnama Alamsyah, Asti Herliana

Abstract - Music is one of the fields that has many enthusiasts in Indonesia. This is because music has a lot of good influence on the Indonesian people. Of course, every Indonesian people's tastes in music are different, and sometimes there are always people who don't recognize the genre of music because they have similarities in several things. The purpose of this research is to classify Music Genres to help the public recognize the Music Genres that exist in Indonesia. The method used is the Support vector machine method where this method has a way of working by inserting the kernel concept into a high-dimensional space. The results of this study are 87% Classification Accuracy with 8 classes, namely Genres Pop, Jazz, Dangdut, R&B, Reggae, Religion, Ska, and Rock.

Keywords— Music Genre Classification, Speech recognition, Python

Design of Collaborative Cloud Classroom (CCCR) for Ethno-Flipped Classroom Teaching Model

Rahmi Ramadhani, Edi Syahputra, Elmanani Simamora and Abdul Meizar.

Abstract - The integration of Information and Communication Technology (ICT) is growing in the education sector, particularly in mathematics learning. The integration of ICT is also adjusted to the applied learning model. One of the technology-integrated learning models is the ethno-flipped classroom model. Mathematics learning based on the ethno-flipped classroom model strengthens the interactive discussion and collaboration activities between students and teachers both inside and outside the classroom learning stage. However, the available platforms have not provided flexibility in the implementation of interactive and collaborative discussion activities. This study aims to develop a prototype cloud-based learning technology platform system called Collaborative Cloud Classroom. The system is developed in PHP using the CodeIgniter framework and MySQL database. This research is development research with a Waterfall model limited to the non-functional testing stage of the developed system. The results show that the Collaborative Cloud Classroom prototype system passed the non-functional testing (75.85%, exceeding the lower limit - 70%) which means the tested items are valid, and can be referred to as prototype-1 and is feasible for further testing. This research is a pilot study to be further developed at the advanced development stage for expert and practitioner testing before the system design is ready for field trials.

Keywords— Collaborative Cloud Classroom, Development Study, Ethno-Flipped Classroom Model, Flexibility Learning, Pilot Study

3D LOW POLY ASSET CREATION BASED ON BALINESE LOCAL WISDOM CONCEPT

Putu Devi Novayanti, Padma Nyoman Crisnapati, Ricky Aurelius Nurtanto Diaz

Abstract - This study aims to serve as a manual for low-poly 3D object modeling and related workflow. Focus on low-poly isometric approaches by defining and outlining the numerous phases involved in the creation of a 3D model. For this 3D asset project, Subak, the native knowledge of Bali, was chosen as the theme. As will be documented in the process of developing 3D models utilizing low-poly isometric working techniques and procedures often employed in the industry. Blender's modifiers, particle systems, and grouping can reduce asset processing time, especially for objects with symmetrical attributes or shapes, when used in conjunction with other features. The knowledge gathered in this study serves as a good beginning point for beginners interested in creating low-poly 3D models.

Keywords— 3d asset, low-poly, isometric, subak, bali

A New Approach Feature Selection for Intrusion Detection System Using Correlation Analysis

Dandy Pramana Hostiadi, Yohanes Priyo Atmojo, Roy Rudolf Huizen, I Made Darma Susila, Gede Angga Pradipta, I Made Liandana

Abstract - Threats and attacks on computer networks need to be handled properly in the cyber era. Malicious activities can harm the availability of system resources to the company's financial losses. Anticipating the malicious effects of attacks can be done by developing an attack detection model known as an Intrusion Detection System (IDS). Several previous studies have developed attack detection models with various detection optimization methods, for example, by optimizing the feature selection process. However, it has not shown a correlation analysis between features to get a strong correlation that can affect the improvement of detection performance. This paper proposes an attack detection model by developing a correlation-based feature selection technique that adopts the Pearson correlation algorithm. Correlation analysis was developed by measuring the correlation threshold to get a strong correlation between features, and its selected for classification modeling using Random Forest. The result of feature selection is obtaining 35 features, and the detection accuracy is 99.8136%, precision is 99.9687%, and recall is 99.7039%. The proposed model can be used to develop the existing intrusion detection model.

Keywords— attack, threat, feature selection, intrusion detection system, network security.

Optimization of Student Database Confidentiality Using Elgamal Algorithm and Fermat Method

Rubianto Rubianto, Roslina Roslina, Rika Rosnelly, Yusfrizal Yusfrizal, Kristina Annatasia Br Sitepu, Elida Tuti Siregar

Abstract - Every Islamic boarding school institution must have many databases, one of which is the student database. Securing the student database is needed to protect student data and information from database theft. To create an optimal system in securing the student database with the aim of avoiding accessing and processing data and information by unauthorized persons, the student database processed in this study used the ElGamal algorithm and the Fermat method with key formation using prime numbers and solving the problem requires discrete logarithm calculations. The keys used by this algorithm are the public key and the private key. The result of testing this method is that the student database is encrypted. The algorithm used to generate these prime numbers is to use Fermat. The ElGamal algorithm is very helpful in securing the student database at the Darul Hikmah Islamic Boarding School TPI Medan. In testing the encryption of the student database file with the file name "santri.mdf" it was successfully converted into a file with the new name "santri_mdf.encrypt", and in the decryption process it could return to plaintext with the name "santri.mdf".

Keywords— student database, Elgamal algorithm, Fermat method

Applying Minimum Message Length to the Clustering of Mutual Funds

Yudi Agusta

Abstract - Clustering has been widely studied to group data into clusters. Several methods have been used including Maximum Likelihood (ML), Information Criterion by Akaike (AIC), and Bayesian Information Criterion (BIC) by Schwarz. In this paper, Minimum Message Length (MML) is applied to the clustering of mutual funds data. In this application, data are assumed to come from multivariate correlated Gaussian distribution. For this, MML principle needs to be numerically approximated. The modeling results are contrasted with those obtained using alternative methods, in terms of probability-bit costings and clustering structures. The experiment's findings demonstrate that, in terms of the fitted probability bit costings, MML clustering provided a more trustworthy model than AIC and BIC with significantly less bits required in conveying the data given the model. MML clustering also handled overlapping clusters better compared to modeling using the combination of ML with AIC and BIC. Furthermore, mutual funds trading have shown changes of movements during the pandemic Covid-19 with performances of mutual funds tend to be decreasing across funds, especially during the first 15 months of the period. Only several funds were grouped differently compared to most funds analyzed. The latter have shown effect of pandemic Covid-19 the most with lower returns compared to the returns of most funds.

Keywords—MML, clustering, approximation, mutual funds

VR REAL RUN: An immersive Oculus Quest 2-based Virtual Reality Exergaming

Joe Yuan Mambu, Rismayani Rismayani, Jay Idoan Sihotang, Vivi Peggy Rantung

Abstract - There are many different types of exergaming, but one of the most engaging one is the one with virtual reality. This type of gaming allows you to immerse yourself in a completely different world, and it can be a lot of fun. Due to Covid-19 pandemic many people resort to their usual exercise activities and opt to do it at home yet only to find a monotonous and boring fitness routine. VR Real Run is aimed to give a solution on how to have fun and to get fit at the same time. By using the latest and front runner in the VR headsets products, the Oculus Quest 2, we developed an exergame that require user to run in place and jump to play. It also features high score to motivate users in perform better in the next session. A black box test has been well performed and a usability test was came out with a 79 SUS score which translate the application as “good” therefore its usability is acceptable.

Keywords—exergaming, oculus quest, virtual reality, covid-19, 3D application

Ear Feature Extraction Methods – A Review

Lilis Yuningsih, Putu Desiana Wulaning Ayu, Roy Rudolf Huizen, Dandy Pramana Hostiadi, Gede Angga Pradipta

Abstract - Research on system authentication with ears as the object have been widely studied and developed. The object of ears has some excellences such as being unchangeable in structure due to the age, unique, and easy to be obtained. The feature extraction process plays the most important role that highly determines the accuracy level from the recognition and classification of image. The research on ear recognition has been continuously developed to reach its completeness. This paper presents a review on research that has been done and divided into three categories: 3D feature extraction, appearance-based feature extraction, geometric feature extraction, and hybrid feature extraction. This paper also presents any advantages and disadvantages of each category as well as a number of challenges frequently faced by previous research related to the feature extraction.

Keywords— ear recognition, ear feature extraction, ear classification

Adaptive Neuro-Fuzzy Inference System For Medical Image Classification –A Review

Lilis Yuningsih, Roy Rudolf Huizen, Gede Angga Pradipta, Putu Desiana Wulaning Ayu, Dandy Pramana Hostiadi

Abstract - Medical image has now been widely used as the object in research particularly in artificial intelligent. Classification automation on medical image can assist to provide information or as the second opinion for the paramedics in doing a medical action and giving a diagnosis for the patients. One of the algorithms as the classifier is the adaptive neuro-fuzzy inference system (ANFIS) method – a hybrid method combining the fuzzy logic and neural network. ANFIS algorithm is the fuzzy inference system (FIS) implemented into the adaptive fuzzy neural network framework. This method combines the explicit knowledge as the representation from FIS and learning ability from the artificial neural network. This paper presents the discussion and the review of the adaptive neuro-fuzzy inference system (ANFIS) algorithm as the classifier in medical image classification. A number of research that have been conducted on the medical image object are evaluated and discussed in terms of their strengths and weaknesses.

Index Terms— ANFIS, Medical Image Classifiaction, Neuro-fuzzy.

Classification of Rice Leaf Diseases Based on Texture and Leaf Colour

Evi Dewi Sri Mulyani, Hendri Julian Pramana, Lina Listiani, N. Nelis Febriani Sm, Restu Adi Wiyono, Firah Putri Pratiwi

Abstract - Agriculture is a sector that contributes greatly to the Indonesian economy. The role of the agricultural sector in economic development in Indonesia is as a producer of food. The high demand for rice as a staple food in the community requires farmers to be able to produce rice of good quality and in large quantities to meet the needs of the community. One of the factors that affect the quality of rice plants is the attack of pests and diseases. Farmers have difficulty in identifying pests and diseases in rice plants due to limited knowledge. Improper handling of rice plants that are attacked by pests and diseases will result in decreased yields and farmers suffer losses. The problems that occur require a solution so that by designing a modeling of identification of pests and diseases it can be fast and accurate based on the texture and color of the leaves. Disease identification consisted of brown spot and leaf blight using rice leaf imagery using GLCM and K-NN. The results of the application of GLCM feature extraction and classification using the K-NN method are very good with an accuracy rate of 89%.

Keywords— Agriculture, Rice Leaf Disease, K-Nearest Neighbors, GLCM

Internet of Things System for Freshwater Fish Aquarium Monitoring and Automation using Iterative Waterfall

Theodorus Ezra. Suherman, Mochammad Hald. Widiyanto, Zefany Athalia

Abstract - This research aims to develop an IoT system for freshwater fish aquarium owners that can monitor the pH and temperature values of the aquarium water and automatically feed the fish twice a day based on the owner's schedule using their smartphone. The research method is divided into two parts: data collection via literature studies and development via the Iterative Waterfall model. The system utilizes an ESP32 microcontroller, a motor for automatic fish feeding, a waterproof temperature sensor to read the water temperature value, and a color sensor combined with a universal pH strip to read the water pH value. The color sensor can read the strip's color, which will change when immersed in aquarium water, and then the program classifies it into the appropriate pH value. Further research showed that the system passed in all test cases (i.e., pH monitoring test, temperature monitoring test, feeding test, and feeding schedule update test) by using Black Box Testing. The system evaluation revealed that the system could be utilized to maintain freshwater fish in an aquarium

Keywords—Internet of Things, Monitoring, Automation, Aquarium, Freshwater Fish

IT Governance: Performance Assessment of Maturity Levels of Rural Banking Industry

Sandy Kosasi, Untung Rahardja, I Dewa Ayu Eka Yuliani, Robertus Laipaka, Budi Susilo, Herlina Kikin

Abstract - Infrastructure resources and application portfolios of IT services have not been optimally used in the rural banking industry. In addition, work units are apt to be partially managed. Furthermore, there has been no performance assessment on the contribution of IT governance to ensure the alignment of businesses and IT strategies. The purpose of this study was to determine the capabilities of application portfolios of IT services through the implementation of management structures and IT processes in terms of domains of EDM and DSS. The research was in the form of a survey. A mixed method through an explanatory design and follow-up explanation was applied. A total of 82 respondents, living in West Kalimantan, Indonesia, completely filled in online questionnaires. The COBIT 5 framework was the approach to assessing maturity levels of IT governance. It was found that the performance value of maturity was at Level 3 (established process). In other words, an expected value was not achieved. So far, the use of application portfolios of IT services in the rural banking industry has only been limited to the standardization of procedures and documentation systems. Appropriate synchronization and obvious interoperability were absent. Also, there was no consistency in assuring resource optimization and continual management of implementing the procedures and using application portfolios of IT services.

Keywords—IT Governance, IT Services, Maturity Level, Performance Assessment, Application Portfolios

The Business Prospect in Metaverse and NFT Era (User, Accountant, and Gaming Community Perspectives)

Kenny Thenjono, Felix Ratana, Setiani Putri Hendratno

Abstract - Non-Fungible Token (NFT) has been growing extraordinarily in recent years. The concept of NFT is essentially a digital asset that operates based on smart contracts on a blockchain that were traded with cryptocurrencies such as Ethereum, Tezos, Solana, etc. Public attention toward NFTs has exploded in 2021. Despite its popularity and skyrocketing trading prices, little is known about the economics, people's perceptions, and experiences with NFTs. Therefore, This study aims to provide diverse understandings of NFT, the benefits & drawbacks of NFT, and the potential of NFT and metaverse according to them. In this paper, researchers perform a qualitative study which consists of 18 respondents, including users, accountants, and gaming community. This research uses a semi-structured interview and descriptive analysis method. The conclusion drawn from this study is that this research recommends readers for utilizing NFT and we expect readers to find this research useful.

Keywords— Non-Fungible Token, Blockchain, Metaverse, Innovation, Business Prospect.

Investigating the Role of IT-based Operational Improvement and IT-based Service Innovation to Achieve Business Survival

Ibnu Darmawan, Assed Lussak

Abstract - The purpose of this research is to examine the survival of small enterprises in the food and beverage sector in today's competitive market, particularly in Bandung. This city has one of the highest populations in Indonesia. This undoubtedly has an impact on how small businesses must be ready to adapt to changing tastes, the use of technology, and the generational preferences of millennials. This study employs an explanatory research method, with partial least squares and moderated linear regression analysis as analysis techniques. Purposive sampling is used in the sample technique, with a total sample of 50 respondents. The findings of this study demonstrate that product and IT-based service innovations, mediated by IT-based operational improvement, have a direct and indirect impact on firm survival

Keywords— operations, innovation, product, service, it-based, survival.

An Analysis Air Traffic Prediction During a Pandemic

Darmeli Nasution, Herman Mawengkang, Fahmi Fahmi, Muhammad Zarlis

Abstract - Air transportation during the covid-19 pandemic experienced a very drastic decline. The decrease in the number of passengers was caused by national and international restrictions. The troublesome administration makes passengers discouraged from traveling using Air transportation. Based on the National Statistics Agency, air transportation experienced a decline from early 2020 to 2021. This study focuses on air traffic predictions, namely the number of aircraft passengers during the COVID-19 pandemic at Indonesia's main airports, namely Kuala Namu, Sukarno Hatta, and Juanda airports. , Ngurah Rai and Hasanuddin. The method used to predict the number of airplane passengers during a pandemic is the backpropagation algorithm using the Fletcher Reeves method.

Keywords—Analysis, Optimization model, Capacity Management, Uncertain situation

Examining the Impact of IT Experience, Training, Self-Efficacy and Anxiety on Remote Work Quality in Indonesia

Ibnu Darmawan, Assed Lussak

Abstract - In 2020, Covid-19 pandemic has forced millions of individuals worldwide to work remotely with little or no prior experience, for corporations and organizations that are mostly equipped for this change. The third worry concerning remote work quality is whether employees can adjust and what factors influence this. To address such scenarios, a model of remote work self-efficacy was previously established. The development, on the other hand, was intended to evaluate virtual enterprises with dependable ICT and adequate human training. Unprepared, the research attempts to delve deeper into the constituents of its forefathers. The study included 46 participants from the provinces of Jakarta, Central Java, and Yogyakarta in May 2021, when rapid viral spread forced businesses to lock their doors. Unlike other studies, this one show how two-way conversations that generate social persuasion, physiological and emotional states, and self-efficacy improve distant job quality.

Keywords— communication, self-efficacy, remote work, social persuasion, physiological, emotion

Vehicle Routing Problem in Electric Fleet

Sundari Retno Andani, Muhammad Zarlis, Herman Mawengkang, Sutarman Sutarman

Abstract - Transportation is part of the logistics activities that are very important and cost the most. The problem faced in relation to distribution is determining vehicle routing problems. Transportation contributes to the increase in pollution and greenhouse gas emissions that result in global warming. Therefore, a vehicle routing problem model is needed in the electric fleet. VRP plays an important role in goods distribution activities that aim to optimize distribution activities by minimizing costs and time. The vehicle routing problem in electric fleets also takes into account battery capacity, charging time and charging station location.

Keywords—Vehicle Routing Problem, electric fleet

Geofencing Application for Parents Tracking Children using Push Notification in Universitas Klabat based on mobile

Stenly Ibrahim Adam, Oktoverano Hendrik Lengkong, Stenly Richard Pungus, Suvin Raj Kollabathula

Abstract - Abstract— Universitas Klabat provides a good education for knowledge growth and a path to a successful career. However, the student's discipline is the key factor in achieving a high academic and good carrier path. Parents dream for their children to be fruitful and have a better life. But if the child is not at school, all the financial resources used for education are of waste causing stress to parents.

To overcome the problem, the researcher sets a radius around the school entrance to set up a virtual boundary through Geofencing. When the student enters or leaves the school, the phone will cross the geofence, and a notification will be sent to the parent's cell phone via WhatsApp notifying that their child has either arrived or left the school. This ensures safety and guarantees the parents that their child arrived at school. And with the time being shown, the parents can know if the child was present or late for class. If the parents find out that their child has left the school during class hours, they can contact their child and tell him to go to school. This application could help benefit the parents so they can monitor the whereabouts whether the child reached school or not with the help of GPS and location services. Benefiting the child's safety and education.

Keywords—Discipline, Education, Geofencing, notification, GPS, Location services, Safety, Education

Mobile-Based Road Infrastructure Damage Reporting Service App

Stenly Ibrahim Adam, Reymon Rotikan, Prince Siachin Pasombaran, Gabriel Janes Posumah

Abstract - Most people in Manado city do not know how to report road damage complaints to the relevant agencies. People in Manado City are waiting for the government to repair the damage. The author also finds that the reporting of complaints that occur in the community is still done manually through letters sent to the relevant agencies. The results that researchers got from respondents said that the problems they often experienced when passing through the streets in Manado City were potholes, sandy roads, bumpy roads because they were uneven, and so on. Based on the problems experienced and what respondents filled out in the questionnaire, public complaints about infrastructure and roads have not been conveyed properly so that people still do not know who to complain to. Based on these problems, create a mobile-based application that can be used by the community to help report road damage and other road infrastructure so that this application is able to become a communication bridge between the community and the government in dealing with existing road damage in Manado City. In this study, the researcher used the AGILE SCRUM method as a framework in the research process. We build front-end applications using the JavaScript programming language and using the React-Native framework on a mobile application and using the ReactJs framework on the website application and for the backend we use Nodejs, for the database we use MongoDB.

Keywords—Mobile-Based, Reporting, Google Vision, Map, damaged-road, SCRUM, NodeJS.

Online Handwritten Recognition For Alphabet Writing Practice

Ni Putu Linda Santiari, I Gede Surya Rahayuda

Abstract - Learning to write in children requires the child's habit of using a pencil to write on paper. The manual method has drawbacks such as the use of a lot of paper when children have to study harder to keep repeating the exercises and also cannot be done online remotely. In addition to this, writing exercises on the touchscreen can also train children to be more skilled at using the touchscreen. To overcome these problems, the author will discuss the use of handwriting recognition technology to practice writing capital letters (A-H), where the technology will be built on a web-based basis. The recognition algorithm used is K-NN. Testing the use of the website was carried out at Tunas Mekar Sari Kindergarten, Denpasar. The identification number and result will be stored on the web server. Based on the experiment, it was found that from 80 image data, the K-NN algorithm succeeded in providing accurate recognition results on 60 image data, and obtained an accuracy of 78.75%

Keywords—handwritten, recognition, style, K-NN

Communication Signal Network Optimization Model Based On The Concept Of Ubiquitous Clouds

Sumarlin Sumarlin, Muhammad Zarlis, Suherman, Syahril Efendi

Abstract - Ubiquitous Computing is referred to as the third wave in computing. The first is the mainframe concept, where a machine is used by many people at the same time (one computer, many people). Now we are in the era of personal computers (personal computers) where someone uses each machine they have (one person, one computer). As computers became cheaper and more prevalent, the next era of Ubiquitous Computing would come and the era of "one person, many computers".

Ridge Polynomial Neural Network for Brain Cancer Based on Android

Riah Ukur Ginting, Poltak Sihombing, Syahril Efendi, Amila, Burhanuddin Damanik

Abstract - Brain cancer is a disease that causes the highest mortality after breast cancer. The epidemiological data of brain cancer in Indonesia does not have a diagnostic technique that is less than optimal and the case registration data is incomplete. One of the causes of delays in brain cancer detection is the high cost and lack of public knowledge about the risk of brain cancer. The purpose of this paper is to create an android application using the ridge polynomial neural network algorithm. The results of brain cancer detection will be visualized in patients at Haji Adam Malik General Hospital Medan which was shown in the 450th iteration by achieving an MSE of 0.021550.

Keyword : ridge polynomial neural network, brain cancer, CT- Scan 128, Android, neural network

Text-Based Emotion Detection using CNN-BiLSTM

Denis Eka Cahyani, Aji Prasetya Wibawa, Didik Dwi Prasetya, Langlang Gumilar, Fadhilah Akhbar, Egi Rehani Triyulinar

Abstract - Social media is not only used by the public to convey information but also to express emotions in writing. Text-based emotion detection is needed to find out the emotions contained in the text. This study combines CNN and BiLSTM for text-based emotion detection and compares the use of word embedding such as Word2Vec and GloVe. The data types used in this study are commuter line, transjakarta and commuter line + transjakarta. This study uses two scenarios, namely scenario I which classifies the dataset into emotion and no-emotion classes and scenario II which classifies emotions into five types of emotions, namely happiness, anger, sadness, fear, surprise. This study has two experimental types to emotion detection based on text, namely Word2Vec-CNN-BiLSTM, and GloVe-CNN-BiLSTM. In scenario I, Word2Vec-CNN-BiLSTM outperforms GloVe-CNN-BiLSTM in terms of accuracy. The accuracy values generated by Word2Vec-CNN-BiLSTM on the commuter line, transjakarta and commuter line + transjakarta data are 84.34%, 83.73%, and 83.88%, respectively. Word2Vec-CNN-BiLSTM provides the best overall Precision, Recall and F1-Measure compared with GloVe-CNN-BiLSTM on all data. The same result is also shown in scenario II where accuracy, precision, recall and F1-measure in Word2Vec-CNN-BiLSTM are better than other methods. The results of this study also improve the performance of emotion detection in text compared to the results of previous studies using Word2Vec-BiLSTM

Keywords—Emotion Detection, CNN, BiLSTM, Word2Vec, GloVe

Footstep Detection for Indoor Positioning using Accelerometer and Magnetometer Sensor on Smartphone

Made Liandana, Bagus Made Sabda Nirmala, Gede Angga Pradipta, Dandy Pramana Hostiadi

Abstract - Indoor positioning using inertial sensors can be used as an alternative to GPS because indoor GPS signals are weaker than outdoors. Inertial sensors such as accelerometers and magnetometers are already packaged in smartphone devices, so the use of smartphones for indoor positioning is an option. Footstep detection is essential in determining position indoors; in this study, footsteps were detected using the accelerometer sensor. While the heading direction is calculated using the Magnetometer sensor. Previous studies have shown that the position of the smartphone, when held, affects indoor positioning estimated. So in this study, it is proposed to use the angle of inclination. In addition, to identify the initial position, a marker in the form of a QR Code is used. The proposed approach consists of 5 processes, namely: calculating the tilt angle, detection of footsteps, calculating the heading direction, estimated displacement, and the estimation of the position. The error in the position estimation is used as a test parameter. The longer path length results in a smaller error than the shorter path.

Keywords—Indoor positioning, tilt angle, QRcode, accelerometer, magnetometer.

DEVELOPMENT OF A CHATBOT FOR THE ONLINE APPLICATION TELEGRAM CHAT WITH AN APPROACH TO CLASSIFICATION OF EMOTIONS ON TEXT USING THE INDOBERT-LITE METHOD

Khodijah Hulliyah, Faishal Rayyan, Normi Sham Awang Abu Bakar

Abstract - The increasing preference for text-based communication on online chat applications has caused the number of social interactions to increase rapidly. However, text-based communication usually results in misunderstandings resulting from the absence of feeling intonation and emotions in the text. This study aims to create a chatbot that can detect emotions in text to be entered into online chat applications. This study used a pre-trained model specifically trained from a collection of Indonesian-language datasets, namely IndoBERT-lite. The dataset used to train the model is a collection of Indonesian tweets totaling 4,403 which have been labeled with 5 classes of emotions, namely love, happy, anger, sadness, and fear. The hyperparameters used in this study to train the model were 5 epochs, batch size 16, learning rate 0.000003, and adam optimizer. Based on the test results with the parameters already mentioned, the accuracy, F1 score, recall, and precision values were obtained in the training set of 89%, 89%, 89%, and 90%, while the validation set obtained 70%, 71%, 70%, and 72%.

Keywords :Online chat application, emotion classification, chatbot, pre-trained model, IndoBERT-lite, Telegram

Dogs Feed Smart System With Food Scales Indicator IoT Based

Robby Kurniawan Harahap, Andrian Kharisma Wijaya, Eri Prasetyo Wibowo, Widyastuti Widyastuti, Dyah Nur'Ainingsih, R. A. Sekar Ciptaning Anindya

Abstract - An IoT-based system of feeding and drinking for pet dogs will be described in this paper. Regular feeding and drinking become a problem when pet owners are not at home or near their pets. Feeding and drinking equipment combined with IoT technology can answer this problem. In this research, the IoT system created an IoT-based system with remote control and monitoring to make it easier for animal owners to provide pet food and drink via smartphone devices. The pets referred to in this research are dogs. This system consists of two main functions, namely feeding and drinking. Each of these functions can operate manually and automatically. In addition to these two functions, there is an extension function, namely weighing food. Automatic feeding and drinking can operate according to a schedule designed using the RTC sensor DS2321 and manually via the Blynk Android app. Load cell sensor to measure the weight of food in the food container and ultrasonic sensor to measure food residue and drinking water in the container. The results of weighing food and measuring food and drinking waste are monitored through a smartphone application. Based on the test results, the results show that the tool can work according to the design function. The measurement results using the load cell sensor have an accuracy of 98% in weighing food weight compared to the reference results from the reference scales. The overall test results show that the system works well by providing manual input by the animal owner and automatically based on the RTC sensor. With this result, pet owners can leave their animals without worrying because they can monitor the animal's feeding and drinking schedule via their smartphones.

Index Terms—Animal Feeding, Internet of Things (IoT), Pet Dogs; Load Cell, Real-time Scheduling.

Classify Malaria Dataset Human Blood Images Using Convolutional Neural Networks

Purnawarman Musa, Eri Prasetyo Prasetyo, Matrisnya Hermita, Raihan Firas Muzhaffar

Abstract - Malaria is prevalent in regions around the globe, and human activity has contributed to more than 400,000 fatalities annually. A timely and accurate diagnosis is necessary for optimal disease treatment, given that malaria is a substantial problem on a global scale. Our research presents classification studies of malaria as a solution to the previously described problem. These studies use image datasets obtained from photo data online and attempt to detect malaria infected or non-infected by someone using a blood image via Convolutional Neural Network strategies and deep learning methods. The results of tests done with Convolutional Neural Network techniques show that the processes were successful, with the best model getting more than 95%. In the confusion matrix, their accuracy is 97.28%, their precision is 99.60%, their recall is 95.15%, their specificity is 99.62%, and their F1 Score is 97.32%. In addition, the prediction accuracy for identifying malaria was 100% when utilizing photographs or various datasets from the laboratory as test data

Keywords— Dataset Blood, Deep Learning, CNN, Image, Malaria

Prediction of Feed Quantity Using Multiple Linear Regression Algorithm for Clarias Farming

Esmi Nur Fitri, Sri Winarno, Farrikh Al Zami, Affandy Affandy, M. Hafidz Ariansyah

Abstract - One of the prevalent fish commodities in the community is clarias which is marked by high demand. High demand makes clarias farmers need an effective aquaculture strategy to assemble the consumption needs of clarias in the community. One strategy that needs to be noticed is the determination of the appropriate feed size so that the feeding is maximized. Currently, farmers have difficulty in determining the right size of feed, as a result, many uneaten feed remains are found. Therefore, an analysis of determining the size of the feed is needed that is adjusted to the width of the clarias's mouth so that feeding can carry out optimally. This study analyzed determining feed size in clarias using the Multiple Linear Regression algorithm. This study uses 150 data, namely training data totaling 105 and testing data totaling 45. The result of the coefficient of determination obtained is 81.40 and has an intercept value of -0.094. Measurement of the performance of the Multiple Linear Regression algorithm equation using Mean Absolute Percentage Error shows a result of 21%. From the results of the analysis above, it concluded that the determination of feed size affects the optimal growth of clarias.

Keywords-- Prediction, Clarias, Multiple Linear Regression, Fish Feed

Clarias Size Clustering to Determine Market Segmentation Using K-Means Algorithm

M. Hafidz Ariansyah, Sri Winarno, Farrikh Al Zami, Affandy Affandy, Esmi Nur Fitri

Abstract - Clarias is one of the fish that is easily found in Indonesia. Besides being cheap, clarias is easy to find in the market, both in traditional and modern markets. There are quite a lot of types of markets in Indonesia, so a grouping analysis is needed considering the market location based on the size of the fish. This analysis aims to make it easier for clarias farmers to distribute their crops according to existing market segments. Therefore, this study conducted a segmentation analysis of the clarias market using the K-Means algorithm to help clarias farmers in distributing clarias harvests to the appropriate market. The results of this study indicate that the sillhoutte value in the clarias dataset obtained K values between 3 - 10 clusters (55.02% - 47.77%). The most optimal value is K = 3 with a sillhoutte index value of 55.02%. This means that the application of the K-Means algorithm provides positive assumptions for market segmentation so that clarias farmers can distribute clarias harvests to the right market.

Keywords : clustering, sillhoutte index, clarias, machine learning

Prototype NFT/DFT Hydroponic Data Collection Using IoT System

IGKG Puritan Wijaya ADH, I Nyoman Rudy Hendrawan, I Made Bhaskara Gautama, I Made Arya Budhi, I Gusti Ngurah Wikranta Arsa

Abstract - Hydroponic cultivation has several considerations that must be considered in terms of water treatment as the main source role for plant growth. With this problem, a monitoring system is needed that can monitor water conditions in DFT hydroponic irrigation pipes. The monitoring tool uses ESP32 which is the main role of the system that will read and send sensor data to support monitoring, where each sensor has its role. This system utilizes the MQTT protocol as a data communication medium. The test was carried out using the Prototyping research method. From the test results, it can be concluded that the monitoring tool has the ability to read several water conditions from the level of acidity or alkalinity, turbidity or water clarity, water temperature, water level and water flow rate or flow that is functioning properly and is displayed on the website page in real-time

Keywords— hydroponic, internet of things, microcontroller, hardware, software

MicroRNA and Gene Relationship between Ethnicity and Cancer Stage as Potential Biomarker and Treatment for Lung Adenocarcinoma

Nadya Natasya, David Agustriawan

Abstract - Most common cancer in the world is Lung Cancer (LC) with a low survival rate and has caused numerous deaths. However, up until now there are still no effective methods to cure cancer. MiRNAs are one of the potential treatments for various cancers that can function as an oncogenes or tumor suppressors. However, the technology for that is currently being developed and being researched. Furthermore, there is no study discusses the relation in a particular subtype of LC between race and cancer stage. Therefore, this study focusses on searching miRNA profile in LC between race and cancer stage to search for potential biomarker and treatment for LC. The clinical and microRNA patient dataset was obtained from the TCGA database. The Lung Adenocarcinoma (LUAD) was selected as the cancer type. The dataset was further classified into white and black ethnicity and four different cancer stages. Two different packages from R (edgeR and DESeq) were being used for performing aberrant expression analysis in miRNA. To support the result several other analyses were also done including target gene analysis, pathway analysis, sensitivity and specificity analysis, and spearman correlation. Based on the analysis, hsa-mir-486 together with hsa-mir-184 and hsa-mir-144 show promising results ($AUC > 0.9$) and could be used as potential early diagnostic and therapeutic strategies in LUAD. However, wet lab experiments and analysis such as transcriptome profiling need to be done to further validate the results.

Keywords—microRNA, lung adenocarcinoma, aberrant miRNA profiling, R, epigenetics

AMPLITUDE AND FREQUENCY BASED EVALUATIONS FOR ALGORITHM DEVELOPMENT OF PREMATURE VENTRICULAR CONTRACTION DETECTION SYSTEM

Joshua Sun, Mario Donald Bani, Moch Firmansyah, David Agustriawan, Muammar Sadrawi

Abstract - Cardiovascular diseases are one of the most prevalent non-communicating diseases, and also one of the leading causes of death globally. In Indonesia alone, cardiovascular diseases are one of the leading causes of death. However, many people are still unaware about the early prevention and mitigation of cardiovascular disease, increasing the prevalence of the diseases. The innovation of self- diagnosing and monitoring systems can help people in monitoring their cardiovascular health and parameters in order to prevent or mitigate cardiovascular diseases. This project was a part of a bigger project that was arranged to develop a portable ECG (Electrocardiogram) device. The algorithm was written in Python programming language. The logic for the detection system was based on SciPy module. Monitoring PVC is important in patients with cardiovascular diseases history because its frequency can be a sign of a worsening condition. The PVC detection algorithm was developed to detect abnormal peaks as a result of PVC occurrence in the ECG recordings. The parameter for the PVC peaks was determined after observation of multiple ECG recordings dataset that contain a large amount of PVC. The ECG recordings were obtained from MIT-BIH Arrhythmia Database which provides ECG recording with multiple heart conditions and ECG morphology. The algorithm was able to detect PVC occurrence with average accuracies of 89.31% with standard deviation of 11.26%. However, the algorithm still has limitations in differentiating the PVC if it has similar characteristics with normal heartbeat peaks, also when there are too much background noise.

Keywords—Electrocardiogram, premature ventricular contraction, SciPy, PVC peaks, normal heartbeat peaks

Sentiment Analysis of Government Policy Regarding PPKM on Twitter Using LSTM

Green Arther Sandag, Eben Haezar Ekoputra Soegiarto, Lidya Laoh, Andre Gunawan, Debby Sondakh

Abstract - The Policy of PPKM Covid from the government has become a popular topic to be discussed among the public, especially on Twitter. Due to the many responses or opinions about the PPKM that has been implemented by the government in Indonesia. Sentiment Analysis is the basis for research on the issue of Indonesian PPKM by using a deep learning model, namely LSTM. The data collection of tweets is obtained through crawling the data of Twitter API using the 'snsrape' module with the keyword "PPKM COVID" and the target data is 15,001 tweets. The data is processed and divided into two parts become 80% training data, 20% testing data and using the GRU, BiLSTM and RNN comparison models. Accuracy performance obtained from the four models include LSTM 90%, GRU 89%, BiLSTM 90% and RNN 85%. The comparison of the best accuracy results is obtained from the LSTM and BiLSTM models. Furthermore, the result of sentiment obtained a high percentage for negative sentiment with a total percentage of 54.6%, while the positive sentiment had a percentage of 37.0% and neutral sentiment is 8.5%.

Keywords—PPKM, LSTM, BiLSTM, GRU, RNN

Modifying the Revised NIOSH Lifting Equation using Anthropometric Variables to Calculate Horizontal and Vertical Multipliers

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Abstract - The Revised NIOSH Lifting Equation is a work system assessment tool which often used in industrial world. The calculation result in the form of Recommended Weight Limit (RWL) and the Lifting Index (LI) become the basis for improving the work system carried out. RNLE is an application developed by NIOSH and uses American anthropometry as a constant in its calculations. Some researchers, especially in Asia, consider that the application is less suitable for Asia people who have anthropometric differences with Americans. The assessment carried out by the RNLE application is based on work activities carried out without considering the worker's body posture. In particular, the calculate of HM and VM in this application uses a constant related to anthropometry. RNLE uses the constants based on the average anthropometry of workers in calculation. The constant anthropometry used in the equation led to the results of the risk calculation that does not correspond to physical aspects of workers. It takes an equation that consider anthropometry workers to get the calculation of the value of the appropriate work risk. The study aims to propose equations that consider anthropometry factors to calculate the risk factor. The development of the equation with Python programming language allows further development in the field of information and communication technology. The results of the study shows that the average results of the RWL and LI calculation uses anthropometry data not equal to the RNLE, thus required new equation in order to resulting more objective risk value.

Keywords— Horizontal variable, vertical variable, RNLE

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