

# Program

Time	Ballroom	Melaka Suite	Pahang Suite	Penang Suite	Selangor Suite
Wednesday, July 24					
08:00-08:30	Participants Registration				
08:30-09:00	Arrival of VIPs and Guests				
09:00-09:05	Welcoming Remarks by General Chair & Co-Chair of ICoICT 2019				
09:05-09:25	Opening Speech by President of Multimedia University				
09:25-09:30	Video Presentation				
09:30-09:35	Souvenir Presentation				
09:35-10:15	Photo Session and Refreshment				
10:15-10:30	ICoICT 2020 Presentation				
10:30-11:45	Keynote Speech #1				
11:45-13:00	Keynote Speech #2				
13:00-14:00	Lunch Break				
14:00-15:15	Keynote Speech #3				
15:15-15:30	Afternoon Coffee Break				
15:30-16:30	Tutorial Session #1				
16:30-17:30	Tutorial Session #2				
20:00-22:30	Gala Dinner				
Thursday, July 25					
08:00-09:00	Participants registration				
09:00-10:20	Tutorial Session	1C: Image Analysis and Recognition	1B: Information Analysis	1D: Intelligent Systems	1A: Predictive Analytics
10:30-12:50	2A: Neural Computing	2D: Human Factor and Usability	2C: Healthcare and Well-being	2E: Biometrics and Security Systems	2B: Smart Living
13:30-15:30	3A: Social Media Analytics	3D: Machine and Sensor	3C: Text Mining and Classification	3E: Human Machine Interface	3B: Network Analysis
15:30-17:10	4A: System Modeling	4D: Data Sources and Management	4C: Algorithm Analysis	4E: Text and Sentiment Analysis	4B: Machine Learning and Prediction
Friday, July 26					
08:30-10:10					5A: General

Wednesday, July 24 8:00 - 8:30

Participants Registration

Wednesday, July 24 8:30 - 9:00

Arrival of VIPs and Guests

Wednesday, July 24 9:00 - 9:05

Welcoming Remarks by General Chair & Co-Chair of ICoICT 2019

Wednesday, July 24 9:05 - 9:25

Opening Speech by President of Multimedia University

Prof. Datuk Ts. Dr. Ahmad Rafi Mohamed Eshaq

Wednesday, July 24 9:25 - 9:30

Video Presentation

Wednesday, July 24 9:30 - 9:35

Souvenir Presentation

Wednesday, July 24 9:35 - 10:15

Photo Session and Refreshment

Wednesday, July 24 10:15 - 10:30

ICoICT 2020 Presentation

Wednesday, July 24 10:30 - 11:45

Keynote Speech #1

Convergence of Big Data and Artificial Intelligence for Big Biology

We are witnessing an exciting era of data explosion in biology where biological data from various data sources is growing at an exponential rate. This is 26 years after Donald Knuth's statement, "Biology easily has 500 years of exciting problems to work on", in an interview with Computer Literacy Bookshops (CLB) on 7th December 1993. There is now demand for new approaches and techniques to organize, manage, and analyze this massive amount of biological data. At the same time, Artificial Intelligence is emerging as a vital method for data analytics. In this talk, we present the convergence of big data and artificial intelligence, and how both technologies are poised to solve the challenges in Big Biology.

Wednesday, July 24 11:45 - 13:00

Keynote Speech #2

Data-driven QoS and QoE Management in Smart Cities

Communication and information are the basis of smart city development. This talk is about the real-time management of communication performance for smart cities that have a vast number of networking nodes and services. I will focus on both QoS and QoE, and discuss the challenges in guaranteeing such performance by analyzing the characteristics of smart city communication networks. The opportunity of employing data to automatically manage QoS/QoE performance will be presented.

Wednesday, July 24 13:00 - 14:00

Lunch Break

Wednesday, July 24 14:00 - 15:15

Keynote Speech #3

Machine Learning for Business Intelligence

Business intelligence has gone from static reports that tell you what happened, to interactive dashboards where you can drill into information to try and understand why it happened. New big data sources, including Internet of Things (IoT) devices, are pushing businesses from those reactive analytics where you look back once a month to spot trends or once a day to check for problems to proactive analytics that give you alerts and real-time dashboards. Large organizations use machine learning to reveal patterns and turn information into insights to help them make faster and accurate business decisions.

This talk will cover how machine learning is used in business intelligence applications nowadays, such as churn prediction and product recommendation.

Wednesday, July 24 15:15 - 15:30

Afternoon Coffee Break

Wednesday, July 24 15:30 - 16:30

Tutorial Session #1

Aesthetics-driven Image Recomposition: From Classic to Deep Vision

With the rapid advancement and adoption of mobile and digital imaging technology, almost everyone is now a photographer. According to Agence France Presse (AFP) report, 880 billion photographs were taken in 2014, and 27,800 photos/minute and 208,300 photos/minute, are uploaded to Instagram, and Facebook respectively. With the large amount of photos being captured and shared on social media, there is a growing interest in aesthetics quality improvement. One aspect of photography that contributes to high quality photos is image composition; the spatial arrangement of photo subjects in the image frame. Professional photographers often apply a wealth of photographic composition rules, i.e., rule of thirds, visual balance and simplicity to capture compelling photos. However, casual photographers may not have the knowledge of taking good photos and often find their photos unsatisfying. This fosters the need for aesthetics-driven recomposition tools that can assist them to enhance the aesthetics of their poorly-taken photos with ease.

Earlier works of image recomposition aim to produce resulting images that mimic professional photographs by employing optimization-based techniques that are guided by selected photographic composition techniques / rules. Moving forward, researchers then adopt the learning-based approach to learn an image recomposition model using traditional machine learning algorithms. More recently, with the introduction of generative networks, image recomposition can now be performed in an end-to-end manner, whereby an aesthetics prediction model acts as a discriminator to guide a generator network to produce resulting images with higher aesthetics appeal. This tutorial commences with the formulation of the image recomposition problem, followed by the chronological development of the image recomposition research; from the classic approaches that utilize optimization and traditional machine learning to deep vision approaches that employ convolutional neural network and generative network. The tutorial will conclude with the discussion on the challenges and opportunities in aesthetics-driven image recomposition.

Wednesday, July 24 16:30 - 17:30

Tutorial Session #2

Smart Contract Security

It is vital to ensure smart contracts running on blockchains are secure and trustworthy. In this talk, I will first talk about security issues of smart contracts. I will then demonstrate automated security testing tools used for analysing vulnerabilities in smart contracts.

Wednesday, July 24 20:00 - 22:30

Gala Dinner

Thursday, July 25 8:00 - 9:00

Participants registration

Thursday, July 25 9:00 - 10:15

Tutorial Session

Starting and Building a Career With Malware Analysis

Chang draws on his working experience both as a line analyst and a manager to shed light on what malware analysis is and what someone interested in the field needs to know. He will also set the stage and context with an overview of the current threat landscape.

Thursday, July 25 9:00 - 10:20

1A: Predictive Analytics

***Predicting Staple Food Materials Price Using Multivariables Factors (Regression and Fourier Models with ARIMA)***

Said Fadlan Anshari (Telkom University & Informatic Faculty, Indonesia); Putu Harry Gunawan and Yanti Rusmawati (Telkom University, Indonesia)

pp. 1-5

***Smart Shopping Prediction on Smart Shopping With Linear Regression Method***

Maman Abdurohman, Aji Gautama Putrada Satwiko and Medina Diani Nastiti (Telkom University, Indonesia)

pp. 6-11

***The Causality Effect on Vector Autoregressive Model: The Case for Rainfall Forecasting***

Aniq Atiqi and Putu Harry Gunawan (Telkom University, Indonesia)

pp. 12-16

***Hypnagogia based Smart Alarm System using PIR Sensors***

Maman Abdurohman, Aji Gautama Putrada Satwiko and Fitrah Nusantara (Telkom University, Indonesia)

pp. 17-21

1B: Information Analysis

***Financial Network Approach for Modeling about Company Bankruptcy***

Jorgie B Permana and Yanti Rusmawati (Telkom University, Indonesia); Muhammad Arzaki (Telkom University & Computing Lab - ICM Research Group, Indonesia)

pp. 22-29

***A check nodes correction approximate min-sum decoding algorithm for LDPC***

Ruizhen Wu (Intel Mobile Communications Technology (Xi'an) Ltd, P.R. China); Lin Wang, Tao Yuan and Xiaoyong Zhang (Intel Mobile Communications Technology (Xi'an) Ltd, P.R. China)

pp. 30-34

***Real-time Screen Sharing Using Web Socket for Presenting Without Projector***

Irfan Darmawan (Telkom University, Indonesia); Alam Rahmatulloh and Rohmat Gunawan (Siliwangi University, Indonesia)

pp. 35-40

***Enterprise Architecture for the Fire Rescue Services***

Natasha Manick and Ashvin Appigadoo (University of Mauritius, Mauritius); Bibi Zarine Cadessaib (University of Mauritius & Reduit, Mauritius)

pp. 41-46

## 1C: Image Analysis and Recognition

### ***Analysis of Global Spatial Statistics Features in Existing Contrast Image Quality Assessment Algorithm***

Ismail Darej and Baraa Hammad (University of Anbar, Iraq)  
pp. 47-50

### ***Quality Image Enhancement from Low Resolution Camera using Convolutional Neural Network***

Nopita Pratiwi Patmawati (Telkom University, Indonesia); Anditya Arifianto (Telkom University & Artificial Intelligence Laboratory, ICM Research Group, Indonesia); Kurniawan Nur Ramadhani (Universitas Telkom, Indonesia)  
pp. 51-56

### ***Classification of Japanese Fagaceae Wood Based on Microscopic Image Analysis***

Salma Salma and Putu Harry Gunawan (Telkom University, Indonesia); Esa Prakasa (Indonesian Institute of Sciences, Indonesia); Ratih Damayanti (Forda, Indonesia); Junji Sugiyama (Research Institute for Sustainable Humanosphere, Japan)  
pp. 57-62

### ***Face Image Super-Resolution using Inception Residual Network and GAN Framework***

Septian Dwi Indradi (Telkom University, Indonesia); Anditya Arifianto (Telkom University & Artificial Intelligence Laboratory, ICM Research Group, Indonesia); Kurniawan Nur Ramadhani (Universitas Telkom, Indonesia)  
pp. 63-68

## 1D: Intelligent Systems

### ***Approximation of velocity-density function for traffic flow model with obstacle problem in Jalan Merdeka Bandung***

Putu Harry Gunawan (Telkom University, Indonesia); Muhammad Ardi Rizmaldi (School of Computing, Telkom University, Indonesia)  
pp. 69-74

### ***Analyzing Tourism Mobile Applications Perceived Quality using Sentiment Analysis and Topic Modeling***

Riefvan Achmad Masrury and Fannisa Fannisa (Telkom University, Indonesia); Andry Alamsyah (Telkom University & School of Economics and Business, Indonesia)  
pp. 75-80

### ***Identification of Ultra High-Energy Cosmic Rays Primary Particles Initializing Air Showers on a base of ADC traces from Water Cherenkov Detectors***

Zbigniew Szadkowski (University of Lodz & Faculty of High-Energy Astrophysics, Poland); Adam Jozwik and Krzysztof Pytel (University of Lodz, Poland)  
pp. 81-85

### ***Prototype of Automation of Organic Fertilizer Manufacturing System Based on Internet of Things***

Siti Amatullah Karimah (Telkom University, Indonesia); Yogie Fajar Pratama (School of Computing, Telkom University, Indonesia); Endro Ariyanto (Telkom University, Indonesia)  
pp. 86-91

Thursday, July 25 10:30 - 12:30

## 2A: Neural Computing

### ***Increasing Accuracy of Power Consumption using Artificial Neural Network***

Maman Abdurohman, Aji Gautama Putrada Satwiko and Arry Syukur (Telkom University, Indonesia)  
pp. 92-97

### ***Generating Image Description on Indonesian Language using Convolutional Neural Network and Gated Recurrent Unit***

Aditya Alif Nugraha (Telkom University, Indonesia); Anditya Arifianto (Telkom University & Artificial Intelligence Laboratory, ICM Research Group, Indonesia); Suyanto Suyanto (Telkom University, Indonesia)  
pp. 98-103

### ***A cross model Telco Industry Financial Distress Prediction in Indonesia: Multiple Discriminant Analysis, Logit and Artificial Neural Network***

Hariadi Kristianto and Brady Rikumahu (School of Economics and Business, Telkom University, Indonesia)  
pp. 104-108

### ***Prediction of Agriculture and Mining Stock Value Listed in Kompas100 Index Using Artificial Neural Network Backpropagation***

Meizir Zubir Rajab (Telkom University, Indonesia); Brady Rikumahu (School of Economics and Business, Telkom University, Indonesia)  
pp. 109-113

### ***Artificial Neural Network for Indonesian Tourism Demand Forecasting***

Andry Alamsyah (Telkom University & School of Economics and Business, Indonesia); Putu Friscintia (Telkom University, Indonesia)  
pp. 114-120

### ***Gait Recognition Using Deep Convolutional Features***

Pa Pa Min (Multimedia University, Malaysia)  
pp. 121-125

Thursday, July 25 10:30 - 12:50

## 2B: Smart Living

### ***Indoor Air Quality Monitoring and Controlling System based on IoT and Fuzzy Logic***

Nico Surantha and Fadli Pradityo (Bina Nusantara University, Indonesia)  
pp. 126-131

### ***Communication Learning User Interface Model for Children with Autism with the Goal-Directed Design Method***

Danang Junaedi, Fitrilia Susanti and Veronikha Effendy (Telkom University, Indonesia)  
pp. 132-137

### ***Passenger Vehicle Avoidance Time Model For Connected And Autonomous Vehicles***

Azizul Rahman (Universiti Sains Malaysia, Malaysia)  
pp. 138-143

### ***Smart Light Recommending System Using Artificial Neural Network Algorithm***

Maman Abdurohman, Aji Gautama Putrada Satwiko and Muchammad Ferdian Akbar (Telkom University, Indonesia)  
pp. 144-148

### ***Smart Living Society begins with A Holistic Digital Economy: A Multi-Level Insight***

Mei Peng Low (Lot PT 21144 Jln Sg Long & UTAR, Malaysia); Chay Yoke Chung, Leng Yean Ung, Peck Ling Tee and Thiam Yong Kuek (UTAR, Malaysia)  
pp. 149-155

### ***Elderly Action Recognition System with Location and Motion Data***

Nour Eddin Tabbakha (Multimedia University, Malaysia); Chee Pun Ooi and Wooi Haw Tan (Multimedia University, Malaysia)

pp. 156-160

***Water Filter Automation System Using Fuzzy Logic Controller***

Bayu Erfianto (TELKOM University & School of Computing, Indonesia); Aji Gautama Putrada Satwiko (Telkom University, Indonesia)

pp. 161-166

Thursday, July 25 10:30 - 12:30

2C: Healthcare and Well-being

***Implementing Principal Component Analysis and Multinomial Logit for Cancer Detection based on Microarray Data Classification***

Azka Khoirunnisa, A Adiwijaya and Aniq Atiqi (Telkom University, Indonesia)

pp. 167-172

***Artificial Intelligence based prediction of seizures for Epileptic Patients: IoT based Cost effective Solution***

Talha Ahmed Khan (Universiti Kuala Lumpur, Malaysia)

pp. 173-177

***A DASH Diet Recommendation System for Hypertensive Patients Using Machine Learning***

Romeshwar Sookrah, Jaysree Dhowtal and Soulakshme D. Nagowah (University of Mauritius, Mauritius)

pp. 178-183

***Virtual Screening of RanBP9 Inhibitors in Alzheimer's disease***

Han Jieh Tey (Multimedia University, Malaysia); Han Chong Ng (Senior Lecturer, Multimedia University, Malaysia); Thong Leng Lim (Multimedia University, Malaysia)

pp. 184-188

***Mobile Edge Computing based Mixed Reality Application for the Assistance of Blind and Visually Impaired People***

Arifa Akter, Anik Islam and Soo Young Shin (Kumoh National Institute of Technology, Korea)

pp. 189-193

***Disease Propagation Prediction using Machine Learning for Crowdsourcing Mobile Applications***

Leckraj Nagowah, Pratima Kurtah and Yusrah Takun (University of Mauritius, Mauritius)

pp. 194-199

2D: Human Factor and Usability

***"Do I Really Need to Use a Lock Screen?": An Evaluation of Indonesian Smartphone Users***

Ari Kusyanti and Harin Puspa Ayu Catherina (Universitas Brawijaya, Indonesia)

pp. 200-206

***Text Segmentation Based on Word Embedding on Indonesian Quran Translation by Greedy with Window Approaching***

Arief Fatchul Huda (Universitas Islam Negeri Bandung & Telkom University, Indonesia); Ramdani Ramdani and Moch Arif Bijaksana (Telkom University, Indonesia)

pp. 207-211

***Online Tools for Collaborative Learning to Enhance Students Interaction***

Wan Nur Tasnim Wan Hussin (Universiti Teknologi Malaysia, Malaysia); Jamalludin Harun (Fakulti Pendidikan, Universiti Teknologi Malaysia, Malaysia); Nurbiha A Shukor (Universiti Teknologi Malaysia, Malaysia)

pp. 212-216

***The Use of Modified UTAUT 2 Model to Analyze the Continuance Intention of Travel Mobile Application***

Indrawati Indrawati and Firda Amalia (Telkom University, Indonesia)

pp. 217-222

***The Usability factors of lost Digital Legacy data from regulatory misconduct: older values and the issue of ownership***

David Cook, Derani Dissanayake and Kulwinder Kaur (Edith Cowan University, Australia)

pp. 223-228

***Factors Affecting Trust of Software as A Service Usage in Public Network: A Correlation Analysis***

Nurazean Maarop (Universiti Teknologi Malaysia, Malaysia); Noor Hafizah Hassan (Advanced Informatics School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia); Ganthan Narayana Samy (Universiti Teknologi Malaysia (UTM) & Faculty of Computer Science and Information Systems, Malaysia); Doris Hooi-Ten Wong (Universiti Teknologi Malaysia, Malaysia)  
pp. 229-234

## 2E: Biometrics and Security Systems

***Virtual Password Authentication Scheme in Hashed Domain***

Mohammad Zakie Faiz Rahiemy and Parman Sukarno (Telkom University, Indonesia)  
pp. 235-240

***Chaos-based Cryptography for Transmitting Multimedia Data over Public Channels***

Ashraf A Zaher (American University of Kuwait - College of Arts and Sciences & IEEE, Kuwait)  
pp. 241-246

***Face Spoofing Detection using Color Distortion Features and Principal Component Analysis***

Graham Desmon Simanjuntak (Telkom University, Indonesia); Kurniawan Nur Ramadhani (Universitas Telkom, Indonesia); Anditya Arifianto (Telkom University & Artificial Intelligence Laboratory, ICM Research Group, Indonesia)  
pp. 247-251

***Improving The Accuracy of Fuzzy Vault Scheme in Fingerprint Biometric***

Joni Saputra and Parman Sukarno (Telkom University, Indonesia)  
pp. 252-259

***Security Document for Smart Parking Gate based on Common Criteria Framework***

Rahmat Yasirandi, Yoso Setyoko and Parman Sukarno (Telkom University, Indonesia)  
pp. 260-267

***BHMUS: Blockchain Based Secure Outdoor Health Monitoring Scheme Using UAV in Smart City***

Anik Islam and Soo Young Shin (Kumoh National Institute of Technology, Korea)  
pp. 268-273



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### 3A: Social Media Analytics

***Online Political Engagement using Twitter among Malaysian Parliamentary Members***

Kamarul Faizal Hashim (University of Dubai, United Arab Emirates); Muhammad Othman (Universiti Utara Malaysia, Malaysia); Sami Miniaoui, SM (University of Dubai, United Arab Emirates); Zaheruddin Othman (Universiti Utara Malaysia, Malaysia); Shadi Atalla (University of Dubai & University of Dubai, United Arab Emirates); Solahuddin Ismail (Universiti Utara Malaysia, Malaysia)

pp. 274-278

***Exploring Relationship between Headline News Sentiment and Stock Return***

Andry Alamsyah (Telkom University & School of Economics and Business, Indonesia); Siska Ayu (Telkom University, Indonesia); Brady Rikumahu (School of Economics and Business, Telkom University, Indonesia)

pp. 279-284

***The impact of social networks on technology entrepreneurs' opportunity recognition process***

Yvonne L.E. Lee (Multimedia University, Malaysia); WeiLee Lim (UCSI University, Malaysia)

pp. 285-291

***Competence Classification of Twitter Users Using the Support Vector Machine (SVM) Method***

Erwin B. Setiawan and Muhammad Rifaldi (Telkom University, Indonesia)

pp. 292-297

***Measuring Information Dissemination Mechanism on Retweet Network for Marketing Communication Effort***

Andry Alamsyah (Telkom University & School of Economics and Business, Indonesia); Muhammad Rizqy Dwi Putra (Telkom University, Indonesia)

pp. 298-304

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### 3B: Network Analysis

***On the Capacity of Full-Duplex Diamond Relay Networks Using NOMA***

Mohammed Belal Uddin (Kumoh National Institute of Technology, Korea); Md Fazlul Kader (University of Chittagong, Bangladesh); Soo Young Shin (Kumoh National Institute of Technology, Korea)

pp. 305-310

***Quality of Service (QoS) Comparison Analysis of Snort IDS and Bro IDS Application in Software Define Network (SDN) Architecture***

Muhammad Arief Nugroho, Hendrawan Hendrawan and Parman Sukarno (Telkom University, Indonesia)

pp. 311-317

***Interest-based Epidemic Routing in Opportunistic Mobile Networks***

Vittalis Ayu and Bambang Soelistijanto (Sanata Dharma University, Indonesia)

pp. 318-323

***Delay and energy based message delivery in Delay Tolerant Networks***

Babar Shah (Zayed University, United Arab Emirates); Ali Abbas (Middle East College, Oman); Muhammad Habib (GPG Jahanzeb College, Pakistan); Francis Chow (Zayed University, United Arab Emirates); Ki-Il Kim (Chungnam National University, Korea); Raza Hasan (Middle East College, Oman)

pp. 324-329

***Development of Communication Technology on VANET with a Combination of Ad-hoc, Cellular and GPS Signals as a Solution Traffic problem***

Faris Humam (Universitas Indonesia, Indonesia)

pp. 330-338

**Outage Analysis of NOMA Exploited Coordinated Direct and Relay assisted Uplink Transmission**

Jae Oh Kim, Mohammed Belal Uddin and Soo Young Shin (Kumoh National Institute of Technology, Korea)  
pp. 339-344

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**3C: Text Mining and Classification**

**Price Prediction of Chili in Bandung Regency using Support Vector Machine (SVM) Optimized with an Adaptive Neuro-Fuzzy Inference System (ANFIS)**

Asma Hasifa Nurcahyono, Fhira Nhita, Deni Saepudin and Annisa Aditsania (Telkom University, Indonesia)  
pp. 345-350

**A Multi-label Classification on Topics of Quranic Verses (English Translation) Using Backpropagation Neural Network with stochastic gradient descent and adam optimizer**

Nanang Saiful Huda, Mohamad Syahrul Mubarak and A Adiwijaya (Telkom University, Indonesia)  
pp. 351-355

**Reading Level System on Fairy Tale Stories for Children Using Dolch Sight Word Vocabulary with Majority Voting Algorithm**

Alifa Nur Azzami, Dana Sulistyio Kusumo and Widi Astuti (Telkom University, Indonesia)  
pp. 356-362

**Analysis of the Word2Vec Model for Semantic Similarities in Indonesian Words**

Louisten Novandi T Manalu, Moch Arif Bijaksana and Arie Suryani (Telkom University, Indonesia)  
pp. 363-367

**Clustering Synonym Set in English WordNet**

Jentrisi Priyatno and Moch Arif Bijaksana (Telkom University, Indonesia)  
pp. 368-371

**3D: Machine and Sensor**

**Optimization of Tour Scheduling Using Firefly Algorithm**

Akhmad Saifullah (School of Computing, Telkom University, Indonesia); Zk Abdurahman Baizal and Putu Harry Gunawan (Telkom University, Indonesia)  
pp. 372-377

**Toward GPU on CUDA for Simulating Non-hydrostatic Wave Model**

Garda Khadafi (School of Computing, Telkom University, Indonesia); Putu Harry Gunawan (Telkom University, Indonesia)  
pp. 378-384

**Parallel Computation of Mac-Cormack Method for Simulating Nozzle Gas Flow**

Agung Fajar Gumilar (School of Computing, Telkom University, Indonesia); Putu Harry Gunawan (Telkom University, Indonesia)  
pp. 385-392

**Implementing OpenMP platform for simulating erodible dam-break using SWE-Exner model**

Cynthia Puspa Anggraeni and Quedi Zata Fakhruy (School of Computing, Telkom University, Indonesia); Putu Harry Gunawan (Telkom University, Indonesia)  
pp. 393-397

**Air Transportation Network Robustness under Random and Hub-Based Disruptions**

Andry Alamsyah (Telkom University & School of Economics and Business, Indonesia); Dian Ramadhani (Telkom University, Indonesia)  
pp. 398-403

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3E: Human Machine Interface

***Intelligent Monitoring and Controlling System for Hydroponics Precision Agriculture***

Nico Surantha and Herman Herman (Bina Nusantara University, Indonesia)

pp. 404-409

***Haversine Method and LoRa for Monitoring Entry of Fishing Vessel in Marine Protected Area***

Francis Jerric Jabon Candido (Samar State University & University of San Carlos, Philippines); Rojay Flores (Batangas State University, Philippines); Percival Forcadilla (University of San Carlos, Philippines)

pp. 410-413

***Design and Performance Investigation of Discrete Wavelet Transform (DWT) Based OFDM Using 4-PAM for Indoor VLC System***

Enggar Fransiska Dwi Widyatama (Al Azhar Indonesia University, Indonesia); Octarina Nur Samijayani (University of Al Azhar Indonesia, Indonesia); Dwi Astharini (University of Indonesia, Indonesia); Suci Rahmatia (University of Al Azhar Indonesia, Indonesia); Dadang Gunawan (Universitas Indonesia, Indonesia)

pp. 414-418

***A Wireless Sensor Network for Fire Detection and Alarm System***

Patrick Jason Y. Piera and Joseph Karl G. Salva (University of San Carlos, Philippines)

pp. 419-423

Thursday, July 25 15:30 - 17:10

#### 4A: System Modeling

***The Clustering Algorithms Approach for Decision efficiency in Investment Portfolio Diversification***

Irma Palupi, Bambang Wahyudi and Indwiarti Indwiarti (Telkom University, Indonesia)  
pp. 424-429

***Simulating Water and Sediment Flow Using SWE-Convection Diffusion Model on OpenMP Platform***

Quedi Zata Fakhry and Cynthia Puspa Anggraeni (School of Computing, Telkom University, Indonesia); Putu Harry Gunawan (Telkom University, Indonesia)  
pp. 430-435

***An Open Government Data Maturity Model: A Case Study in BPS-Statistics Indonesia***

Miftahu Rahmatika, Dewi Krismawati and Sinta Rahmawati (Universitas Indonesia, Indonesia); Assaf Arief (University of Indonesia, Indonesia); Dana I. Sensuse (Universitas Indonesia, Indonesia); Muhammad Fadhil Dzulfikar (Universitas Indonesia & E-Government and E-Business Research Lab, Indonesia)  
pp. 436-442

***Computing UDCHR Scheme for simulating underwater sediment movement using OpenMP***

Fadhil Lobma (School of Computing, Telkom University, Indonesia); Putu Harry Gunawan (Telkom University, Indonesia)  
pp. 443-447

***The MSOF-DTW Method for Checking Timeseries Similarities***

Fazmah Arif Yulianto (Telkom University, Indonesia); Kuspriyanto Kuspriyanto and Richard Mengko (Institut Teknologi Bandung, Indonesia)  
pp. 448-454

#### 4B: Machine Learning and Prediction

***Nonlinear Autoregressive Neural Network Models for Sea Level Prediction, Study Case: in Semarang, Indonesia***

Didit Adytia (School of Computing, Telkom University, Indonesia); Miftahul Awali Rizkina (Telkom University, Indonesia); Nugrahingil Subasita (NeXT Waves-ID, Indonesia)  
pp. 455-459

***Lung Sounds Classification Using Stacked Autoencoder and Support Vector Machine***

Adnan Hassal Falah and Jondri Jondri (Telkom University, Indonesia)  
pp. 460-464

***IoT based Song Recognition for FM Radio Station Broadcasting***

Murtadha Arif Bin Sahbudin (University Of Messina, Messina & MDSLAb, Italy); Marco Scarpa and Salvatore Serrano (University of Messina, Italy); Chakib Chaouch (University of Messina, Messina, Italy)  
pp. 465-470

***The Particulate Matter Concentration Spatial Prediction using Interpolation Techniques with Machine Learning***

Pattarapron Chuanchai (University of Chiang Mai, Thailand)  
pp. 471-475

***Two Stages Song Subject Classification on Indonesian Song Based on Lyrics, Genre & Artist***

Rifqi Aziz, Moch Arif Bijaksana and A Adiwijaya (Telkom University, Indonesia)  
pp. 476-481

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#### 4C: Algorithm Analysis

***Parallelization of Uniformization Algorithm with CUDA-Aware MPI***

Lia Farhatuaini and Reza Pulungan (Universitas Gadjah Mada, Indonesia)  
pp. 482-487

***Constructing a One-time and a Few-time Digital Signature Schemes from the Hardness of Megrelishvili Vector-Matrix Problem***

Muhammad Arzaki (Telkom University & Computing Lab - ICM Research Group, Indonesia)  
pp. 488-495

***Forecasting Portfolio Optimization using Artificial Neural Network and Genetic Algorithm***

Mohammad Solin (Telkom University, Indonesia); Andry Alamsyah (Telkom University & School of Economics and Business, Indonesia); Brady Rikumahu (School of Economics and Business, Telkom University, Indonesia); Muhammad Apriandito Arya Saputra (Telkom University, Indonesia)  
pp. 496-502

***Storytelling Technique Using Three Act Structure and Directed Graph for Virtual Reality Game (case studi: UrBandung Legend)***

Bambang Pudjoatmodjo (Telkom University, Indonesia & Universiti Teknikal Malaysia Melaka, Malaysia); Rizza Indah Mega Mandasari (Telkom University, Indonesia); Sazilah Salam (Universiti Teknikal Malaysia Melaka & UTeM Solutions Sdn Bhd, Malaysia)  
pp. 503-507

Thursday, July 25 15:30 - 17:10

4D: Data Sources and Management

***Big Data Analytics in Airlines: Efficiency Evaluation using DEA***

Zudha Aulia Rachman and Arviansyah Arviansyah (Universitas Indonesia, Indonesia)  
pp. 508-513

***A Study of Ontology-based Knowledge Management System in Academic Domain***

Shidiq Al Hakim (University of Indonesia, Indonesia); Mokhammad Fathoni Rokhman (Universitas Maarif Hasyim Latif, Sidoarjo, Indonesia); Dana I. Sensuse and Deki Satria (Universitas Indonesia, Indonesia)  
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***Mathematical Formulation and Implementation of Query Inversion Techniques in RDBMS for Tracking Data Provenance***

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