

# **2021 9th International Conference on Information and Communication Technology (ICoICT 2021)**

**Virtual Conference  
3-5 August 2021**



**IEEE Catalog Number: CFP21ICZ-POD  
ISBN: 978-1-6654-4710-2**

**Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP21ICZ-POD
ISBN (Print-On-Demand):	978-1-6654-4710-2
ISBN (Online):	978-1-6654-0447-1

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com



## Table of Contents

# 2021 9th International Conference on Information and Communication Technology (ICoICT)

## Applications for post-pandemic recovery

<i>The Role of Technology and Innovation Capabilities in Achieving Business Resilience of MSMEs During Covid-19: Empirical Study</i>	
Grisna Anggadwita (Telkom University, Indonesia), Erni Martini (Telkom University, Indonesia), Ratih Hendayani (Telkom University, Indonesia), Muhammad Kamil (Telkom University, Indonesia) .....	1
<i>Gaze-Controlled Digital Signage for Public Health Education during Covid-19 Pandemic</i>	
Sunu Wibirama (Universitas Gadjah Mada, Indonesia), Suatmi Murnani (Universitas Islam Indonesia, Indonesia), Irawan Dharma Sukawati (Universitas Gadjah Mada, Indonesia), Ridi Ferdiana (Universitas Gadjah Mada, Indonesia) .....	7
<i>Analysis of the House of Risk (HOR) Model for Risk Mitigation of the Supply Chain Management Process (Case Study: KPBS Pangalengan Bandung, Indonesia)</i>	
Ratih Hendayani (Telkom University, Indonesia), Ellysa Rahmadina (Telkom University, Indonesia), Grisna Anggadwita (Telkom University, Indonesia), Rina Pasaribu (Telkom University, Indonesia) .....	13
<i>Evaluation of the Social Restriction and its Effect to the COVID-19 Spread in Indonesia</i>	
Inna Syafarina (LIPI, Indonesia), Ayu Shabrina (Indonesian Institute of Sciences, Indonesia), Arnida Lailatul Latifah (Indonesian Institute of Sciences, Indonesia), Didit Adytia (School of Computing, Telkom University, Indonesia) .....	19
<i>Contributing Clinical Attributes to COVID-19 Mortality in Jakarta: Machine Learning Study</i>	
Muhamad Erza Erza Aminanto (University of Indonesia (UI) & Jakarta Smart City, Indonesia), Bahrul Ilmi Nasution (Jakarta Smart City, Indonesia), Andi Sulasikin (Jakarta Smart City, Indonesia), Yudhistira Nugraha (Telkom University, Indonesia), Juan Kanggrawan (Jakarta Smart City, Indonesia), Alex Lukmanto Suherman (Directorate of Research and Community Service, Indonesia) .....	25

## Computer Vision

<i>Multi-Target Regression Using Convolutional Neural Network-Random Forests (CNN-RF) For Early Earthquake Warning System</i>	
Benaldy Yuga Adhaityar (University of Diponegoro, Indonesia), David Sahara (Institut Teknologi Bandung, Indonesia), Cecep Pratama (Universitas Gadjah Mada, Indonesia), Adi Wibowo (Diponegoro University, Indonesia), Leni Sophia Heliani (Universitas Gadjah Mada, Indonesia) .....	31
<i>Vision-Based Employee Activity Classification</i>	
Rizal Kusuma Putra (Telkom University, Indonesia), Ema Rachmawati (Telkom University, Indonesia), Febryanti Sthevanie (Telkom University, Indonesia) .....	37

<i>Compressive Sensing Image Watermarking Orthogonal Matching Pursuit</i> Irma Safitri (Telkom University, Indonesia), Ledy Novamizanti (Telkom University, Indonesia), Aliffian S. Laksono (Telkom University, Indonesia) .....	42
<i>Traffic Sign Recognition with Convolutional Neural Network</i> Zhong Bo Ng (Multimedia University, Malaysia), Kian Ming Lim (Multimedia University, Malaysia), Chin Poo Lee (Multimedia University, Malaysia) .....	48
<i>Deep Convolutional Generative Adversarial Network Application in Batik Pattern Generator</i> Agus Eko Minarno (Universitas Muhammadiyah Malang, Indonesia), Moch. Chamdani Mustaqim (University of Muhammadiyah Malang, Indonesia), Yufis Azhar (Universitas Muhammadiyah Malang, Indonesia), Wahyu Andhyka Kusuma, WAK (Universitas Muhammadiyah Malang, Indonesia) .....	54

## Data Science

<i>Convolutional Neural Networks for Indonesian Aspect-Based Sentiment Analysis Tourism Review</i> Royan Nayoan (Universitas Islam Indonesia, Indonesia), Ahmad Fathan Hidayatullah (Universitas Islam Indonesia, Indonesia), Dhomas Hatta Fudholi (Universitas Islam Indonesia, Indonesia) .....	60
<i>Sentiment Analysis on Marketplace Review using Hybrid Lexicon and SVM Method</i> Muhammad Mukhtar Dwi Putra (Telkom University, Indonesia), Wikky Fawwaz Al Maki (Telkom University, Indonesia), Ade Romadhony (Telkom University, Indonesia) .....	66
<i>Forecasting Number of COVID-19 Cases in Indonesia with ARIMA and ARIMAX Models</i> Bimo Satrio Aji (Telkom University, Indonesia), Indwiarti Indwiarti (Telkom University, Indonesia), Aniq Atiqi (Telkom University, Indonesia) .....	71
<i>Disaster Tweet Classification Based On Geospatial Data Using the BERT-MLP Method</i> Iqbal Maulana (Telkom University, Indonesia), Warih Maharani (Telkom University, Indonesia) .....	76
<i>Cyberbullying Detection on Indonesian Twitter using Doc2Vec and Convolutional Neural Network</i> Shindy Trimaria Laxmi (Telkom University, Indonesia), Rita Rismala (Telkom University, Indonesia), Hani Nurrahmi (Telkom University, Indonesia) .....	82

## E-Learning and HCI

<i>Digital Nudge Evaluation on COVID-19 tracing Application</i> Dyah Wahyu Sukmaningsih (Jl. K. H. Syahdan No. 9, Kemanggisan, Palmerah & Bina Nusantara University, Indonesia), Edi Abdurachman (Bina Nusantara University, Indonesia), Betty Purwandari (Universitas Indonesia, Indonesia), Agung Trisetyarso (Bina Nusantara University, Indonesia) .....	87
<i>Developing Suicide Risk Idea Identification for Teenager (SERIINA) Mobile Apps Prototype using Extended Rapid Application Development</i> Tenia Wahyuningrum (Institut Teknologi Telkom Purwokerto, Indonesia), Gita Fadila Fitriana (Institut Teknologi Telkom Purwokerto, Indonesia), Ariq Cahya Wardhana (Institut Teknologi Telkom Purwokerto, Indonesia), Muhammad Sidiq (Institut Teknologi Telkom Purwokerto, Indonesia), Dyah Wahyuningsih (Politeknik Kesehatan Semarang, Indonesia) .....	92
<i>Designing An Educational Game Evaluation Framework Based On Game Mechanic</i> Satrio A Rukmono (Institut Teknologi Bandung, Indonesia), Fais Zharfan Azif (Institut Teknologi Bandung, Indonesia), Muhammad Zuhri Catur Candra (Institut Teknologi Bandung, Indonesia) .....	98
<i>Cultivating Recycling Awareness in Preschoolers using Animated Interactive Comic</i> Siti Zulaiha Ahmad (Universiti Teknologi Mara Perlis, Malaysia), Nurul Aina Kamarulzaman (UiTM Perlis Branch, Malaysia), Ariffin Abdul Mutalib (Universiti Utara Malaysia, Malaysia) .....	104
<i>Analysis Influence of The Organizational Learning Environment Factors To Encourage Employee Motivation Using E-Learning</i> Nanik Qodarsih (The Research, Development and Training Centre for Law and Judiciary & Mahkamah Agung RI, Indonesia), Achmad Hidayanto (University of Indonesia, Indonesia), Muhammad Rifki Shihab (Faculty of Computer Science, Universitas Indonesia, Indonesia) .....	110

# Healthcare, Bioinformatics, and Biomedical Applications

<i>Distributed Phylogenetic Tree Processing on Biology Sequences Using Mapreduce</i> Renaning Karutami Susilo (Telkom University, Indonesia), Setyorini Setyorini (Telkom University, Indonesia), Siti Amatullah Karimah (Telkom University, Indonesia) .....	116
<i>Linear Regression Model to Predict the Spread of COVID-19 in Tangerang City</i> Yusuf Sudiyo (Bina Nusantara University, Indonesia), Agung Trisetyarso (Bina Nusantara University, Indonesia), Harjanto Prabowo (Bina Nusantara University, Indonesia), Meyliana Meyliana (Bina Nusantara University, Indonesia) .....	121
<i>Strategic Information System Planning for Indonesia Non-franchise Pharmacies Based on John Ward and Factor Analysis Method</i> Tabah Arwiyanto (Diponegoro University, Indonesia), Adian Fatchur Rochim (Diponegoro University, Indonesia), R Rizal Isnanto (Diponegoro University, Indonesia) .....	127
<i>Flexible Multi-Layer Condura Fabric Ultra Wide-Band Antenna For Telemedicine Application</i> Yusnita Rahayu (Universitas Riau, Indonesia), Tasya Kirana (Universitas Riau, Indonesia) .....	133
<i>Anonymizing Prescription Data Against Individual Privacy Breach in Healthcare Database</i> Dedi Gunawan (Universitas Muhammadiyah Surakarta, Indonesia), Yusuf Sulisty Nugroho (Universitas Muhammadiyah Surakarta, Indonesia), Maryam M (Universitas Muhammadiyah Surakarta, Indonesia), Fatah Al Irsyadi (Universitas Muhammadiyah Surakarta, Indonesia) .....	138

# Networking, IoT, and Security

<i>Simulation Of Jellyfish Topology Link Failure Handling Using Floyd-Warshall and Johnson Algorithm in Software Defined Network Architecture</i> Muhammad Arief Nugroho (Telkom University, Indonesia), Andrian Rakhmatsyah (School of Computing - Telkom University, Indonesia) .....	144
<i>Game Theoretical Power Control in Heterogeneous Network</i> Anggun Fitriani Isnawati (Institut Teknologi Telkom Purwokerto, Indonesia), Mas Aly Afandi (Institut Teknologi Telkom Purwokerto, Indonesia) .....	149
<i>IoT Drone Camera for a Paddy Crop Health Detector with RGB Comparison</i> Elvaretta Yucky (Telkom University, Indonesia), Aji Gautama Putrada (Telkom University, Indonesia), Maman Abdurouhman (Telkom University, Indonesia) .....	155
<i>A Review on IoT with Big Data Analytics</i> Abu Fuad Ahmad (Faculty of Information Science and Technology Multimedia University, Malaysia), Md. Shohel Sayeed (Multimedia University, Malaysia), Choo Peng Tan (Multimedia University, Malaysia), Kim Geok Tan (Multimedia University Malaysia, Malaysia), Md Ahsanul Bari (Universiti Teknikal Malaysia Melaka, Malaysia), Ferdous Hossain (Multimedia University, Malaysia) .....	160
<i>Vehicle Blind Spot Area Detection Using Bluetooth Low Energy and Multilateration</i> Muhammad Reza Widya Pratama (Telkom University, Indonesia), Maman Abdurouhman (Telkom University, Indonesia), Aji Gautama Putrada (Telkom University, Indonesia) .....	165

# Computer Vision

<i>Facial Emotion Recognition using Transfer Learning of Alexnet</i> Sarmela Raja Sekaran (Multimedia University, Malaysia), Chin Poo Lee (Multimedia University, Malaysia), Kian Ming Lim (Multimedia University, Malaysia) .....	170
<i>Visually Similar Handwritten Chinese Character Recognition with Convolutional Neural Network</i> Wei Han Liu (Multimedia University, Malaysia), Kian Ming Lim (Multimedia University, Malaysia), Chin Poo Lee (Multimedia University, Malaysia) .....	175

<i>Pneumonia Classification using Gabor-Convolutional Neural Networks and Image Enhancement</i> Agus Eko Minarno (Universitas Muhammadiyah Malang, Indonesia), Muhammad Rifal Alfarizy (Universitas Muhammadiyah Malang, Indonesia) .....	180
<i>Fingerprint Enhancement using Iterative Contextual Filtering for Fingerprint Matching</i> Brama Yoga Satria (Gadjah Mada University, Indonesia), Agus Bejo (Universitas Gadjah Mada, Indonesia), Risanuri Hidayat (Gadjah Mada University (UGM), Indonesia) .....	186
<i>Histogram of Oriented Gradient Random Template Protection for Face Verification</i> Lucas Chong Wei Jie (Multimedia University, Malaysia), Siew Chin Chong (Multimedia University, Malaysia) .....	192

## Data Science

<i>Aspect-Based Sentiment Analysis in Beauty Product Reviews Using TF-IDF and SVM Algorithm</i> Nadira Putri Arthamevia (Telkom University, Indonesia), A Adiwijaya (Telkom University, Indonesia), Mahendra Dwifabri Purbolaksono (Telkom University, Indonesia) .....	197
<i>Aspect Term Extraction Using Deep Learning-Based Approach on Indonesian Restaurant Reviews</i> Rachmansyah Adhi Widhianto (Telkom University, Indonesia), Ade Romadhony (Telkom University, Indonesia) .....	202
<i>Spam Detection on Indonesian Beauty Product Review</i> Muhammad Ahsan Athallah (Telkom University, Indonesia), Ade Romadhony (Telkom University, Indonesia) .....	207
<i>Emotion Classification on Indonesian Twitter Using Convolutional Neural Network (CNN)</i> Firhan Maulana Rusli (Telkom University & Lovia, Indonesia), Rita Rismala (Telkom University, Indonesia), Hani Nurrahmi (Telkom University, Indonesia) .....	213
<i>Mapping Complex Tourist Destination Preferences: Network Perspectives</i> Dian Puteri Ramadhani (Telkom University, Indonesia), Andry Alamsyah (Telkom University, Indonesia), Muhammad Nashir Atmaja (Telkom University, Indonesia), Joe Panjaitan (Telkom University, Indonesia) .....	219

## E-Learning and HCI

<i>Exploring the existence and variation of Game Player Traits among Undergraduate students in Malaysia</i> Mageswaran Sanmugam (Universiti Sains Malaysia, Malaysia) .....	225
<i>Implementation of Continuous Integration and Continuous Delivery (CI/CD) on Automatic Performance Testing</i> Mohammad Rizky Pratama (Telkom University, Indonesia), Dana Sulisty Kusumo (Telkom University, Indonesia) .....	230
<i>Understanding Government Reorganization Impact from Knowledge Management Perspective: A Study Case</i> Yulia Sulistyaningsih (Universitas Indonesia, Indonesia), Khairiyah Rizkiyah (University of Indonesia, Indonesia), Sofian Lusa (University of Indonesia, Indonesia), Assaf Arief (University of Indonesia, Indonesia) .....	236
<i>RPA-based Bots for Managing Online Learning Materials</i> Siti Fatimah Abdul Razak (Multimedia University, Malaysia), Faizuniza Mashhod (Multimedia University, Malaysia), Zulfadhli Najmi bin Zaidan (Multimedia University, Malaysia), Sumendra Yogarayan (Multimedia University (MMU), Malaysia) .....	242
<i>Enterprise Resource Planning Teaching in Post Pandemic using Gamification</i> Kaushal Jheengut (Mauritius), Dinesha Cauleechurn (Mauritius), Bibi Zarine Cadarsaib (University of Mauritius & Reduit, Mauritius) .....	247

# Healthcare, Bioinformatics, and Biomedical Applications

<i>Holick's Rule Implementation: Calculation of Produced Vitamin D from Sunlight Based on UV Index, Skin Type, and Area of Sunlight Exposure on the Body</i> Jonathan Salomo (Bandung Institute of Technology & IEEE ITB Student Branch, Indonesia), Eduardus Ariasena (Bandung Institute of Technology, Indonesia), Athaya Syaqa (Bandung Institute of Technology, Indonesia), Salma Majidah (Bandung Institute of Technology, Indonesia) .....	253
<i>T-COFFEE Multiple Sequence Aligner on Hadoop Spark Cluster</i> Viebiyanty Prihatiningrum (Telkom University, Indonesia), Setyorini Setyorini (Telkom University, Indonesia), Siti Amatullah Karimah (Telkom University, Indonesia) .....	259
<i>Relaxation Oscillator Using Closed-loop Dual Comparator for Biomedical Applications</i> Theodora Valerie (Universitas Gadjah Mada, Indonesia), Dodi Garinto (Politeknik Manufaktur Astra & Indonesian Power Electronics Center, Indonesia), Prapto Nugroho (Universitas Gadjah Mada, Indonesia), Ary Syahriar, - (University al Azhar Indonesia & Faculty of Science and Technology, Indonesia), Eka Samsul Ma'arif (Astra Manufacturing Polytechnic, Indonesia) .....	264
<i>Wireless Programmable body sensor networks and Situated Healthcare</i> Alberto Faro (Deepsensing srl, Italy), Daniela Giordano (University of Catania, Italy), Mario Venticinque (Municipality of Catania, Italy) .....	269

# Networking, IoT, and Security

<i>AADC 3: Active-Active Distributed Controller with 3-in-1 Asynchronous Heartbeat Synchronization Method in Software-Defined Networks</i> Muhammad Arief Nugroho (Telkom University, Indonesia), Vera Suryani (Universitas Telkom, Indonesia) .....	275
<i>4G LTE Cellular Network Coverage Planning and Simulation on Mandalay Area with Propagation Model Cost-Hatta</i> Ahmad Idris (Universitast Al-Azhar Indonesia, Indonesia), Suci Rahmatia (University of Al Azhar Indonesia, Indonesia), M. Ismail (PT. Nokia Solutions and Networks, Indonesia) .....	280
<i>USB Flash Drives Forensic Analysis to Detect Crown Jewel Data Breach in PT. XYZ (Coffee Shop Retail - Case Study)</i> Daniel Septianto (Swiss German University & Asia Pulp and Paper, Indonesia), Lukas Lukas (Universitas Katolik Indonesia Atma Jaya, Indonesia), Bagus Mahawan (Swiss German University, Indonesia) .....	286
<i>Detection of Sinusoids with Frequency Drift in White Gaussian Noise</i> Bradley Comar (US DoD, USA) .....	291
<i>Tone Detection System Design for Targets with Frequency Drift</i> Bradley Comar (US DoD, USA) .....	297

# Computer Vision

<i>Enhanced AlexNet with Super-Resolution for Low-Resolution Face Recognition</i> Jin Chyuan Tan (Multimedia University, Malaysia), Kian Ming Lim (Multimedia University, Malaysia), Chin Poo Lee (Multimedia University, Malaysia) .....	302
<i>An End-to-End Optical Character Recognition Pipeline for Indonesian Identity Card</i> Andreas Chandra (Warung Pintar Sekali, Indonesia), Ruben Stefanus (Warung Pintar Sekali, Indonesia) .....	307
<i>A Study of Batik Style Transfer using Neural Network</i> Aditya Firman Ihsan (Telkom University, Indonesia) .....	313
<i>Tomato Plant Disease Identification through Leaf Image using Convolutional Neural Network</i> Aulia Ikvanda Yoren (Telkom University, Indonesia), Suyanto Suyanto (Telkom University, Indonesia) .....	320

## Data Science

<i>Non-Stationary Order of Vector Autoregression in Significant Ocean Wave Forecasting</i> Fikka Raudiya (Telkom University, Indonesia), Aniq Atiqi (Telkom University, Indonesia), Didit Adytia (School of Computing, Telkom University, Indonesia) .....	326
<i>FN-Net: A Deep Convolutional Neural Network for Fake News Detection</i> Kian Long Tan (Multimedia University, Malaysia), Chin Poo Lee (Multimedia University, Malaysia), Kian Ming Lim (Multimedia University, Malaysia) .....	331
<i>Sentiment Analysis of Ojek Online User Satisfaction Based on the Naïve Bayes and Net Brand Reputation Method</i> Alam Rahmatulloh (Siliwangi University, Indonesia), Rahmi Shofa (Siliwangi University, Indonesia), Irfan Darmawan (Telkom University, Indonesia), Ardiansah Ardiansah (Siliwangi University, Indonesia) .....	337
<i>Raw Paper Material Stock Forecasting with Long Short-Term Memory</i> Febryo Kurniawan (Tarumanagara University, Indonesia), Dyah Herwindiati (Tarumanagara University, Indonesia), Manatap Dolok Lauro (Tarumanagara University, Indonesia) .....	342
<i>Mobile Customer Behaviour Predictive Analysis for Targeting Netflix Potential Customer</i> Suryadi Tanuwijaya (Telkom University, Indonesia), Andry Alamsyah (Telkom University, Indonesia), Maya Ariyanti (Telkom University, Indonesia) .....	348

## E-Learning and HCI

<i>Implementation and Analysis of Reusability Framework Design for Event User Interface Component in Phaser 3</i> Ahmad Arsyel Abdul Hakim (Telkom University, Indonesia), Dana Sulisty Kusumo (Telkom University, Indonesia), Jati H. Husen (Telkom University, Indonesia) .....	353
<i>Master Data Management Maturity Model (MD3M) Assessment: A Case Study in Secretariat of Presidential Advisory Council</i> Chielsin Ko (Universitas Indonesia, Indonesia), Andytias Adywiratama (Universitas Indonesia, Indonesia), Achmad Hidayanto (University of Indonesia, Indonesia) .....	359
<i>Capturing Institution and Learners Readiness of e-Learning Implementation: A Case Study of a University in Bandung, Indonesia</i> Dawam Dwi Jatmiko Suwawi (Telkom University, Indonesia), Bayu Aditya (Telkom University, Indonesia), Nungki Selviandro (Telkom University, Indonesia), Anisa Herdiani (Telkom University, Indonesia), Yati Rohayati (Telkom University, Indonesia), Yanuar Firdaus Arie Wibowo (Telkom University, Indonesia) .....	364
<i>Satisfaction Factors of Indonesian National Civil Servant Recruitment System</i> Galih Kenang Avianto (Universitas Indonesia, Indonesia), Fitriya Elliyana (Universitas Indonesia, Indonesia), Dana I. Sensuse (Universitas Indonesia, Indonesia) .....	371
<i>The Preliminary Study on the Perception of Engineering Students on Blended Learning</i> Min Chi Low (Universiti Tunku Abdul Rahman, Malaysia), Chen Kang Lee (Universiti Tunku Abdul Rahman, Malaysia), Manjit Singh Sidhu (Universiti Tenaga Nasional & College of IT, Malaysia), Zaimah Hasan (Universiti Tenaga Nasional, Malaysia), Seng Poh Lim (Universiti Tunku Abdul Rahman & Faculty of Information and Communication Technology, Malaysia), Seng Chee Lim (Tunku Abdul Rahman University College, Malaysia) .....	377

## Healthcare, Bioinformatics, and Biomedical Applications

<i>Implant Segmentation in Radiographic Imagery Using Wavelet Decomposition and Multiresolution MTANN</i> Rangga Perwiratama (Universitas Atma Jaya Yogyakarta, Indonesia), Pranowo Pranowo (Universitas Atma Jaya Yogyakarta, Indonesia), Djoko Budiyo Setyohadi (Universitas Atma Jaya Yogyakarta, Indonesia) .....	383
<i>Improving Multi-Class Motor Imagery EEG Signals Classification Using Ensemble Learning Method</i> Deni Kurnianto Nugroho (Universitas Gadjah Mada, Indonesia), Noor Akhmad Setiawan (Universitas Gadjah Mada, Indonesia), Hanung Adi Nugroho (Universitas Gadjah Mada, Indonesia) .....	388



<i>Implementation and Experimental Characterization of Dual-Band Wearable Reflector Composed of AMC Structure for Wireless Communication</i>	394
Achmad Munir (Institut Teknologi Bandung, Indonesia), Dwiki Haryanto (Telkom University, Indonesia), Ichsan Nusobri (Telkom University, Indonesia), Levy Olivia Nur (Telkom University, Indonesia)	

## Networking, IoT, and Security

<i>Modified Pixel Value Ordering-based Predictor for Reversible Data Hiding on Video</i>	398
Tohari Ahmad (Institut Teknologi Sepuluh Nopember (ITS), Indonesia), Alek Nur Fatman (Institut Teknologi Sepuluh Nopember, Indonesia), Ahmad Hoirul Basori (Faculty of Computing and Information Technology in Rabigh, King Abdulaziz University, Saudi Arabia)	
<i>Simulation Analysis of Partial Transmit Sequence on Palm Date Leaf Clipping for PAPR Value Reduction</i>	404
Vincent Vincent (President University, Indonesia), Antonius Suhartomo (President University, Indonesia), Joni W. Simatupang (President University, Indonesia & NTUST, Taiwan), Mia Galina (President University, Indonesia)	
<i>Design Automation of Single Photon Counting Method for Quantum Random Number Generation</i>	411
Dwi Novazrianto (Politeknik Siber dan Sandi Negara & Hardware Cryptographic Engineering, Indonesia), Alwan Muhamad Fajar (Politeknik Siber dan Sandi Negara, Indonesia), Aprilia Kusuma Dewi (Politeknik Siber dan Sandi Negara, Indonesia), Muhammad Yusuf (Politeknik Siber dan Sandi Negara, Indonesia), Rini Wisnu Wardhani (Politeknik Siber dan Sandi Negara & Badan Siber dan Sandi Negara, Indonesia), Dedy Septono Catur Putranto (BSSN, Indonesia)	
<i>On the Modifications of a Digital Signature Algorithm with Secret Sharing</i>	417
Umi Uli Zulfah (Badan Siber dan Sandi Negara, Indonesia), Mareta Wahyu Ardyani (Politeknik Siber dan Sandi Negara, Indonesia)	
<i>Connected Vehicle Communication Concept for Flood Level Warning Using Low Cost Microcontroller</i>	423
Sumendra Yogarayan (Multimedia University (MMU), Malaysia), Siti Fatimah Abdul Razak (Multimedia University, Malaysia), Mohd Fikri Azli Abdullah (Multimedia University, Malaysia), Fremont Kwong (Multimedia University, Malaysia, Indonesia)	
<i>Randomness, Uniqueness, and Steadiness Evaluation of Physical Unclonable Functions</i>	429
Rivaldo Ludovicus Sembiring (Telkom University, Indonesia), Rizka Reza Pahlevi (Telkom University, Indonesia), Parman Sukarno (Telkom University, Indonesia)	

## Computer Vision

<i>A Low-Cost High-Accuracy Thermal Camera Using Off-the-shelf Hardware Devices</i>	434
Dinh-Tien Tran (Ho Chi Minh City University of Technology, VNU-HCM, Vietnam), Viet-Khoa Nguyen (Ho Chi Minh City University of Technology, VNU-HCM, Vietnam), Ngoc-Thien Nhan (Ho Chi Minh City University of Technology, VNU-HCM, Vietnam), Duc-Hiep Nguyen (Ho Chi Minh City University of Technology, VNU-HCM & Vietnam Blockchain Corporation (VBC), Vietnam), Hoang-Anh Pham (Ho Chi Minh City University of Technology & Vietnam National University Ho Chi Minh City, Vietnam)	
<i>Sentinel 1 Classification for Garlic Land Identification using Support Vector Machine</i>	440
Muhammad Asyhar Agmalaro (IPB University, Indonesia), Imas Sukaesih Sitanggang (Bogor Agricultural University, Indonesia), Mia Waskito (IPB University, Indonesia)	
<i>Recognition of Academic Emotions in Online Classes</i>	445
Jordan Ming Han Pang (Multimedia University, Malaysia), Tee Connie (Multimedia University, Malaysia), Goh Kah Ong Michael (Multimedia University, Malaysia)	
<i>Image Steganography Compressive Sensing Orthogonal Matching Pursuit</i>	451
Irma Safitri (Telkom University, Indonesia), Ratri Dwi Atmaja (Telkom University, Indonesia), Vikra Akbar (Telkom University, Indonesia)	

## Data Science

<i>Hoax Identification on Tweets in Indonesia Using Doc2Vec</i> Titi Widaretna (Telkom University, Indonesia), Jimmy Tirtawangsa (Telkom University, Indonesia), Ade Romadhony (Telkom University, Indonesia) .....	456
<i>Electronic Nose Dataset for Classifying Rice Quality using Neural Network</i> Ferdy Erlangga (Telkom University, Indonesia), Dedy Rahman Wijaya (Telkom University, Indonesia), Wawa Wikusna (Telkom University, Indonesia) .....	462
<i>SVM Parallel Concept Test with SMO Decomposition on Cancer Microarray Dataset</i> Rahmat Ramadan Prasojoe (University of Telkom, Indonesia), Setyorini Setyorini (Telkom University, Indonesia) .....	467
<i>Detecting Online Recruitment Fraud Using Machine Learning</i> Hridita Tabassum (BRAC University, Bangladesh), Gitanjali Ghosh (BRAC University, Bangladesh), Afra Atika (BRAC University, Bangladesh), Amitabha Chakrabarty (BRAC University, Bangladesh) .....	472
<i>Data Mining for Revealing Relationship Between Google Community Mobility and Macro-Economic Indicators</i> Gunawan Gunawan (University of Surabaya, Indonesia) .....	478

## E-Learning and HCI

<i>Suitable Knowledge Management Process Implementation: a case study of PT XYZ</i> Yusuf Pratama (Universitas Indonesia, Indonesia), Dana I. Sensuse (Universitas Indonesia, Indonesia), Sofian Lusa (University of Indonesia, Indonesia), Damayanti Elisabeth (Universitas Indonesia, Indonesia), Nadya Safitri (Universitas Indonesia, Indonesia), Ghanim Kanugrahan (Universitas Indonesia, Indonesia), Bryanza Novirahman (Universitas Indonesia, Indonesia) .....	483
<i>Critical Success Factors for Project Tracking Software Implementation: A Case Study at a Banking Company in Indonesia</i> Hendro Prabowo Hadi (University of Indonesia, Indonesia), Ridha Eryadi (University of Indonesia, Indonesia), Teguh Raharjo (Universitas Indonesia, Indonesia) .....	488
<i>Assurance Case Pattern using SACM Notation</i> Nungki Selviandro (Telkom University, Indonesia) .....	494
<i>Sustainability And Aptness Of Game Elements In A Gamified Learning Environment</i> Mageswaran Sanmugam (Universiti Sains Malaysia, Malaysia) .....	500
<i>User Interface Model for Visualization of Learning Materials in Comic Strip Form Using Goal-Directed Design Method</i> Muhammad Fauzan Nur Adillah (School of Computing - Telkom University, Indonesia), Danang Junaedi (Telkom University, Indonesia), Yanuar Rahman (Telkom University, Indonesia) .....	506

## Networking, IoT, and Security

<i>Accessibility and Response Time Analysis on the COVID19 Website in Indonesia</i> Ryan Wicaksono (Telkom University, Indonesia), Hilal H. Nuha (Telkom University, Indonesia) .....	511
<i>Modified Bit Parity Technique for Error Detection of 8 Bit Data</i> Fakhira Zulfira (Telkom University, Indonesia), Hilal H. Nuha (Telkom University, Indonesia), Dodi Wisaksono Sudiharto (Telkom University, Indonesia), Rio Guntur Utomo (Telkom University, Indonesia) .....	517
<i>IoT Application on Agricultural Area Surveillance and Remote-controlled Irrigation Systems</i> Ratnasari Nur Rohmah (Mesan Baru No. 29 & Universitas Muhammadiyah Surakarta, Indonesia), Heru Supriyono (Universitas Muhammadiyah Surakarta, Indonesia), Agus Supardi (Universitas Muhammadiyah Surakarta, Indonesia), Hasyim Asyari (Universitas Muhammadiyah Surakarta, Indonesia), Riant Rahmadi (Universitas Muhammadiyah Surakarta, Indonesia), Yana Oktafianto (Universitas Muhammadiyah Surakarta, Indonesia) .....	522

<i>Hunting Cyber Threats in the Enterprise Using Network Defense Log</i> Ardian Oktadika (Swiss German University, Indonesia), Charles Lim (Swiss German University & Universitas Indonesia, Indonesia), Kalpin Erlangga (Swiss German University, Indonesia) .....	528
<i>Present-80 Encryption Algorithm Implementation on GPRS Arduino Mega-2560 Cyber Physical Tracking System</i> Dwi Novazrianto (Politeknik Siber dan Sandi Negara & Hardware Cryptographic Engineering, Indonesia), Rini Wisnu Wardhani (Politeknik Siber dan Sandi Negara & Badan Siber dan Sandi Negara, Indonesia), Naufal Hafiz Syahidan (Politeknik Siber dan Sandi Negara & Hardware Cryptographic Engineering, Indonesia) .....	534

## Networking, IoT, and Security

<i>Learning Method of Performance-oriented Congestion Control (PCC) for Video Streaming Analysis</i> Rezy Noerdiah (Telkom University, Indonesia), Hilal H. Nuha (Telkom University, Indonesia), Sidik Prabowo (Telkom University, Indonesia) .....	539
<i>Building an ID Card Repository with Progressive Web Application to Mitigate Fraud based on the Twelve-Factor App methodology</i> Kevin Akbar Adhiguna (Padjadjaran University & Lovia, Indonesia), Firhan Maulana Rusli (Telkom University & Lovia, Indonesia), Hendy Irawan (Telkom University, Indonesia, Indonesia) .....	544
<i>XB-Pot: Revealing Honeypot-based Attacker's Behaviors</i> Ryandy Djap (Swiss German University, Indonesia), Charles Lim (Swiss German University & Universitas Indonesia, Indonesia), Kalpin Erlangga (Swiss German University, Indonesia), Andi Yusuf (BSSN, Indonesia) .....	550
<i>Design of a Snort-based IDS on the Raspberry Pi 3 Model B+ Applying TaZmen Sniffer Protocol and Log Alert Integrity Assurance with SHA-3</i> Garand Yudha (Politeknik Siber dan Sandi Negara, Indonesia), Rini Wisnu Wardhani (Politeknik Siber dan Sandi Negara & Badan Siber dan Sandi Negara, Indonesia) .....	556
<i>Experimental Investigation of Wave Absorber Made of Ring Resonator-Based AMC Structure</i> Levy Olivia Nur (Telkom University, Indonesia), Ichsan Nusobri (Telkom University, Indonesia), Budi Syihabuddin (Telkom University, Indonesia), Achmad Munir (Institut Teknologi Bandung, Indonesia) .....	562

## Data Science

<i>Information Cascade Mechanism and Measurement of Indonesian Fake News</i> Andry Alamsyah (Telkom University, Indonesia), Asla Sonia (Telkom University, Indonesia) .....	566
<i>Fraud Accounts Identification Modelling on Multi-Platform E-Commerce</i> Grawas Sugiharto (Jakarta & ITB Indonesia, Indonesia), Yudistira Asnar (Counselor, Indonesia) .....	571
<i>Classification on Participants Renewal Process in Insurance Company: Case Study PT XYZ</i> Deddy Utomo (University of Indonesia, Indonesia), Noperida Damanik (Universitas Indonesia, Indonesia), Indra Budi (Faculty of Computer Science & Universitas Indonesia, Indonesia) .....	576
<i>Hybrid Space-Time Model and Machine Learning for Forecasting Multivariate Spatio-Temporal Data</i> Hendri Prabowo (Institut Teknologi Sepuluh Nopember, Indonesia), Dedy Dwi Prastyo (Institut Teknologi Sepuluh Nopember, Indonesia), Setiawan Setiawan (Institut Teknologi Sepuluh Nopember, Indonesia) .....	582
<i>Comparative Study of Covid-19 Tweets Sentiment Classification Methods</i> Untari N. Wisesty (Bandung Institute of Technology, Indonesia, Indonesia), Rita Rismala (Telkom University, Indonesia), Wira Mungguna (Bandung Institute of Technology, Indonesia), Ayu Purwarianti (Bandung Institute of Technology, Indonesia) .....	588

## Data Science

<i>Forecasting of COVID-19 Cases in Jakarta using Poisson Autoregression</i> Bahrul Ilmi Nasution (Jakarta Smart City, Indonesia), Yudhistira Nugraha (Telkom University, Indonesia), Juan Kanggrawan (Jakarta Smart City, Indonesia), Alex Lukmanto Suherman (Directorate of Research and Community Service, Indonesia) .....	594
<i>Optimization of Crops Allocation Planning in Cianjur Involving Water Cost Constraints Using Genetic Algorithm</i> Irma Palupi (Telkom University, Indonesia), Bambang Wahyudi (Telkom University, Indonesia), Siti Sa'adah (Telkom University d/h Telkom Institute of Technology, Indonesia) .....	600
<i>Fake News Detection with Hybrid CNN-LSTM</i> Kian Long Tan (Multimedia University, Malaysia), Chin Poo Lee (Multimedia University, Malaysia), Kian Ming Lim (Multimedia University, Malaysia) .....	606
<i>Aspect Based Sentiment Analysis With Combination Feature Extraction LDA and Word2vec</i> Rizka Vio Octriany Inggit Sudiro (Telkom University, Indonesia), Sri Suryani (Telkom University, Indonesia), Yuliant Sibaroni (Telkom University, Indonesia) .....	611
<i>Sentiment Analysis on Beauty Product Reviews using LSTM Method</i> Muhammad Rafii Danendra (Telkom University, Indonesia), Yuliant Sibaroni (Telkom University, Indonesia) .....	616

## Data Science

<i>Indonesian ID Card Extractor Using Optical Character Recognition and Natural Language Post-Processing</i> Firhan Maulana Rusli (Telkom University & Lovia, Indonesia), Kevin Akbar Adhiguna (Padjadjaran University & Lovia, Indonesia), Hendy Irawan (Telkom University, Indonesia, Indonesia) .....	621
<i>Analysis of Records Management Maturity Level for Data Collection of Network Assets in Indonesian Telecommunication Industry</i> Rizky A C Eka Putri (University of Indonesia, Indonesia), Achmad Hidayanto (University of Indonesia, Indonesia) .....	627
<i>Data Acquisition Guide for Forest Fire Risk Modelling in Malaysia</i> Yee Jian Chew (Multimedia University, Malaysia), Shih Yin Ooi (Multimedia University, Malaysia), Ying Han Pang (Multimedia University, Malaysia) .....	633
<i>Implementation of Hidden Markov Model (HMM) to Predict Financial Market Regime</i> Irma Palupi (Telkom University, Indonesia), Bambang Wahyudi (Telkom University, Indonesia), Agung Putra (Telkom University, Indonesia) .....	639
<i>Prediction of Graduation with Naïve Bayes Algorithm and Principal Component Analysis (PCA) on Time Series Data</i> Wishnu Dwi Herlambang (Margahayu Raya, Jalan Andromeda VIII, Indonesia), Kusuma Ayu Laksitowening (Telkom University, Indonesia), Ibnu Asror (Telkom University, Indonesia) .....	645

## Data Science

<i>Comparative Analysis of Support Vector Machine (SVM) and Random Forest (RF) Classification for Cancer Detection using Microarray</i> Irawansyah Irawansyah (Telkom University, Indonesia), A Adiwijaya (Telkom University, Indonesia), Widi Astuti (Telkom University, Indonesia) .....	650
<i>Evaluating the BPPT Medical Speech Corpus for An ASR Medical Record Transcription System</i> Elvira Nurfadhilah (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Asril Jarin (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Lyla Ruslana Aini (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Siska Pebiana (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Agung Santosa (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Muhammad Teduh Uliniansyah (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Eduward Butarbutar (Solusi247, Indonesia), Desiani Desiani (Agency for the Assessment and Application of Technology (BPPT), Indonesia), Gunarso Gunarso (Agency for the Assessment and Application of Technology (BPPT), Indonesia) .....	657

<i>Implementation of Simulated Annealing-Support Vector Machine on QSAR Study of Indenopyrazole Derivative as Anti-Cancer Agent</i>	
Muhammad Fajar Rizqi (Telkom University, Indonesia), Reza Rendian Septiawan (Telkom University, Indonesia), Isman Kurniawan (Telkom University, Indonesia) .....	662
<i>Ransomware Detection on Bitcoin Transactions Using Artificial Neural Network Methods</i>	
Hairil Hairil (Telkom University, Indonesia), Niken Cahyani (Telkom University, Indonesia), Hilal H. Nuha (Telkom University, Indonesia) .....	669
<i>Emotional Context Detection on Conversation Text with Deep Learning Method Using Long Short-Term Memory and Attention Networks</i>	
Afrida Helen (Universitas Padjadjaran (Unpad), Indonesia), Mira Suryani (Universitas Padjadjaran, Indonesia), Hidayatul Fakhri (Universitas Padjadjaran, Indonesia) .....	674



2021 9th International Conference on Information and Communication  
Technology (ICoICT)

Organized by Telkom University, Multimedia University & Gajah Mada University