

## Table of Contents

Title Page

Welcome Message from General Chair

Committee

Program Schedule

Table of Contents

### ***Keynote Speech***

Keynote 1

#### **End-to-End Learning Framework for Future Wireless and Satellite Networks using AutoEncoder**

Prof. Mathini Sellathurai

Keynote 2

#### **D2D-MEC Systems for Video Streaming**

Prof. Ridha Hamila

Keynote 3

#### **Enabling Future Superconnectivity: Internet of Things as a Melting Pot of Communication and Intelligence**

Assoc. Prof. Dr. Agustian Taufiq Asyhari

Keynote 4

#### **Microwave Remote Sensing and the Applications for Environmental Monitoring**

Prof. Josaphat Tetuko Sri Sumantyo

<b>1570718105</b>	<b>Traffic-aware Link Assignment in GEO Satellite Communication Networks</b>	<b>1</b>
	Letian Li (No. 38 Research Institute, China Electronics Technology Group Corporation, China); Wenlong Wei (Shanghai Institute of Satellite Engineering, China); Kaiwei Wang (No 38 Research Institute, China Electronics Technology Group Corporation, China); Weilong Ren (No. 38 Research Institute China Electronics Technology Group Corporation, China); Shuo Wang (No. 38 Research Institute China Electronics Technology Group Corporation, China)	
<b>1570721008</b>	<b>Orbit Shifting Analysis Satellite Telkom 4 with Cowell and Encke Method Caused by Perturbation</b>	<b>6</b>
	Ahmad Fahrizal Ramadhan, Solichah Larasati and Imam Muhammadi PB (Institut Teknologi Telkom Purwokerto, Indonesia)	
<b>1570723450</b>	<b>A Novel Elman Network based INS/GPS Fusion Filter to Enhance Tracking Accuracy in UAVs</b>	<b>16</b>
	Arya Viswanath, and Sameer Saheerudeen Mohammed (National Institute of Technology Calicut, India)	

<b>1570723971</b>	<b>Techno-Economic of the Ka-Band HTS to Minimize Broadband Services Gap for Indonesian Government</b> Ignatius Daru Kristiadi, Muhammad Imam Nashiruddin ,and Miftadi Sudjai (Telkom University, Indonesia)	<b>21</b>
<b>1570725914</b>	<b>Implementation of Layer 2 MPLS VPN on the SDN Hybrid Network using Ansible and ONOS Controllers</b> Kukuh Nugroho (Institut Teknologi Telkom Purwokerto, Indonesia)	<b>27</b>
<b>1570718886</b>	<b>Mapping of Business Intelligence Research Themes: Four Decade Review</b> Agung Purnomo (Bina Nusantara University, Indonesia); Mega Firdaus (Universitas Nahdlatul Ulama Sidoarjo, Indonesia); Dian Sutiksno (Politeknik Negeri Ambon, Indonesia); Riyan Putra (Nahdlatul Ulama University of Surabaya, Indonesia); Uswatun Hasanah (Universitas Trunojoyo Madura, Indonesia)	<b>32</b>
<b>1570720122</b>	<b>Expert System of Land Suitability for Fruit Cultivation Using Case-Based Reasoning Method</b> Bayu Anggoro Krisnamurti, Yogo Dwi Prasetyo, Condro Kartiko (Institut Teknologi Telkom Purwokerto, Indonesia)	<b>38</b>
<b>1570722407</b>	<b>Performance Comparison of Swarm Intelligence Algorithms for Web Caching Strategy</b> Mulki Indana Zulfa (Universitas Gadjah Mada & Universitas Jenderal Soedirman, Indonesia); Rudy Hartanto, and Adhistya Permanasari (Universitas Gadjah Mada, Indonesia)	<b>45</b>
<b>1570722560</b>	<b>Implementation of Constant-Q Transform (CQT) and Mel Spectrogram to converting Bird's Sound</b> Silvester Dian Handy Permana (Universitas Trilogi, Indonesia); Ketut Bayu Yogha (Universitas Trilogi, Indonesia)	<b>52</b>
<b>1570723265</b>	<b>Fuzzy Logic Implementation on Motion of Tennis Ball Picker Robot</b> Faizah, Aris Triwiyatno, and R. Isnanto (Diponegoro University, Indonesia)	<b>57</b>
<b>1570723704</b>	<b>Personality Detection on Social Media Twitter Using Long Short-Term Memory with Word2Vec</b> Rachma Indira and Warih Maharani (Telkom University, Indonesia)	<b>64</b>
<b>1570722145</b>	<b>5G D2D Transmission Mode Selection Performance &amp; Cluster Limits Evaluation of DAI and ML Techniques</b> Iacovos Ioannou (University of Cyprus, Cyprus & CYENS Center of Excellence, Cyprus); Christophoros Christophorou (CYENS Centre of Excellence & CITARD Services LTD, Cyprus); Vasos Vassiliou (University of Cyprus & CYENS Center of Excellence, Cyprus); Andreas Pitsillides (University of Cyprus, Cyprus)	<b>70</b>
<b>1570723135</b>	<b>Collaborative Traffic Measurement Using Sketches for Software Defined Networks</b>	<b>81</b>

	Cheng-Chieh Peng, Pi-Chung Wang and Kuo-Shiang Hsu (National Chung Hsing University, Taiwan)	
<b>1570723159</b>	<b>Adaptive Replication for Real-Time Applications based on Mobile Edge Computing</b> Kuo-Shiang Hsu, Wan-Chi Chang, Wei-Hsun Huang and Pi-Chung Wang (National Chung Hsing University, Taiwan)	<b>88</b>
<b>1570723965</b>	<b>Utilizing 2100 MHz for 4G LTE-A Network Deployment to Addressing Spectrum Scarcity in Urban Area</b> Pinasthika Aulia Fadhila, Muhammad Imam Nashiruddin, and Muhammad Adam Nugraha (Telkom University, Indonesia)	<b>95</b>
<b>1570724372</b>	<b>Intelligent Augmented Video Streaming Services Using Lightweight QR Code Scanner</b> Xuan-Vinh Nguyen, Gia-Huy Lam, Quang-Nhat Le, Quoc-Loc Duong, The-Manh Nguyen and Bao-Long Le (University of Information Technology, and Vietnam National University, Ho Chi Minh City, Vietnam); Quang Dieu Tran (Ho Chi Minh National Academy of Politics Hanoi, Vietnam); Trong-Hop Do (University of Information Technology, and Vietnam National University, Ho Chi Minh City, Vietnam); Nhu-Ngoc Dao (Sejong University, South Korea)	<b>103</b>
<b>1570726122</b>	<b>Multi-Device Task Offloading with Scheduling in an Edge Cloud Platform</b> Moch Yasin, Tohari Ahmad, and Royyana Mulisn Ijtihadie (Institut Teknologi Sepuluh Nopember, Indonesia)	<b>108</b>
<b>1570718706</b>	<b>Design of LoRaWAN for Smart Factories in Industrial Estates</b> Hanin Nafi'ah and Puspa Rahmawati (Institut Teknologi Telkom Purwokerto, Indonesia); Alfin Hikmaturokhman (Institut Teknologi Telkom Purwokerto & Universitas Indonesia, Indonesia); Solichah Larasati (Institut Teknologi Telkom Purwokerto, Indonesia)	<b>116</b>
<b>1570722106</b>	<b>Concatenated Coset Coding in a Multi-tone DHA FH OFDMA System with Order Statistics-based Reception</b> Dmitry Osipov (Kharkevich Institute for Information Transmission Problems of the RAS Moscow, Russia & National Research University Higher School of Economics Moscow, Russia)	<b>123</b>
<b>1570726191</b>	<b>Evaluation of Low-density parity-check code with 16-QAM OFDM in a time-varying channel</b> Ali Y. Kuti and A. E. Abdelkareem (College of Information Engineering (COIE) Al-Nahrain University, Iraq)	<b>128</b>
<b>1570726611</b>	<b>Analysis of GFDM-OQAM Performance Using Zero Forcing Equalization</b> Elsa Nur Oktaviar, Anggun Fitriani Isnawati, and Khoirun Ni'amah (Institut Teknologi Telkom Purwokerto, Indonesia)	<b>135</b>

<b>1570726618</b>	<b>Performance Analysis GFDM Using MMSE Equalization in Audio Transmission</b>	<b>141</b>
	Wiwit Indah Sari and Anggun Fitriani Isnawati (Institut Teknologi Telkom Purwokerto, Indonesia); Khoirun Ni'amah (Institut Teknologi Telkom Purwokerto & Telkom University, Indonesia)	
<b>1570731252</b>	<b>Minimizing the additional costs due to Router Outage in IP-over-EON using Adaptive Routing</b>	<b>146</b>
	Ridwansyah (Universitas Negeri Makassar & Universitas Hasanuddin, Indonesia); Syafruddin Syarif, Dewiani, and Wardi (Universitas Hasanuddin, Indonesia)	
<b>1570723827</b>	<b>Sorting Algorithm for Medium and Large Data Sets Based on Multi-Level Independent Subarrays</b>	<b>152</b>
	Kiaksar Shirvani Moghaddam (Iran University of Science and Technology, Iran); Shahriar Shirvani Moghaddam (Shahid Rajaee Teacher Training University, Iran)	
<b>1570723829</b>	<b>Classification Hoax News of Covid-19 on Instagram Using K-Nearest Neighbor</b>	<b>157</b>
	Indra Malik Akbar F, Yaddarabullah, and Silvester Dian Handy Permana (Universitas Trilogi, Indonesia)	
<b>1570723909</b>	<b>Steganalysis of Adaptive Image Steganography using Convolution Neural Network and Blocks Selection</b>	<b>162</b>
	Saeed Mohammed Hashim (College of IT University of Babylon, Iraq); Dhia Abdullahusein Zubaydi (College of Science University of Almustansiriyah, Iraq)	
<b>1570723979</b>	<b>Classification Auction Motorcycle and Car In South Jakarta District Attorney Using Naïve Bayes</b>	<b>168</b>
	Fransisca Kristina Mega, Yaddarabullah, and Silvester Dian Handy Permana (Universitas Trilogi, Indonesia)	
<b>1570724464</b>	<b>A Network of Object-Oriented Software Metrics' Parameters</b>	<b>172</b>
	Marwah M. A. Dabdawb, and Basim Mahmood (University of Mosul, Iraq)	
<b>1570724891</b>	<b>Indicators on the Feasibility of Curfew on Pandemics Outbreaks in Metropolitan/Micropolitan Cities</b>	<b>179</b>
	Basim Mahmood (University of Mosul, Iraq)	
<b>1570725374</b>	<b>Artificial Potential Field Algorithm for Obstacle Avoidance in UAV Quadrotor for Dynamic Environment</b>	<b>184</b>
	Alfian Ma'arif (Universitas Ahmad Dahlan, Indonesia); Wahyu Rahmaniari (National Central University, Taiwan); Marco Antonio Márquez Vera (Universidad Politécnica de Pachuca, Carr. Pachuca-Sahagún Km. 20, México, Mexico); Rania Majdoubi (Mohammed V University in Rabat & LCS Laboratory, Faculty of Sciences, Mohammed V University in Rabat, Morocco); Abdullah Çakan (Konya Technical University, Turkey)	

<b>1570726675</b>	<b>Prediction of the Unemployment and Bank Interest Rates on Changes in the Stock Price Index with Efficient Regression</b> Berlian Al Kindhi, Rista Anisa Dewi, Noviyanti Santoso, Akhmad Yuzfa Salvian Idris, Afrizandy Bayu Yudhistira, Felya Mayora Putri (Institut Teknologi Sepuluh Nopember, Indonesia)	<b>190</b>
<b>1570725848</b>	<b>Data Efficient Video Transformer for Violence Detection</b> Almaamoon Abdali (Ministry of Education, Iraq)	<b>195</b>
<b>1570726714</b>	<b>Network Science as a Forgery Detection Tool in Digital Forensics</b> Alaa Amjed, and Basim Mahmood (University of Mosul, Iraq); Khalid A. K. AlMukhtar (Ministry of Interior, Iraq)	<b>200</b>
<b>1570727040</b>	<b>Data Quality Management Maturity: Case Study National Narcotics Board</b> Henny Sri Indriany, Achmad Nizar Hidayanto, Lellyana Juliet Wantania (Universitas Indonesia, Indonesia); Budy Santoso, Widha Utami Putri, and Welly Pinuri (National Narcotics Board, Indonesia)	<b>206</b>
<b>1570726784</b>	<b>Solar Cell Based Integrated Sensor System Monitoring on Smart IoT</b> Berlian Al Kindhi, Josaphat Pramudijanto, Ilham Surya Pratama, Lucky Putri Rahayu, Fauzi I. Adhim, and Joko Susila (Institut Teknologi Sepuluh Nopember, Indonesia)	<b>213</b>
<b>1570726820</b>	<b>Real-Time Examination System For New Students At Pandemic Time Covid 19 Using Fuzzy Logic</b> Lukman Medriavin Silalahi, Setiyo Budiyo, Imelda Uli Vistalina Simanjuntak, and Freddy Artadima Silaban (Universitas Mercu Buana, Indonesia); Agus Dendi Rochendi (Lembaga Ilmu Pengetahuan Indonesia, Indonesia); Wafi Akhlaqil Karimah (Universitas Mercu Buana, Indonesia)	<b>219</b>
<b>1570727034</b>	<b>Visual Editor for Streamlining P4-based Programmable Parser Development</b> Muhammad Fajar Sidiq, and Mega Pranata (Institut Teknologi Telkom Purwokerto, Indonesia); Akbari Indra Basuki (Indonesian Institute of Sciences, Indonesia)	<b>225</b>
<b>1570727053</b>	<b>SimRouter: Message routing based on Similarity and Relative Probable Positions of nodes in DTNs</b> Gaurav Kumar, and Yatindra Nath Singh (Indian Institute of Technology Kanpur, India)	<b>231</b>
<b>1570728769</b>	<b>A Fast Sub-Optimum Access Point Selection in Ultra-Dense Networks</b> Kiaksar Shirvani Moghaddam (Iran University of Science and Technology, Iran); Shahriar Shirvani Moghaddam (Shahid Rajaei Teacher Training University (SRTTU), Iran)	<b>239</b>
<b>1570731555</b>	<b>Integrated Strategy Framework To Improve Quality Of Network on The BMKG Communication Network System</b> Budi Dwinanto, and Ajib Setyo Arifin (Universitas Indonesia, Indonesia)	<b>244</b>

<b>1570727672</b>	<b>The Analysis of High Power Amplifier Distortion on the MIMO-GFDM Systems</b> Ari Endang Jayati, and Budiani Destyningtias (Universitas Semarang, Indonesia)	<b>252</b>
<b>1570728090</b>	<b>Experimental Characterization of Miniaturized Meander Line-Based 4×4 Butler Matrix</b> Zulfi (Institut Teknologi Bandung and Telkom University, Indonesia); Achmad Munir (Institut Teknologi Bandung, Indonesia)	<b>258</b>
<b>1570728572</b>	<b>Outage Probability Analysis of Full-Duplex UAV-assisted Wireless System over Rician Fading Channel</b> Kalavagunta Dilip Kumar, and Anandpushparaj Jeganathan (National Institute of Technology, Trichy, India); Mitali Gupta (Indian Telephone Industries Limited (ITI Ltd), INDIA, India); Muthuchidambaranathan P (National Institute of Technology, Trichy, India)	<b>263</b>
<b>1570728949</b>	<b>Design GUI Filter Infinite Impulse Response (IIR) for Noise Reduction While Real-Time using LabVIEW</b> Rheza Andika F, Ahmad Al Afif, and Putri Wulandari (Universitas Al Azhar Jakarta, Indonesia);	<b>269</b>
<b>1570731404</b>	<b>Spectrum Fee License Analysis on 3.5, 26, and 28 GHz Frequency For 5G Implementation in Indonesia</b> Ade Wahyudin (Sekolah Tinggi Multimedia (MMTC) Yogyakarta, Indonesia); Alfin Hikmaturokhman, and Dinar Ahmad Harish (Institut Teknologi Telkom Purwokerto, Indonesia)	<b>274</b>
<b>1570731767</b>	<b>Segmenting the Subscribers of An Indonesian 4G Service Operator Using RFM Method</b> Joko Tri Wibowo, and Muhammad Suryanegara (Universitas Indonesia, Indonesia)	<b>280</b>
<b>1570728738</b>	<b>A Comparison of Several Approaches for Image Recognition used in Food Recommendation System</b> Quang-Linh Tran, Gia-Huy Lam, Quang-Nhat Le, Trung-Hieu Tran, and Trong-Hop Do (University of Information Technology, Ho Chi Minh City & Vietnam National University, Ho Chi Minh City, Vietnam)	<b>284</b>
<b>1570730064</b>	<b>Interpolation Effect on FBP-Based Image Reconstruction of Measured L-Band Microwave Tomography</b> Achmad Munir, Fauzia Sekarningrum, and Nurul Amalia Amri (Institut Teknologi Bandung, Indonesia); Bakhtiar Abubakar, and Slamet Risnanto (Universitas Sangga Buana & Indonesia, Indonesia); Mohammad Ridwan Effendi (Institut Teknologi Bandung, Indonesia)	<b>290</b>
<b>1570730118</b>	<b>Experimental Approach of L-Band Microwave Tomography and Its Image Reconstruction Using CS Method</b>	<b>294</b>

Achmad Munir, Sri Mulyani, Dian Kurnia Imanda, and Ricky Willyantho (Institut Teknologi Bandung, Indonesia); Sofia Sa'idah, and Edwar (Telkom University, Indonesia);

- |                   |  |            |
|-------------------|--|------------|
| <b>1570732529</b> | <p><b>Designing a tourism recommendation system using a hybrid method (Collaborative Filtering and Content-Based Filtering)</b></p> <p>Ni Wayan Priscila Yuni Praditya, Adhistya Erna Permanasari, and Indriana Hidayah (Universitas Gadjah Mada, Indonesia)</p>   | <b>298</b> |
| <b>1570732934</b> | <p><b>A Study on Diacritic Restoration Problem in Vietnamese Text using Deep Learning based Models</b></p> <p>Quang-Linh Tran, Gia-Huy Lam, Van-Binh Duong and Trong-Hop Do (University of Information Technology, Ho Chi Minh City &amp; Vietnam National University, Ho Chi Minh City, Vietnam)</p>        | <b>306</b> |
| <b>1570733047</b> | <p><b>30VNFoods: A Dataset for Vietnamese Foods Recognition</b></p> <p>Trong-Hop Do, Duc-Duy-Anh Nguyen, Hoang-Quan Dang, Hoang-Nhan Nguyen, Phu-Phuoc Pham and Duc-Tri Nguyen (University of Information Technology, Ho Chi Minh City &amp; Vietnam National University, Ho Chi Minh City, Vietnam)</p>     | <b>311</b> |
| <b>1570733322</b> | <p><b>Face Recognition for Identification and Verification in Attendance System: A Systematic Review</b></p> <p>Ahmad Anshari, Sulistyono Aris Hirtranusi, Dana Indra Sensuse, Kautsarina Kautsarina (Universitas Indonesia, Indonesia); Ryan Randy Suryono (Universitas Teknokrat Indonesia, Indonesia)</p> | <b>316</b> |
| <b>1570733412</b> | <p><b>Image Classification for Egg Incubator using Transfer Learning of VGG16 and VGG19</b></p> <p>Apri Junaidi, Jerry Lasama, Faisal Dharma Adhinata (Institut Teknologi Telkom Purwokerto, Indonesia); Ade Rahmat Iskandar (Akademi Teknik Telekomunikasi Sandhy Putra, Indonesia)</p>                     | <b>324</b> |
| <b>1570731609</b> | <p><b>Cloud-RAN and Coverage Gap in Rural Areas</b></p> <p>Ida Sémévo TOGNISSE (Institut de Mathématiques et Sciences Physiques, Benin); Ahmed Dooguy KORA (Ecole Supérieure Multinationale de Télécommunications, Senegal); Jules DEGILA (Institut de Mathématiques et Sciences Physiques, Benin)</p>       | <b>329</b> |
| <b>1570731911</b> | <p><b>Real-time Signboards using Panels P5 RGB and NodeMCU esp8266 with Library PxMatrix</b></p> <p>Prasetyo Yuliantoro, Shinta Romadhona, and Alfin Hikmaturokhman (Institut Teknologi Telkom Purwokerto, Indonesia)</p>  | <b>337</b> |
| <b>1570733136</b> | <p><b>Prototype Smart Door Lock By Using Wireless Network Based on Arduino Uno</b></p> <p>Kholidiyah Masykuroh, Fikra Titan Syifa, Gatot Rizky Setiyanto, Afifah Dwi Ramadhani, Danny Kurnianto, and Nanda Iryani (Institut Teknologi Telkom Purwokerto, Indonesia)</p>                                      | <b>342</b> |

<b>1570733366</b>	<b>SOLSR Protocol Performance Analysis For Voip Application In Mesh Topology</b>	<b>348</b>
	Aditya Wijayanto, Rifki Adhitama, and Auliya Burhanuddin (Institut Teknologi Telkom Purwokerto, Indonesia)	
<b>1570731816</b>	<b>Development and Characterization of Narrowband BPF Made of Substrate Integrated Waveguide</b>	<b>354</b>
	Hardi Nusantara (Institut Teknologi Bandung, Indonesia); Arief Budi Santiko (Indonesia Institute of Science LIPI, Indonesia); Zulfi and Achmad Munir (Institut Teknologi Bandung, Indonesia); Kusmadi and Nina Lestari (Universitas Sangga Buana, Indonesia)	
<b>1570731866</b>	<b>Design of a Compact Circular Patch Antenna Operating at ISM-Band for the WiMAX Communication Systems</b>	<b>358</b>
	Rashedul Islam, Fardeen Mahbub, Shouherdho Banerjee Akash, Imtiaz Ahmed Prince, Farhan Tasnim, Nafisa Tabassum Navia (American International University-Bangladesh, Bangladesh)	
<b>1570731965</b>	<b>Design and Characterization of ADM-based Dual-band SIW Bandpass Filter</b>	<b>363</b>
	Ahmad Ikhyari, Ahmad Izzuddin and Achmad Munir (Institut Teknologi Bandung, Indonesia)	
<b>1570733029</b>	<b>A Design of Extreme Learning Machine Based Receiver for 2×2 MIMO-OFDM System</b>	<b>367</b>
	M. Rezwatul Mahmood and Mohammad A Matin (North South University, Bangladesh)	
<b>1570733359</b>	<b>Secret and Trustable Communication Channel over Blockchain Public Ledger</b>	<b>371</b>
	Muhammad Fajar Sidiq, Fahrudin Mukti Wibowo and Merlinda Wibowo (Institut Teknologi Telkom Purwokerto, Indonesia); Akbari Indra Basuki, Iwan Setiawan and Didi Rosiyadi (Indonesian Institute of Sciences, Indonesia)	