

# **2025 IEEE International Conference on Aerospace Electronics and Remote Sensing Technology (ICARES 2025)**

**Surabaya, Indonesia  
23-24 October 2025**

IEEE Catalog Number: CFP2596Y-POD  
ISBN: 979-8-3315-5708-9



Copyright © 2025, IEEE

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:    | CFP2596Y-POD      |
| ISBN (Print-On-Demand): | 979-8-3315-5708-9 |
| ISBN (Online):          | 979-8-3315-5707-2 |

**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 |
| Web:    | www.proceedings.com    |

# TABLE OF CONTENTS

|                                                                                                                                   |    |
|-----------------------------------------------------------------------------------------------------------------------------------|----|
| Canadian conifer tree classification using the Pseudo Tree Crown (PTC) .....                                                      | 1  |
| <i>Tianning Zhang, Frank Zhang, Shengjie Miao, Hui Li</i>                                                                         |    |
| A Review of UAV-Based D2D Communication Scenarios for Search and Rescue .....                                                     | 6  |
| <i>Toha Ardi Nugraha</i>                                                                                                          |    |
| Assessing Carbon Monoxide (CO) Source In Urbanized Area Using Sentinel-5P And Landsat-8 .....                                     | 12 |
| <i>Devika Rahma Damayanti Yusuf, Bangun Muljo Sukojo, Inggit Lolita Sari, Sasfina Aditiya</i>                                     |    |
| <i>Nurya Ramadhania, Murdawati</i>                                                                                                |    |
| Harvesting Insights: A Comprehensive Analysis of Agricultural Lands using Remote Sensing .....                                    | 19 |
| <i>Roaya Bubshait, Aysha Aljawder, Aysha Almahmeed</i>                                                                            |    |
| Relationship of Landslides with Erosion in Tripe Jaya District, Gayo Lues Regency .....                                           | 26 |
| <i>Murdawati, Irma Yusiyan, Nadya Novi Rahmadana, Nurya Ramadhania</i>                                                            |    |
| Data Mining of Nickel Downstreaming and Infrastructure In Sulawesi-Maluku Islands, Indonesia .....                                | 33 |
| <i>Avriella Sofianti, Batari Cyrilla Jagaddhita, Santia, Edy Irwansyah</i>                                                        |    |
| Machine Learning Based Soil Moisture Estimation in Bangladesh from Remote Sensing Data .....                                      | 39 |
| <i>Shahidul Islam, Sakib Salam, Sk Rahat Bin Salam, Afjal Hossain Jisan</i>                                                       |    |
| Evaluating the Effects of Sliding Window Overlap in Deep Learning-Based Passive RF Drone<br>Detection .....                       | 46 |
| <i>Tanatsan Khantha, Atthawut Tirakitpanitchakorn, Ussanai Nithirochananont, Sittiporn Channumsin</i>                             |    |
| Comparative Study of Stiffener Designs on the Natural Frequency of a 6U Deployable Solar Panel .....                              | 51 |
| <i>Puji Rianto, Gesang Nugroho, Mohammad Mukhayadi, Mohammad Farid Huzain, Rendy Kurniawan</i>                                    |    |
| <i>Wahyu Akbar Megah</i>                                                                                                          |    |
| Study of Wire Rope Isolator Configurations for Optimal Vibration Isolation in 12U CubeSat Deployers .....                         | 58 |
| <i>Rendy Kurniawan, Gesang Nugroho, Mohammad Mukhayadi, Moh. Farid Huzain, Puji Rianto</i>                                        |    |
| <i>Wahyu Akbar Megah</i>                                                                                                          |    |
| Design of a PLA-Based Miniaturized Antipodal Vivaldi Antenna for Ground-Penetrating Radar .....                                   | 65 |
| <i>Yasin Turan, Asef Burak Doğan, Atanur Şimşir, Fatih Korkmaz, Ahmet Caner Gül, Semih Doğu</i>                                   |    |
| Spatio-temporal Analysis of Forest Degradation and Its Biomass Carbon Model in Sumatra .....                                      | 70 |
| <i>Dhia Zalfa Zahira, Anjar Dimara Sakti, Ketut Wikantika</i>                                                                     |    |
| VTOL-Modified Tactical UAVs for Intelligence, Surveillance, and Reconnaissance Missions .....                                     | 76 |
| <i>Arwin Datumaya Wahyudi Sumari, Mikael Septianto Mangando, Elisabeth Anna Pratiwi</i>                                           |    |
| Content-based Image Retrieval using an Adaptive Triplet Learning Approach from Multi-label Remote<br>Sensing Image Archives ..... | 83 |
| <i>Aswathy K R, Akshara Preethy Byju, Alberto S. Garea</i>                                                                        |    |
| QO-100 Satellite Communication from Cambodia through NPIC Ground Station .....                                                    | 90 |
| <i>Seven Siren, Paulo Jorge, Sokoeun Un, Channareth Srun, Bunnaren Chrin, Channara Chhet</i>                                      |    |
| <i>Chivon Choeung, Povry Rin, Visal Lim</i>                                                                                       |    |

|                                                                                                                                                                                 |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Space-Based Potential Flood Area in Indonesia and its Validation with Historical Flood Events .....                                                                             | 97  |
| <i>Zukhrufia Rahmi, Parwati Sofan, Ike Sari Astuti</i>                                                                                                                          |     |
| A Spatial Analysis of Traffic Accident Risk in Yogyakarta City Using Remote Sensing and GIS .....                                                                               | 103 |
| <i>Ayesha Amalia Putri, R. Suharyadi, Munawaroh</i>                                                                                                                             |     |
| Deep Learning Analysis of Satellite Images for UN SDG Monitoring in Mauritius' Black River District .....                                                                       | 110 |
| <i>Naveen Kumar, Chidambaram Somanathan, Tulsi Pawan Fowdur, Deejaysing Jogee, Maneeraj Cowlessur</i>                                                                           |     |
| Assessment of Spatial Misclassification in Mangrove vs. Non-Mangrove Remote Sensing Classifications .....                                                                       | 115 |
| <i>Munawaroh Munawaroh, Muhammad Sufwandika Wijaya, Gathot Winarso, AW Rudiastuti<br/>Yulizar Ihrami Rahmila, AAMD Ananda Putra Suardana, Nanin Anggraini, Rahmadi</i>          |     |
| Real-Time Aircraft Conflict Detection in Simulated Airspace Using Axis-Aligned Bounding Boxes .....                                                                             | 122 |
| <i>Homaiza Saud Ahmad, Farah Abu Zalam, Mahdi Jemmali, Qassim Nasir, Manar Abu Talib</i>                                                                                        |     |
| U-Net for enhancing C-2S-MX and R-2 L3 satellite images in poor atmospheric conditions .....                                                                                    | 129 |
| <i>Sanyam Antil, Smt. Meenakshi Sarkar, S Manthira Moorthi, Sri. Debajyoti Dhar</i>                                                                                             |     |
| Monitoring Ground Deformation in Tropical Peatland Landscapes Using a PSDS-InSAR Multi-Sensor Approach: A Case Study of Palangkaraya .....                                      | 134 |
| <i>Andini Azkiyatus Salsabila, Noorlaila Hayati, Rahmat Arief</i>                                                                                                               |     |
| Design and Prototype of C-Band FMCW Radar for the Detection of Human Micro-Doppler Signatures .....                                                                             | 141 |
| <i>C. Özdemir</i>                                                                                                                                                               |     |
| Reconfigurable Dual-Band Circular Patch Antenna Using Capacitive Tuning and DGS for MSSR .....                                                                                  | 146 |
| <i>Okkie Puspitorini, Ari Wijayanti, Nur Adi Siswandari, Paramita Eka Wahyu Lestari<br/>Reyhandhika Hadistira Wananda</i>                                                       |     |
| BATAR: Implementation of QFH Antenna Technology in APRS and Voice Repeater Communications Using LAPAN-A2 (IO-86) Satellite for National Disaster Preparedness .....             | 151 |
| <i>Bayu Nuar Khadapi H., Rangga Taqwa, Sayyid Hasan Harahap, Achmad Dani Kurniawan<br/>Uvi Desi Fatmawati, Ria Aprilliyani, Abbas Madani Bangun, Christian Rafael Manullang</i> |     |
| A Patch-Based CNN Approach for Object Detection Using RGB and NIR Image Fusion .....                                                                                            | 158 |
| <i>Zeynep Korkmaz, Semih Doğu</i>                                                                                                                                               |     |
| Evaluating the Impact of Histogram Modification on Building Segmentation using Deep Learning .....                                                                              | 163 |
| <i>Danang Budi Susetyo, Nugroho Purwono, Wa Ode Nur Esha Amalia, Angkoso Dewantoro<br/>Atriyon Julzarika</i>                                                                    |     |
| Microstrip-based Wilkinson Power Divider Design for ADS-B Application at 1090 MHz Frequency .....                                                                               | 170 |
| <i>Auditya Erlangga Wicaksono, Fannush Shofi Akbar, Mohammad Yanuar H, Rizadi Sasmita Darwis</i>                                                                                |     |
| Beyond Pixels: Transforming Satellite Imagery with Vision Transformer-Based Super-Resolution .....                                                                              | 175 |
| <i>Ayush Kumar Shukla, Meenakshi Sarkar, S Manthira Moorthi, Debajyoti Dhar</i>                                                                                                 |     |
| Machine Learning-Based Mapping of Drought Vulnerability in Java from Satellite-Derived Indices .....                                                                            | 182 |
| <i>Ahmad Hasan Aoishiro Basori, Parwati Sofan, Bagus Setiabudi Wiwoho, Ike Sari Astuti</i>                                                                                      |     |
| Validation of a 405 nm iToF LiDAR for Distance Measurement in Free Space and Aquatic Environments .....                                                                         | 189 |
| <i>Asep Hapiddin, Dwi Hanto, Retno Wigajatri Purnamaningsih</i>                                                                                                                 |     |

|                                                                                                                                                                          |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Reframing Urban Heat through Morphological Lenses: LCZ-Based Seasonal UHI Mapping in Jakarta's Expanding Metropolis and Its Supporting Regions .....                     | 196 |
| <i>Zafira Fatimah Azzahra, Parwati Sofan, Ike Sari Astuti, Trinh Wati</i>                                                                                                |     |
| Non-Destructive Seagrass Aboveground Carbon Stock Mapping Based on The Relationship with Percent Cover and Remote Sensing Reflectance .....                              | 203 |
| <i>Huwaida Nur Salsabila, Pramaditya Wicaksono, Projo Danoedoro</i>                                                                                                      |     |
| Ballistic Coefficient Estimation for Non-Thrustered LEO Satellites Using Historical TLE Data .....                                                                       | 210 |
| <i>M. Khawariz Andaristiyani, Affiani Machmudah, Satriya Utama, Ridanto Eko Poetro, Endang Soegiartini</i>                                                               |     |
| Seasonal Rice Mapping Using Sentinel-1 SAR Time Series and Machine Learning: A Case Study of Thanjavur, Tamil Nadu .....                                                 | 216 |
| <i>Niraimathi Janardhanam, Subbarayan Saravanan, Thamaraikani Manogaran, Rajarajeswari Ramakrishnan</i>                                                                  |     |
| Application of Daubechies Discrete Wavelet Transform (DWT) Filtering for Vegetation Density Analysis In Bedadung Watershed Jember City .....                             | 222 |
| <i>Oktavian Rizki Putra Hermawan, Fannush Shofi Akbar, Risdilah Mimma Untsa</i>                                                                                          |     |
| Observability Analysis of a Switching Extended Kalman Filter for Small UAV Navigation .....                                                                              | 227 |
| <i>Aziz Fathurrahman, Ony Arifianto, Yazdi Ibrahim Jenie, Hari Muhammad</i>                                                                                              |     |
| Evaluate the Climate Change Resilience of Marine Protected Areas (MPAs) Using Remote Sensing Data in Indonesia-Malaysia Border Sea .....                                 | 234 |
| <i>Heru Nur Krisna, Rizki Taqwa Putranto, Nimas Ratri Kirana Anggraeni, Anis Yasmin Sabila Lilik Maslukah, Anindya Wirasatriya</i>                                       |     |
| CubeSat-based APRS Using V-Model Engineering System Approach for Emergency Communication .....                                                                           | 239 |
| <i>Firmansyah, Purwoko Aji Prabowo, Okky Freeza Daulay, Herwin Hutapea</i>                                                                                               |     |
| Multi-Sensor Satellite Approaches for Landfill Detection .....                                                                                                           | 246 |
| <i>Galdita Aruba Chulafak, Hana Listi Fitriana, Mohammad Ardha, Gatot Nugroho, Udhi C Nugroho Jalu Tejo Nugroho</i>                                                      |     |
| Jakarta's Sinking Lifelines: Land Subsidence Risk to Greater Jakarta's Critical Infrastructure .....                                                                     | 252 |
| <i>Argo Galih Suhadha, Munawaroh, Agung Syetiawan, Dwi Sarah, Atriyon Julzarika Moch. Hilmi Zaenal Putra, Nugroho Purwono, Mohammad Fadhlani Putranto</i>                |     |
| Monitoring Corn Crop Phenology In Bobon, Butuan City, Philippines Using Multi-Date Sentinel-1 SAR Imagery .....                                                          | 258 |
| <i>Arturo G. Cauba, Karl Vincent S. Codaste, Carl Gio B. Mahinay</i>                                                                                                     |     |
| Analyzing Urban Expansion in Butuan City, Philippines Using Remote Sensing and GIS Techniques .....                                                                      | 263 |
| <i>Arturo G. Cauba</i>                                                                                                                                                   |     |
| Effects of Meteorology on Aviation Safety and Operational Efficiency .....                                                                                               | 270 |
| <i>Ankush Malik, Neeraja Lugani Sethi</i>                                                                                                                                |     |
| Federated Learning for NDVI-Based Regional Plant Health Assessment in Turkey .....                                                                                       | 277 |
| <i>Bedirhan Koksoy, Gokhan Bilgin</i>                                                                                                                                    |     |
| Link and Doppler Analysis of RIDU-Sat 1 TT&C Communication System Using VHF Frequency .....                                                                              | 283 |
| <i>De Shepherd Guella Winisia Zega, Erlangga Aryo Prastya, Rendi Dwi Rusti, Sayyid Hasan Harahap Maulana Ali Arifin, Imanuel Dindin, Herwin Hutapea, Edy Sulistiyadi</i> |     |

|                                                                                                                                                                                                                                                                                        |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Simulation of the RIDU- Sat 1 GMSK TT&C Link using GNU Radio .....                                                                                                                                                                                                                     | 290 |
| <i>Rendi Dwi Rusti, Sayyid Hasan Harahap, Erlangga Aryo Prastya, De Shepherd Guella Winisia Zega<br/>Maulana Ali Arifin, Dananjaya Ariateja, Sembada Denrineksa Bimorogo, Wahyudi Hasbi</i>                                                                                            |     |
| Oriented Ship Detection in Bayer-Encoded Satellite Imagery .....                                                                                                                                                                                                                       | 295 |
| <i>K. Khairunnisa, K. Kamirul, Dicka A. Rahayu, Wahyudi Hasbi</i>                                                                                                                                                                                                                      |     |
| A Study on the Effect of Speckle Noise in Modeling Sea Clutter and a Mellin Transform-Based Method<br>for Weibull Parameter Estimation .....                                                                                                                                           | 300 |
| <i>Shahrokh Hamidi</i>                                                                                                                                                                                                                                                                 |     |
| FPGA-Based High-Speed Data Acquisition System for Ground Testing of Satellite PDHS .....                                                                                                                                                                                               | 307 |
| <i>Dede Ardianto, Agus Bejo, Iswandi Iswandi, Mohammad Mukhayadi, Rommy Hartono</i>                                                                                                                                                                                                    |     |
| Off-Nadir Imaging Based on Attitude Prediction Using Long-Time Telemetry on Near-Equatorial<br>Satellite .....                                                                                                                                                                         | 314 |
| <i>Yuvita Dian Safitri, Ahmad Zammir Ribah, Satriya Utama</i>                                                                                                                                                                                                                          |     |
| Hybrid Deep Learning Approach for Satellite's Battery Capacity Prediction .....                                                                                                                                                                                                        | 321 |
| <i>Nurrochman Ferdiansyah, Imas Sukaesih Sitanggang, Mushthofa, Mohammad Mukhayadi</i>                                                                                                                                                                                                 |     |
| Magnetic Based Momentum Management in Low Earth Polar Orbit: Flight Result .....                                                                                                                                                                                                       | 328 |
| <i>Nur Salma Yusuf Hasanah, Futikhatun Rohmah, Satriya Utama</i>                                                                                                                                                                                                                       |     |
| The Influence of Polarimetric Calibration on Man-Made Target from Ground-Based SAR Data .....                                                                                                                                                                                          | 333 |
| <i>Nurul Chasanah, Dewi Anggraeni, Agus Hendra, Irma Rismayanti, Agus Wiyono, Bambang Setiadi</i>                                                                                                                                                                                      |     |
| An Integrated Ground Segment Framework for NEO-1: Automated Data Pipelines to Maritime<br>Intelligence .....                                                                                                                                                                           | 339 |
| <i>Dicka Ariptian Rahayu, Muazam Nugroho, Maulana Ali Arifin, Aulia Haque Qonita, Rosza Madina<br/>Nur Salma Yusuf Hasanah, Wakhid Abdurrokhman, Suryo Prakoso Putra</i>                                                                                                               |     |
| A Beacon-Synchronized TDMA Scheme for Enhanced Uplink Performance in LoRa LEO Satellite .....                                                                                                                                                                                          | 346 |
| <i>Maulana Ali Arifin, Agfianto Eko Putra, Wahyudi Hasbi</i>                                                                                                                                                                                                                           |     |
| Convolutional Neural Networks for Accurate Ground-Space Classification in Satellite Images .....                                                                                                                                                                                       | 353 |
| <i>Suryo Prakoso Putra, Imas Sukaesih Sitanggang, Hari Agung Adrianto, Satriya Utama<br/>Mohammad Mukhayadi</i>                                                                                                                                                                        |     |
| Design and Simulation Of Hyperspectral Lens System For A Flood Monitoring Cubesat .....                                                                                                                                                                                                | 360 |
| <i>Audrey Rosadi, Dwi Pebrianti, Luhur Bayuaji, Indra Riyanto</i>                                                                                                                                                                                                                      |     |
| Analysis of Premature CanSat Separation Caused by Barometric Sensor Noise .....                                                                                                                                                                                                        | 366 |
| <i>Idam Sholikhah, Albertus Aristo Davino Pasaribu, Mu'Ammar Ihza Syadi, I Made Miasa, Iswandi Iswandi<br/>Catur Atmaji, Adhika Widyaparaga, Septyan Jaya Saputra, Afif Irfan Zein, Byan Cahaya Rahman Arvendy<br/>Tan Nico Febrian, Dzaky Ahmad Sudiarso, Shahnaz Izzati Frishila</i> |     |
| Haze Correlation Analysis in Determining Haze Factor for Haze Removal in SPOT 6 and SPOT 7<br>Images .....                                                                                                                                                                             | 373 |
| <i>D. Heri Y. Sulyantara, Dianovita, Kurnia Ulfa, Musyarofah, Novie Indriasari, Mulia Inda Rahayu<br/>Andie Setiyoko, Orbita Roswintiarti, Sastra Kusuma Wijaya, Abdul Haris</i>                                                                                                       |     |
| A Low-Cost Dual-Channel LoRa Receiver for Satellite Disaster Monitoring .....                                                                                                                                                                                                          | 379 |
| <i>Maulana Ali Arifin, Agfianto Eko Putra, Wahyudi Hasbi, Zaini Ihsan, Alvenia Ayu Dananti, Idam Sholikhah<br/>Aulia Haque Qonita</i>                                                                                                                                                  |     |

|                                                                                                            |     |
|------------------------------------------------------------------------------------------------------------|-----|
| Uniform Circular Array RF Based Direction Finding Using Ensemble Machine Learning .....                    | 384 |
| <i>Agus Subekti, Suyoto, Iman Firmansyah, Budiman Putra A R, Ratna Indra W., Bambang Setiadi</i>           |     |
| Pre-calculated Momentum Transfer for Slew Maneuver of a High-Momentum Small Satellite .....                | 388 |
| <i>Satriya Utama, Mohammad Mukhayadi, Rianto Adhy Sasongko, Leonardo Gunawan</i>                           |     |
| A Compact and Highly Efficient Linear Polarization Array Antenna for SAR Sensors .....                     | 395 |
| <i>Farohaji Kurniawan, Bambang Setiadi, Abdurasyid Ruhayat, Abdul Rohman, Agus Hendra, Agus Wiyono</i>     |     |
| <i>Satria Aditya, Nurul Chasanah, Jefri A. Hamonangan, Irma Rismayanti, Hidayati Mardikasari</i>           |     |
| <i>Effendi Arisandi</i>                                                                                    |     |
| Multitarget Analysis of CC-OFDM MIMO Radar Using Coded Waveforms .....                                     | 400 |
| <i>Muhammad Idris Romadly, Gamantyo Hendranto, Prasetiyono Hari Mukti, Devy Kuswidiastuti</i>              |     |
| Gain Scheduled LQR Control for Shipboard Landing of a Tilt-Rotor UAV .....                                 | 407 |
| <i>Alexander Adiyasa, Rianto Adhy Sasongko</i>                                                             |     |
| Reliability Analysis of Buck Converter for a Satellite Power Distribution Unit .....                       | 414 |
| <i>Gafur Hasan Zam Bahari, Dadang Gunawan, Wahyudi Hasbi</i>                                               |     |
| A Practical Framework for Designing High-Speed Imaging Data Acquisition Systems on Low-Cost<br>FPGAs ..... | 420 |
| <i>Rommy Hartono, Prpto Nugroho, Agus Bejo, Mohammad Mukhayadi, Dede Ardianto, A Hadi Syafrudin</i>        |     |
| Simulation-Driven FPGA Design for High-Speed LAPAN-A4 PDHS Ground Data Acquisition .....                   | 427 |
| <i>Dede Ardianto, Agus Bejo, Iswandi Iswandi, Mohammad Mukhayadi, Rommy Hartono</i>                        |     |