

# **2024 IEEE 12th Region 10 Humanitarian Technology Conference (R10-HTC 2024)**

**Kuala Lumpur, Malaysia  
1-3 October 2024**



**IEEE Catalog Number: CFP2434U-POD  
ISBN: 979-8-3503-4021-1**

**Copyright © 2024 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:	CFP2434U-POD
ISBN (Print-On-Demand):	979-8-3503-4021-1
ISBN (Online):	979-8-3503-4020-4
ISSN:	2374-023X

**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

Deep Learning Classification System for Coconut Maturity Levels Based on Acoustic Signals.....	1
<i>June Anne Caladcad, Eduardo Piedad</i>	
Effects of Sensor Placement in Cancer Imaging with Terahertz Radiation .....	7
<i>Catur Apriono, Herry Tony Andhyka, Fitri Yuli Zulkifli</i>	
In-The-Wild Vibrotactile Sensation: Perceptual Transformation of Vibrations from Smartphones .....	13
<i>Keiko Yamaguchi, Satoshi Takahashi</i>	
Intrusion Detection Using Machine Learning for Security and Privacy in Humanitarian Aid System .....	21
<i>Nurul Amirah Mashudi, Nurul Taqiah Ab Aziz, Wan Fariza Wan Abdul Rahman, Norulhusna Ahmad, Norliza Mohd Noor</i>	
Algorithmic Trading Model for Stock Price Forecasting Integrating Forester with Golden Ratio Strategy.....	27
<i>Niranjana Govindan, Bharathi Baskaran, Azizul Azizan, Fitri Yakub, Inge Dhamanti, C Dhaya</i>	
Deep-Learning and Geometric Mean Optimizer Combined Scheme for Brain MRI Classification .....	33
<i>Swaetha Ramadasan, S. Saranya, K. Vijayakumar, S. Prabha, Pushan Kumar Dutta, Sushil Kumar Singh</i>	
Development of AI Tool for Caries Detection from Dental Radiograph .....	39
<i>Swaetha Ramadasan, T. Manju, K. Vijayakumar, S. Prabha, Pushan Kumar Dutta, Deepak Kumar Verma</i>	
Biomass Fuel Classification from Agricultural Residues Using Machine Learning .....	45
<i>Nikhil Pachauri, Himanshu Gupta, Om Prakash Verma, Sushil Kumar Singh, Deepak Verma, Ravikumar Rn</i>	
Streamlining Academic Document Requests: Leveraging an Online Management System.....	50
<i>Marienel N. Velasco, Resylyn Z. Cabrera, James Benedict M. Palma, Jerwin P. Lalap, Ar Jay C. Del Rosario, Jazz Christine D. Panganiban, James Landon H. Villanueva</i>	
Release the Crack'CNN : Concrete Crack Detection Using Convolutional Neural Networks.....	54
<i>Lejan Daniel I. Perdio, Robert G. De Luna</i>	
Artificial Intelligence to Combat Audio Fraud: A Flask-Deployed Hybrid Deep Learning System.....	60
<i>Shashank Solanki, Ravikumar R N, Tushar Devataval, Jeet Gajera, Sushil Kumar Singh, Himanshu Gupta</i>	
Standardized Sizing Through Machine Learning (SML): Utilizing Decision Tree Algorithm to Classify White Chicken Egg Sizes .....	66
<i>Desiree M. Mendoza, Robert G. De Luna, Ckoleen Faith C. Navarro, Michaella R. Isada, Leonila Tuason, Joanna Marie P. Macadag-Um</i>	
Fuji Apple Quality Analyzer: Predicting Good and Bad Quality of Malus Domestica (Fuji Apple) Using Machine Learning Algorithm.....	72
<i>Robert G. De Luna, Rey Andrew C. Arganosa, Renz F. Famisan, Patricia Marie M. Labampa, Shenielle Kaye T. Mancenon, Heavenly C. Villanueva</i>	
Investigating Generative AI in Higher Education: A Case Study Co-Designed with ChatGPT .....	78
<i>Ravi Varman Selvakumaran, Mimi Suhyoon Lee, Kaan Alkan, Patrick Lee</i>	

Assessing the Performance of Instance Segmentation Algorithms for Indian Roads .....	84
<i>Jerrin Thomas Panachakel, Anusree R., Anusha S. P.</i>	
Renewable Energy 100% University Initiative with Electricity Consumption Analysis.....	90
<i>Yuto Nakamura, Kaya Akagi, Ryohei Egusa, Hiroya Kubo, Takako Hashimoto</i>	
Digital Transformation of a Local Waterworks: A Case Study of Rong Wua Dang Village, Thailand.....	96
<i>Jirapat Promta, Thian Suwannakul, Phurin Prasit, Chinawat Isradisaikul, Thanatip Chankong</i>	
Dissolution of Gold with Dimethyl Sulfoxide: A Scientometric and Systematic Review Analysis .....	102
<i>Nathaniel D. Ferrer, Carlo Angelo Jonathan H. Templa, Brent Myles R. San Pedro, Gernelyn T. Logrosa</i>	
Navigating AI Policy Landscapes: Insights into Human Rights Considerations Across IEEE Regions.....	108
<i>Angel Mary John, Jerrin Thomas Panachakel, Anusha S. P.</i>	
Web Application Integrating Time Series Models for Forecasting Corn Production.....	114
<i>Cedric M. Caquilala, Perlita E. Gasmen, Alex C. Gonzaga, Jethro Gem P. Villoria, Loreniel E. Añonuevo, Vince Jebryl G. Montero, John Riz V. Bagnol</i>	
Enhancing Communication for the Deaf and Hard-Of-Hearing: A Custom Deep Learning Model-Based Approach for Real-Time Sign Language Recognition and Translation .....	119
<i>Angkon Deb, Rudra Roy, Asif Islam, Iftekharul Islam, Arnab Musabbir, Md. Sadman Sadik Rian, Celia Shahnaz</i>	
Leveraging Minimum Relative Entropy and Meta-Heuristic Feature Selection for Enhanced Microarray Gene Data Classification in Diabetes .....	125
<i>Dinesh Chellappan, Harikumar Rajaguru</i>	
Water Level Monitoring System for Sustainable Rice Cultivation Based on Alternative Wetting-And-Drying Technique .....	131
<i>Thanasin Bunnam, Jedsada Arunruerk, Pachara Srimuk, Kridcharid Srikam, Siriphatson Duangsaart, Kanisorn Baochai, Pusit Nitisaropas, Surattana Kakay, Teeraphat Thongchern, Buranon Buncharoen, Sirachat Maisuaydee, Sorawit Srisun, Rataporn Sujitjun, Nittaya Ruensuk</i>	
Machine Learning-Based Assessment of Automated Composting System for Banana Agricultural Waste .....	135
<i>Francis Jacob Aquino, Kristine Te, Raphael Ungab, Vince Jebryl Montero, Michael Calamba</i>	
Smart Walker with Return-To-User Functionality Via Kalman Filter-Based Tracking .....	141
<i>Isaac Asante, Lau Bee Theng, Mark Tee Kit Tsun</i>	
Enhancing Sustainability Through Data Visualization: Clothes Waste Management in Malaysia .....	147
<i>Jasber Kaur Gs, Ahmad Ash-Syafawie Izani, Norisan Abd Karim</i>	
EEG-Based Alzheimer’s Disease Detection Using Deep Learning Techniques.....	153
<i>Ancy S. A., Jerrin Thomas Panachakel</i>	
SeeD: AI-Based Secure Data Exchange Framework for Connected Electric Vehicles.....	159
<i>Karm Dave, Jay Gor, Neel Patel, Rajesh Gupta, Sudeep Tanwar</i>	
Diabetic Retinopathy Detection: An Automatic Modelling Using Artificial Intelligence & Deep Learning .....	165
<i>Muktesh Chandra, Sejal Shah, Samir Mehta, Dhara Jajal, Rohit Thanki</i>	

Efficient Electrode Arrangement for Presenting Phosphenes in Both Upper and Lower Visual Fields.....	169
<i>Manami Kanamaru, Keita Tanaka, Eiji Kamioka</i>	
Robotic Automation System for Indoor Greenhouse Applications.....	175
<i>Josiah Yang Qi, Lai Chean Hung, Hudyjaya Siswoyo Jo, Justin Sia Wei Kiat, Evon Lim Wan Ting, Michelle Dunn</i>	
A Review of Sustainable Farming with Robotics in Indoor Greenhouse Environments.....	180
<i>Josiah Yang Qi, Lai Chean Hung, Hudyjaya Siswoyo Jo, Justin Sia Wei Kiat, Evon Lim Wan Ting, Michelle Dunn</i>	
Key Authentication for Disguised Data Priority Attack in DTN.....	186
<i>Hikaru Kondo, Osamu Mizuno</i>	
A Comprehensive Investigation on Leveraging Generative AI and Large Language Models in the Healthcare Domain.....	192
<i>Rishi Manoj, Nandhini G</i>	
Technoeconomic Feasibility Analysis and Aspen Plus Simulation of the Production of Polyhydroxybutyrate (PHB) Via Chemical Cell Lysis in the Philippines.....	198
<i>Tristan Roy L. Panaligan, Jesuniño R. Aquino, Vanessa C. Buenconsejo, Patricia Sofia G. Capola, Eunice E. Lapitan</i>	
Performance Evaluation of Various Enhancement Algorithm on Thermal Images by Implementation on PYNQ-Z2 Board.....	203
<i>Kr Prabhakar Chaubey, Anshu Saurabh, Basant Kumar, Himanshu Singh</i>	
RNN and PSO Based Evaluation of Weights of Cardiac Affecting Risk Factors.....	209
<i>Kunvar Kant Patel, Silkie Agarwal, Sikandar Chaudhary, Basant Kumar</i>	
Automatic Evaluation of Chest Severity Using Lung Volumetric Parenchymal Infections Semantic Segmented Images from High Resolution Computed Tomography.....	215
<i>Kumar Mohit, Kunvar Kant Patel, Rajeev Gupta, Basant Kumar</i>	
Mapping Accountability in Human-AI Partnerships in Healthcare: Towards a Patient-Centric Approach.....	221
<i>Deepa Austin, Shruchi Singh, Amit Prakash, Vinay Reddy Venumuddala, Swati Ganeshan</i>	
Weight Assessment of Cardiac Risk Factors Using an Efficient Integration of FMFs and ANNs Optimization Technique.....	229
<i>Kunvar Kant Patel, Rajeev Gupta, Basant Kumar</i>	
Determination of Soluble Metals in Water Using RGB Component Analysis and Machine Learning Models.....	235
<i>Jan Fern Historillo, Robert G. De Luna, Menandro M. Merlin, Gerhard P. Tan, Marife A. Rosales</i>	
Towards Proactive Measures and Unbiased Early Detection in Cardiovascular Healthcare.....	241
<i>Samsuddin Zuhairah, Md. Sarkan Haslina, Amir Sjarif Nilam Nur, Mohd Azmi Nurulhuda Firdaus, Chuprat Suriyati, Mohd Rusli Hazlifah</i>	
Sustainability of Water Supply for Orang Asli in Royal Belum State Park: Field Study Insights.....	247
<i>Siti Armiza Mohd Aris, Khairul Hisyam Kamarudin, Robiah Ahmad, Nurul Aini Bani, Nor Fazilah Mohd Hashim</i>	

Multi-Faceted Maximization of a Microgrid-Incorporated Hybrid Photovoltaic-Wind-Battery-Diesel System in Basra, Iraq.....	253
<i>Aqeel Mezher Thajeel Alsultan, Nurul Aini Bani, Mohd Nabil Muhtazaruddin, Firdaus Muhammad-Sukki</i>	
Hydrogen Production Rate of Temperature Controlled Proton Exchange Membrane Electrolyzer .....	259
<i>Usama Hussnain, Nurul Aini Bani, Mohd Nabil Muhtazaruddin, Firdaus Muhammad-Sukki</i>	
Multi-Objective Optimization for Sustainable Production Routing Problem Using NSGA-II Algorithm .....	265
<i>Annisa Kesy Garside, Mohd Nabil Muhtazaruddin, Robiah Ahmad, Nelidya Md Yusoff, Nurul Aini Bani, Eko Pujiyanto</i>	
Smart Happy Device with IoT : For Those Who Suffer Anxiety, Stress, and Depression .....	271
<i>Fitri Yakub, Azizul Azizan, Inge Dhamanti, Ahmad Zahran Md. Khudzari, Niranjana Govindan, Muljono Muljono</i>	
Modeling Hybrid Ocean Thermal Energy Conversion System for Malaysia Landscape .....	277
<i>Mas Omar Mas Rosemal Hakim, Fitri Yakub, Nurdayana Natasha Mohd Johan, Rahayu Tasnin, Muhammad Fikri Zhafran, Mohd Fikri Akmal Mohd Khodzori</i>	
Leveraging Advanced Farm Monitoring Technologies to Achieve Sustainable Agriculture: Aligning with SDG 12, SDG 13, and Malaysia's Strategic Goals .....	283
<i>Noorziza Abdul Aziz, Khairul Zahreen Mohd Arof, Mazlina Mahroji, Muhammad Muizz Mohd Nawawi, Mohd Fitri Mohd Yakub, Muhammad Saqif Talib</i>	
OTEC: The Promising Renewable Energy in Sabah, Malaysia.....	289
<i>Sathiabama T Thirugnana, Ashwinder Kaur Amar Singh, Nur Fathirah Binti Mohd Rahimi, Jannis Langer, Tsutomu Nakaoka, Yasuyuki Ikegami</i>	
Project AgriSage Tech: Federated Learning-Driven Agricultural Innovations for Precision Agriculture.....	297
<i>Rashedul Arefin Ifty</i>	
Visualizing MRI & CT Scans Using Mixed Reality.....	303
<i>Naeema Ziyad, Salih Yoosaf, Navaneeth Prabha, Navaneeth V Nair</i>	
Comprehensive IoT-Based Water Management System: Cloud Integration for Residential Conservation.....	309
<i>Mohamad Syafiq Asyraf Bharudin, Ahmad Anwar Zainuddin, Aliah Maisarah Roslee, Nur Alya Aqilah Razak, Muhamad Hazrin Fahmi Abd Halim, Nik Nor Muhammad Saifudin</i>	
EduFrenzy: A One-Stop Learning Platform .....	315
<i>Mehul Sharma, Shruti Sivakumar, Aishwary Singh, Prashant R Nair</i>	
Development of Pneumatic-Based Exoskeleton System for Ankle Dorsiflexion and Plantarflexion.....	321
<i>Jun Han Lee, Yan Xing Tan, Chi Heim Wong, Chun Yeh Cheah, Yu Zheng Chong, Choon-Hian Goh</i>	

## **Author Index**