

# **2024 5th International Conference in Electronic Engineering, Information Technology & Education (EEITE 2024)**

**Chania, Greece  
29-31 May 2024**



**IEEE Catalog Number: CFP24UU3-POD  
ISBN: 979-8-3503-7288-5**

**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:	CFP24UU3-POD
ISBN (Print-On-Demand):	979-8-3503-7288-5
ISBN (Online):	979-8-3503-7287-8

**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

## Contents

EEITE'2024

### Microwave, Millimeter wave and Terahertz Communications Photonics & Optical Communications

- A Dual Band Graphene based Concentric Octagon Ring Resonator for Terahertz Sensing ..... 1  
Shruti, School of Electronics Engineering, KIIT University
- Evaluating the Performance of a MIMO Channel Under Tree Shadowing for Low-Altitude UAVs ..... 7  
Konstantinos Psychogios, School of Electrical and Computer Engineering, National Technical University of Athens
- Research of mathematical model of microwave drying of wet wool ..... 12  
Stanislav Kosulin, Department of Oncology Radiotherapy, Oncosurgery and Palliative Care Kharkiv National Medical University
- Exploring Nanorobotics Integration with Microwave and Millimeter-Wave Techniques for Advanced On-wafer Measurement..... 19  
Kamel Haddadi, Univ. Lille, CNRS, Centrale Lille, Univ. Polytechnique, Institut d'Electronique de Microélectronique et de Nanotechnologie

### Cybersecurity

- Enhancing Industry 4.0 Cybersecurity Training through Cyber Range Platform ..... 25  
Spyros Panagiotakis, Department of Electrical and Computer Engineering (ECE), Hellenic Mediterranean University
- Cybersecurity as a Contributor to United Nations SDGs towards enhancing the ESG Reporting ..... 31  
Georgia Dede, Harokopio University, Athens, Greece
- Footprint of Semantics in ICT ..... 37  
Athanasios Ritas, Dept of Electronic Engineering, Hellenic Mediterranean University
- An Authenticated Method for a Secure Changing Password ..... 43  
Giorgos Papadourakis, ECE, Hellenic Mediterranean University

### Healthcare

- Exploring Machine Learning Algorithms for Infection Detection Using GC-IMS Data: A Preliminary Study ..... 49  
Georgios Th. Papadopoulos, Dept. of Informatics and Telematics, Harokopio University of Athens
- ONCO-AICO: An AI-based Educational Tool for Polyp Detection from Colonoscopy..... 56  
Iskander Bensenousi, AINIGMA Technologies
- Sarcopenia detection with portable ultrasound ..... 58

Christos Chatzichristos, AINIGMA Technologies, STADIUS, KU Leuven

## Modern Biometric Technologies for Secure Authentication and Identity Verification

Informative (Dis)information: Exploring the Correlation Between Social Media Disinformation Campaigns and Real-World Criminal Activity ..... 60

Spyros Evangelatos, Research & Innovation Development Department, Netcompany-Intrasoft S.A, Dept. of Electronic Engineering, Hellenic Mediterranean University

Seamless Identity Verification at Water and Land Borders..... 66

Niklas Palaghias, Quadible London

Illicit object detection in X-ray images using Vision Transformers ..... 72

Georgios Th. Papadopoulos, Department of Informatics and Telematics, Harokopio University of Athens

Biometrics Data Space: Ensuring Trustworthy and Secure Data Exchange for Suspect Identification ..... 78

Katerina Kyriakou, Department of Electrical and Computer Engineering, University of Thessaly, CERTH, The Centre for Research & Technology

Large Language Models in Modern Forensic Investigations: Harnessing the Power of Generative Artificial Intelligence in Crime Resolution and Suspect Identification ..... 84

Eleni Veroni, Research & Innovation Development Department, Netcompany-Intrasoft S.A & Department of Electronics Engineering, Hellenic Mediterranean University

Enhancing Secure Cross-Border Collaboration among Law Enforcement Agencies for Facial Biometric Search ..... 89

Asterios Leonidis, Institute of Computer Science, Foundation for Research and Technology - Hellas

## Opportunities and Obstacles of Artificial Intelligence for Education

Integrals Applications: a STEAM activity to teach/learn Mathematics in higher education..... 95

Deolinda Rasteiro, ISEC, Polytechnic University of Coimbra

Pedagogical innovation in higher education using an active learning methodology to increase the effectiveness of geometry learning for engineering students ..... 100

Cristina M.R. Caridade, ISEC, CERNAS, CICGE, DGAOT, FCUP, SUScita, Polytechnic of Coimbra  
Exploring HEIs Students' Perceptions of Artificial Intelligence on their Learning Process ..... 107

*Jorge Mendonça, ISEP & SIIS Polytechnic of Porto*

Secret code: a STEAM project to teach mathematics in higher education..... 112

Cristina M.R. Caridade, ISEC, CERNAS, CICGE, DGAOT, FCUP, SUScita, Polytechnic of Coimbra

Problem-Solving Through Pair-Programming: The Mediatonal Role of ChatGPT ..... 118

SELİN URHAN, Mathematics and Science Education Hacettepe University Ankara

HEIs teachers' and students' current experience of AI introduction in teaching and learning 128

Jorge Mendonça, ISEP & SIIS, Polytechnic of Porto

#### POSTER SESSION - 01

Performance comparison of organic transistors with different poly (3-hexyl thiophene) solvents..... 132

Ioannis Marinakis, Department of Electronic Engineering, Hellenic Mediterranean University  
Eco-design applied to FDM 3D Printing Technology ..... 136

Roberto Fernandez Martinez, Department of Electrical Engineering School of Engineering,  
University of the Basque Country

Synthesis and analysis of a novel parameterized morphing, honeycomb cellular cell propulsion actuation system of an AUV ..... 142

George Volanis, Department of Electronic Engineering, Hellenic Mediterranean University  
Cobalt Catalyst Hysteresis Loop Simulations: The Impact of Nanoparticle Number and Nearest Neighbor Distance ..... 146

Anargyros Baklezos, Department of Electronic Engineering Hellenic Mediterranean University  
RF Energy Harvesting from Ambient AM Radio Broadcasting Signals for Low-Power Applications ..... 155

Manolis Tampouratzis, ECE, Hellenic Mediterranean University  
The Future of Privacy: A Review on AI's Role in Shaping Data Security..... 159

Marios Vardalachakis, ECE, Hellenic Mediterranean University

#### New Technologies in Electronics

(Functional Materials, Additive Manufacturing & 3D Printing, Internet of Things)

Enhancing 3D Printing Materials with Biochar: A Literature Review ..... 167

Nikolaos Bolanakis, Dept. of Electronic Engineering, Hellenic Mediterranean University  
e-Invoicing Provider Services in Greece: New Perspectives and Weaknesses..... 175

Panagiotis Mavridis, Department of Electronic Engineering, Hellenic Mediterranean University  
Segment Anything Model for Scan-to-Structural Analysis in Cultural Heritage..... 179

Dimitrios Galanakis, Department of Electronic Engineering, Hellenic Mediterranean University

Gesture Recognition on Textile-Based Pressure Sensor Array..... 186

Ilknur Celik, Istanbul Technical University Computer Engineering

Conventional versus Reinforced Additive Manufacturing in Unmanned Aerial Vehicle Design	191
Denis Kotarski, Faculty of Mech. Eng. and Naval Arch. University of Zagreb	
Leveraging Industrial IoT Infrastructure for Remote Sensing and Edge Computing in the Mining Sector.....	196
Emmanouil Eleftherios Rompogiannakis, Electrical and Computer Engineering Hellenic Mediterranean University	
A Methodology for Applying Decision Policies Into Smart Buildings With the Use of Computational Argumentation and IoT Technologies .....	202
Nikolaos Spanoudakis, Senior Member IEEE Applied Mathematics and Computers Laboratory Technical University of Crete	
INNOVATION APPROACHES IN CAD SYSTEMS TRAINING PROGRAM.....	210
Volodymyr Hutsaylyuk, Faculty of Engineering Helena Chodkowska University of Technology and Economics	
K-12 Agile Learning with Educational Software and Robotics Technology .....	214
Antonios Konstantaras, Department of Electronic Engineering Hellenic Mediterranean University	
The Odysseus Journey Role-Playing Game: Adventures of Rhapsody A .....	219
Ilias Logothetis, Electrical and Computer Engineering Hellenic Mediterranean University	
Simulation software for heat and power cogeneration (CHP) using green hydrogen .....	226
Marios Nikologiannis, Institute of Energy, Environment and Climate Change, Hellenic Mediterranean University	
Design of Virtual Vehicle System with Mechanical Steering Response .....	232
Denis Kotarski, Department of Mech. Eng., Karlovac University of Applied Sciences	
Perceptions of International Students in a Higher Education Institute in Sweden.....	237
Saleh Javadi, Department of Mathematics and Natural Sciences, Blekinge Institute of Technology	
Artificial Intelligence & Applications	
A Naive Bayes Classifier for Fault Detection and Classification Using Dimension Reduction Technique .....	242
Nasar Aldian Ambark Shashoa, Department of Electrical and Computer Engineering, Libyan Academy for Postgraduate Studies	
Fine-Grained Prosody Transfer Text-To-Speech Synthesis With Transformer.....	247
Mohamed HAMED, Signals, Images, and Information Technology Research Laboratory Electrical Department, National Engineering School of Tunisia	
THE SELECTIVELY INTEGRATED RETURNS INTELLIGENT OPTIMISATION SYSTEM – SEIRIOS .....	254
Nikolaos Loukeris, Dept. Business Administration, University of West Attica	

## POSTER SESSION - 02

Designing plantar orthoses via FEM: Model generation and multimaterial insole testing.....	259
Roberto Fernandez Martinez, Department of Electrical Engineering, School of Engineering, University of the Basque Country	
A Tethered Unmanned Aircraft System for crowd dynamics and Unusual Pattern Extraction	264
Evangelos Maltezos, Institute of Communication & Computer Systems	
Integration of 3D Printed Heating Systems and Pressure Sensors into Smart Shoes .....	270
Roberto Fernandez Martinez, Department of Electrical Engineering, School of Engineering, University of the Basque Country	
Thermal anomalies related to the devastating Mw7 earthquake of Samos – Izmir (October 30, 2020) using long-term satellite images analysis.....	274
Sofia Peleli, Institute of Physics of the Earth's Interior & Geohazards, UNESCO Chair on Solid Earth Physics and Geohazards Risk Reduction, Hellenic Mediterranean University Research & Innovation Center, Department of Electronic Engineering, Hellenic Mediterranean University	
CircuitLib: A Case Study of Spin-Off e-Business in Embedded and Electronic Systems Development .....	279
Manolis Tampouratzis, ECE, Hellenic Mediterranean University	
Incorporation of Nanodroplets into Semiconducting Polymer Layers to Improve the Performance of Organic Electrolyte-Gated Transistors .....	284
Ioannis Marinakis, Department of Electronic Engineering, Hellenic Mediterranean University	
Bias Detection and Correction Methods for Machine Learning Algorithms .....	290
Genny Dimitrakopoulou, Center for Security Studies Athens	