

2024 11th International Conference on Electrical and Electronics Engineering (ICEEE 2024)

**Marmaris, Turkiye
22-24 April 2024**



**IEEE Catalog Number: CFP24M39-POD
ISBN: 979-8-3503-6255-8**

**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:	CFP24M39-POD
ISBN (Print-On-Demand):	979-8-3503-6255-8
ISBN (Online):	979-8-3503-6254-1
ISSN:	2694-3654

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

2024 11th International Conference on Electrical and Electronics Engineering (ICEEE 2024)

Table of Contents

Preface	xi
Conference Committees.....	xii

Chapter I: Electronic Components and Equipment Development

Design and Simulation of Critical Conduction Mode Boost PFC Circuit	1
<i>Ramazan Önder Yaşar, Uğur Emre Doğru, Selin Haznedaroğlu Özen, Erdem Akboy</i>	
Machine Learning for NMR Comagnetometer Gyroscopes	7
<i>Murat Salim Karabinaoğlu, Berfin Muhlis Caklı, Mehmet Hüseyin Sevim, Bekir Çakır, Enes Günay</i>	
Design Improvements with Temperature-Rise Tests and Analysis in Disconnectors	12
<i>Akanda Ozbek, Orkun Kılıç, Ahmet Ocak, Hıdır Duzkaya, Suleyman Sungur Tezcan</i>	
Analysis and Design of Differential Phase Shifter Based on Ferrite Loaded Rectangular Waveguide.....	16
<i>Cengizhan ŞAHİN, Serkan ŞİMŞEK</i>	
Lock-up Clutch Adaptation for Automatic Transmissions	21
<i>Burak Ardic, Mirsad Bucak</i>	

Chapter II: Advanced Sensors and Sensor Technology

Hyperspectral Unmixing Using Nonconvex Shrinkage and Total Variation.....	27
<i>Taner Ince, Tugcan Dundar</i>	
Development of a Split Ring Resonator Sensor for Vibration Detection	32
<i>Elif Buse Zengin, Diaa E. Fawzy, A.M.M.A Allam, Osman Nuri Şahin</i>	
3D Printing of Electrically Conductive Carbon-Based Composites for Flexible Strain Sensing Applications.....	38
<i>Meshari Alsharari, Khaled Aliqab</i>	
Investigation of Capacitive-based Dust Sensor with Nanowires Sensing Layer	42
<i>Abdullah Abdulhameed, Yaqub Mahnashi, Muneer A. Al-Absi, Qasem Drmosh</i>	

Chapter III: Modern Electronic Systems and Control Technology

Design of the Digital Control Block of an Analog Beamformer Suitable for Ultrasound Applications	47
<i>Emre Altuner, Mustafa Berke Yelten</i>	
Nonlinear Model Predictive Control for Enhanced Trajectory Tracking with Multi-Obstacle Avoidance	52
<i>Nural Mammadov, Sabri Yilmaz, Önder Horoz, Atalay Uçkun</i>	
Extended Kalman Filter Based Nonlinear Probabilistic Model Predictive Control of an Autonomous Motorcycle.....	57
<i>Nurettin Çerçi, Yaprak Yalçın</i>	
Robust Controller Design for Longitudinal and Lateral Model of High-Performance Fixed-Wing UAVs	62
<i>Burak Isci, Levent Ucun</i>	
Developing a multifunctional electronic control board and customizing it for the irrigation of large area surfaces.....	68
<i>Mesut BUDAK, Mehmet MİLLİ</i>	
Development of Plastic Melter with Automated Conveying System and Temperature Control	72
<i>Aldrin S. Fernando, Joenilo A. Duran, Sheila May L Escobar, Jovel V. Young</i>	
Design of a USB based Interface Adapter for The Verification of MIL-STD-1553 Compliant Avionic Systems	78
<i>Funda Çınar, İhsan Çiçek</i>	
A Webbed Foot Design of Amphibious Quadruped Robot to Adapt Coastal Environment in Simulation	83
<i>Junyu Wang, Zetong Meng, Yihang Peng</i>	

Chapter IV: New motor Control and Modeling

Control Strategy for Virtual Synchronous Generator Based on Y-Z Source Inverter in Islanded Grids.....	89
<i>Shirin Besati, Ali Mosallanejad, Madhav Manjrekar</i>	
The Enhancement of Power System Stability Using Virtual Synchronous Generator	95
<i>Basel Taha Alkhamis, Abdullah Al-Odienat</i>	
Optimizing Control of Railway Traction Motor Performance with a Hardware-in-the-Loop Method	101
<i>Musa Ergen, Engin Afacan</i>	
Modeling of a DC Motor and Position Angle Control Using Optimized PID Controller	107
<i>Mehmet Karahan</i>	
A 25-34 GHz Power Amplifier Based on Differential Layout in 40 nm CMOS.....	111
<i>Jiani Tang, Zhiqun Li</i>	
A Virtual Machine Management Platform in Computer Science Education.....	116
<i>Bianca Alexandra Grama, Ciprian Oprisa</i>	

Chapter V: Intelligent Electrical Equipment Control and Stability Analysis

Development of High-voltage Short-pulse Signal Generator for Ultrasonic Transducer Excitation.....	122
<i>Omar Alkhateeb, Abdullah Abdulhameed, Yaqub Mahnashi</i>	
An Overview of Wireless Avionics Intra-Aircraft Communications: Latency and Reliability	127
<i>Berна Eraslan</i>	
Back-to-back MMC converter for railway application using averaged submodules model.....	135
<i>Tournoux Kevin, Houari Azeddine, Benkhoris Mohamed Fouad, Terrien Franck</i>	
Determination of Transformer Operating Condition with Different Classifiers.....	141
<i>Merve Demirci, Mustafa Saka, Haluk Gozde, Nurmammad Mammadov, Mahir Dursun, M. Cengiz Taplamacioglu</i>	
A Path Tracking and Collision Prevention Control System for an Electric Vehicle with Trajectories Generated by Bezier Curves	146
<i>Berke Salim Oldaç, Elvan Emre Özdemir, Furkan Kosova</i>	
Wavelet-Based Multiresolution FOPI ² D ^μ Controller for Automatic Generation Control	152
<i>Ali Younis Al Dahhan, Reem Al Najjar, Ahmed H. Osman</i>	
Novel Non-Linear Optimized Control Techniques for Conversion of Hybrid Renewable Energy	158
<i>Khursheed Sabeel, Geetika Aggarwal, Usama Ali</i>	
Sine-Cosine Algorithm (SCA) Optimized PI-Controller for Modular Multi-Level Converter Based HVDC System...	165
<i>Hidayet Yakupoğlu, Haluk Gözde, M. Cengiz Taplamacıoğlu, Mahir Dursun</i>	

Chapter VI: Modern Power Electronics and Transmission Technology

Optimal Distributed Generation Location to Reduce Energy Losses	172
<i>Brenda Camacho, Juan Lata-García, Wellington Maliza, Kristy Vera Onofre</i>	
System of System Architecture for Cybersecurity of Power Systems Operations	178
<i>Ehab Ur Rahman, Lirim Ashiku, Cihan Dagli, Rui Bo</i>	
Self-Adaptation Strainer Block Detection for Heating Ventilation and Air Conditioning System of Urban Metro Transportation.....	184
<i>Fan Zhang, Hongtao Ni, Yucheng Huang</i>	
Power and Temperature Investigation for High-Resolution Atomic Spectroscopy.....	189
<i>Berfin Muhlis Caklı, Murat Salim Karabinaoğlu, Mehmet Hüseyin Sevim, Demet Aktaş, Enes Günay</i>	
Design and Prototype Production of an Axial Displacement Measurement System by Using LVDT for Propeller Shaft Development Process.....	195
<i>Oğuzhan Aldemir, Sedat Tarakçı, Efe Işık</i>	

Non-invasive and Cost-effective Monitoring of Street Lighting Photometric Performance	200
<i>Esrat Khan, Leen Ba 'ba', Ruqaia Alshatri, Saba Parvez, Abdalla Gad, Mohamed Jama</i>	
Analysis Of The Comfort Of Modern Buildings Considering Energy Conservation	205
<i>Nurmammad Mammadov, Gulnar Feyziyeva, Samira Akbarova, Israfil Mammadov</i>	

Chapter VII: Reliability Analysis and Safety Management in Distribution Network Systems

Optimal Planning of Integrating Distributed Generations in Unbalanced Distribution Network by Using Particle Swarm Optimization	209
<i>Kitipong Chumwong, Suttichai Premrudeepreechacharn</i>	
Optimizing Power Distribution Network Reliability: A Comparative Analysis of Strategic Modifications.....	215
<i>Turan Can MEMIS, Recep YUMURTACI</i>	
Adaptive Dynamic Tariff Factor for Distribution Network Congestion Mitigation.....	221
<i>Pawarit Boontagool, Paramet Wirasanti</i>	
An Islanded DC Microgrid Blueprint for Residential Applications	226
<i>Rinki Maurya, Dashrath Nishad, Ankit Srivastava, Chandravilash Rai, Surya Prakash, Ashutosh Kumar Singh</i>	
A Survey of Recent Optimization Techniques in Power Distribution Network Reconfiguration	232
<i>Nour Ibrahim Alrifae, Mohamed Abdi Jama</i>	
A Predictive Maintenance Approach for Non-Effectively Earthed Radial Distribution Networks	239
<i>Mert Bekir Atsever, Umur Deveci, Seyit Cem Yilmaz, Umur Ugurlu, Mehmet Hakan Hocaoglu</i>	

Chapter VIII: Battery Model and Health Status Monitoring

Optimizing Fuzzy Logic Controller-based Energy Management Systems for FCEVs via Genetic Algorithm and Big Bang-Big Crunch.....	244
<i>Saleh Msaddi, Sabri Yilmaz</i>	
Dynamic Modelling of a 2-kW Solid Oxide Fuel Cell System	249
<i>Burak Sarıçay, Emir Oğuz, Mehmet Kılıç</i>	
Impact of Charging Speed on Electric Vehicle Battery Life	254
<i>Khursheed Sabeel, Geetika Aggarwal, Mahdy Eslamy, Rani, Rajesh Kumar M, Arshida Paramel</i>	
A Comparative Study on Energy Management Problem of a Fuel Cell Hybrid Electric Vehicle Using Genetic Algorithm and Big-Bang Big-Crunch Algorithm.....	260
<i>Sabri Yilmaz, Ali Kerem Yalçın, Hadiye Cansu Emron, Metehan Vural</i>	

Investigation of the Effect of Pre-Heating on Performance Enhancement of Li-ion Batteries in Aviation Applications	265
--	-----

Umut Baran Ekinci, Derya Ahmet Kocabas

Energy Management Strategy of Fuel Cell Hybrid Electric Vehicle with Deep Reinforcement Learning	270
--	-----

Tuna Bilgin, Saykut Izgi, Ali Kerem Yalçın, Sabri Yilmaz

Chapter IX: Electronic and Communication Engineering

Artificial Neural Network and its Benefit in Modeling and Efficient Yield Analysis of Antennas	275
--	-----

Lida Kouhalvandi, Ladislau Matekovits, Serdar Ozoguz

Developement of 4-Ports MIMO CP Antennas for Radar Applications.....	279
--	-----

Ahmed Said, A.M.M.A Allam, Diaa E. Fawzy, Osman Nuri Şahin

Rate Regions of Two-Way Wireless Communication with Wireless Power Transfer under Different Factors	285
---	-----

Rami Zaino, Teong-Chee Chuah, Mohamed S. Hassan

Design and Implementation of an Antenna for Automotive Applications at 76.5 GHz	290
---	-----

Moustafa S.A. Mohamed, Galal Esam, A.M.M.A Allam, Wassim Alexan, Diaa E. Fawzy, Osman Nuri Şahin

Liquid Crystal Polymer Bandpass Filter with UWB Performance Using Cascaded approach.....	296
--	-----

Khaled Aliqab, Meshari Alsharari

Design and Analysis of Highly Efficient Microwave Absorber for 5G Applications	300
--	-----

Ufuk TÜRKTEM, Bilal TÜTÜNCÜ

Design of a 3-dB Directional Coupler in S-Band Using Symmetric Coupled-Lines.....	305
---	-----

Cem Çindaş, Serkan Şimşek

CRISP – DM Process in Smart Building Management	310
---	-----

Mahir Dursun, Moldir Sabyrzhan

Chapter X: Solar Power Generation and Utilization

Analysis of Fixed and Single-Axis Tracking Systems in Solar Power Plants: A Case Study for Kırıkkale Province in Turkey.....	316
--	-----

Beyza Yıldırım, Hidir Duzkaya

Comparative Design Analysis of a 1 MW Islanded and Non-Islanded Floating Solar Power System at Mangla Hydro Reservoir.....	321
--	-----

Arshida Paramel, Geetika Aggarwal, Khursheed Sabeel, Huda Dawood

PV-Based Electricity Production and Storage in Marine Vehicles.....	327
---	-----

Batuhan TURAL, Enes KOCA, Zuleyha OK DAVARCI, Onur AKAR

Chapter XI: Future Communication Systems and Network Security

A Survey on UAV-Assisted Wireless Communications: Challenges, Technologies, and Application.....	333
<i>Sara A. Owaid, Abbas H. Miry, Tariq M. Salman</i>	
A New Routing Algorithm Based on an Efficient Cluster-Head Selection	341
<i>Layla AZIZ, Charafeddine AIT Zaouit, Mohamed EL GHAZOUANI, Samira ACHKI, Abdelali EL GOURARI</i>	
Power Optimization of LCRC for A Custom PCI Express 6.0 IP Core	346
<i>Muhammed Mustafa Öney, İhsan Çiçek, Hasan Erdem Yantır</i>	
Performance Evaluation of Palestinian Mobile Networks Based on Crowdsourcing Measurements	351
<i>Safa Nassereldin, Rami Sawalmeh, Mohammad Barakat, Nadeen Shanan, Ali Jamoos</i>	
Wireless Body Area Network Authentication using Lightweight Security Protocol.....	356
<i>Mudarimeen Munlin, Watanyou Yodthong, Chaitat Tarasombat</i>	
IMMA Performance in Uplink UAV Communications over Rician Channels	361
<i>Nagla Abuzgaiia, Abdelhamid Younis, Raed Mesleh</i>	
GNU Radio-Based SSK MIMO System: From Concept to Reality	366
<i>Raed Mesleh, Omar Hiari, Ayat Alolimat, Mustafa Shawaqfeh</i>	
Fog Computing Service Placement Orchestrator.....	371
<i>Nerijus Šatkauškas, Algimantas Venčkauskas, Nerijus Morkevičius</i>	
A Study on Tennis Ball Ground Impact Point Detection.....	377
<i>Onur Sarialioğlu, İbrahim Cem Balci, İrem Sayın, Buse Çiçek, Nika Kakulia, Serkan Saltürk, Hüseyin Üvet</i>	
TOA localization algorithm based on least squares method and LM algorithm neural network.....	382
<i>Ruihan Xu, Keyi Xu, Xingqi Zhu, Jiale Gu, Bingheng Cai</i>	
Enhanced Millimeter-Wave Communication and Radar Systems in Autonomous Vehicles	389
<i>Yutong Tang, Ziyun Zhang, Jiale Tian, Chen Chen, Motong Li</i>	
Enhancing Malware Detection with Firefly and Grey Wolf Optimization Algorithms.....	394
<i>Ahmad Adel Abu-Shareha, Mosleh M. Abualhaj, Ali AL-ALLAWEE, Alhamza Munther, Mohammed Anbar</i>	
Distributed Connected Dominating Set Based Algorithm For Mobile Ad-Hoc Networks.....	399
<i>Aziz Can Yılmaz, Çağatay Berke Erdaş</i>	
Enhancing Intrusion Detection Systems: A Comparative Study using Whale Optimization Algorithm and Hawks Optimization Algorithm.....	404
<i>Mosleh M. Abualhaj, Sumaya N. Al-Khatib, Ali AL-ALLAWEE, Alhamza Munther, Mohammed Anbar</i>	

Chapter XII: Digital Signal Detection, Estimation and Analysis

Joint Angle Estimation in Beam-Space Based on the Information of Range-sum for Bistatic MIMO Radar.....	410
<i>Ben Niu, Yongbo Zhao</i>	
Sparse Recovery Using SL0 Algorithm by Dictionary Optimization and Application to ISAR Imaging with Low SNR	416
<i>Kun Liu, Jing Yang, Xin Wang, Jiabin Qi, Qingqing Liu, Li Wang, Yong Luo</i>	
Realistic Sonar Image Generation with Rendering Method for Underwater Object Detection.....	421
<i>Mertcan ERCAN, Mehmet ÇİYDEM</i>	
Degradation Detection on Voice over Internet Protocol (VoIP) Calls using Deep Learning Techniques.....	426
<i>Hasan Kilimci, H. Hakan Kilinc, Zeynep Hilal Kilimci</i>	
Utilization of a Shooting and Bouncing Ray Method to Estimate the VOR Systems Bearing Error	434
<i>Sumeyye TAŞKAN KOLAT, Uğur SAYNAK, Hüseyin Arda ÜLKÜ</i>	
Performance Comparison Between Transform-based Deep Learning Approaches for ECG Signal Classification	439
<i>Ebrahim Alboghaish, Alaa Eleyan, Gulden Eleyan</i>	
MCP Joints Estimation using EMG Signals and Elastic-Net Regression Approach.....	444
<i>Rami Alazrai, Rua'a Alqaisi, Mohammad I. Daoud, Mostafa Z. Ali, Baha'A. Alsaify</i>	
Heart Rate-Based Prediction of Daily Activity Levels Using Wearable Devices for Home Rehabilitation Process of Cardiac Patients	449
<i>Sahika Betul Yayli, Yasemin Yetimova, Isil Ozkan, Ibrahim Cem Balci, Irem Sayin, Serkan Salturk, Ipek Aydin, Abdullah Omer Ebeoglu, Hasan Ali Barman, Huseyin Uvet</i>	
Extraction of Fetal Electrocardiogram Utilizing BiLSTM Combined with FastICA	454
<i>Yongfeng Li, Yi Li, Runjie Liu</i>	
Exploiting Flexible Memristor based on Carbon Quantum Dots for Neuromorphic Computing.....	459
<i>Tianqi Yu, Zhiwei Zhao</i>	

Chapter XIII: Data Analysis, Intelligent Algorithms and Computational Models in Computer and Information Systems

Bayesian Network Model for Cardiovascular Diseases Diagnosis.....	464
<i>Abdelaziz Daoudi, Saïd Mahmoudi</i>	
An Enhanced Recommendation Approach for Efficient Requirements Elicitation.....	468
<i>Qusai Y. Shambour, Nazem N. Qandeel, Hatem A. Shlool</i>	

Exploring the Dynamics of Cryptocurrency Donations by Blockchain Data Analysis	474
<i>Ye Liu, Paul Ezhilchelvan</i>	
Comparing player rating awarding systems: Evaluating performance metrics in soccer	484
<i>Dan Toderici, Sergiu-Rareş Lupşa, Camelia Lemnaru</i>	
On the Performance of A.I-Based Cyber Incident Notification System (AICINS)	490
<i>Bulut Karadag, Ali Esenkaya, Ismail Fırat Celik, İsmet Koroglu, Mustafa Kaya, Aslıhan Candır</i>	
Federated Learning for Privacy Preserving Abnormal Tooth Detection	496
<i>Ülkü Tuncer Küçüktaş, Fatih Uysal, Fırat Hardalaç</i>	
A Robust Genetic Based Constraint Scheduling Algorithm to Promote On-Demand Cloud Services	504
<i>Ismail Hababeh, Mohammad I. Daoud, Medya Omar</i>	
Deep Learning-based Decision Prediction in Turkish Legal Texts	511
<i>Seher Solmaz, Mahir Dursun</i>	
Detecting Abnormal Record in Automotive Maintenance Data Based on Deep Sparse Auto-encoder	517
<i>Fanghua Chen, Gang Zhou, Xin Geng, Jinrui Zhang</i>	
A Multi-objective Particle Swarm Optimization Algorithm for Drone Path Planning in Forest Firefighting.....	523
<i>Ruihua Xu, Yiming Xia, Peidong Chen</i>	
An emulator of the sea surface temperature	528
<i>Kangwen Lin, Jialin Tang, Qingxuan Xu, Mingguang Lin</i>	

Author Index