2024 IEEE 4th International Maghreb Meeting of the **Conference on Sciences and Techniques of Automatic Control** and Computer Engineering (MI-STA 2024)

Tripoli, Libya 19-21 May 2024



**IEEE Catalog Number: CFP24AC0-POD** 

979-8-3503-7264-9

**ISBN**:

## 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:
 CFP24AC0-POD

 ISBN (Print-On-Demand):
 979-8-3503-7264-9

 ISBN (Online):
 979-8-3503-7263-2

## **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**

Paper ID	Title	Page
66	The Correlation Between Architecture Smells, Package Stability and Reusability: A Case Study	1
74	Cyber Risk Management of Third-Party Relationships: The need for An Assessment Guidelines to Regulate Private Sectors in Libya	7
77	A Framework for improving software development process hybridization of extreme programming, feature - driven development and waterfall	13
80	Digital Image Encryption Based on Elliptic Curve Cryptography	20
81	Automatic Generation of Epsilon (Eps) value for DBSCAN Using Genetic Algorithms	26
89	Choosing The Right Automated Software Testing Tool	31
111	Development of a decentralized application for managing food supply chain based on blockchain	36
131	Decentralized Hotel Reservations: Blockchain Integration for Incentivized Data Sharing and Smart Contracts	41
135	Adoption of Blockchain Technology in the Packaged Beverage Supply Chain	46
136	Blockchain and IoT Technology Adoption Model for Improved Elderly Health Monitoring	51
141	An Enhanced Software Maintenance Approach Based on World-Class Manufacturing Standard	56
148	The Impact of Social Media on Bipolar Disorder Patients	62
182	A holistic approach for Cyber Security Vulnerability Assessment Based on Open Source Tools: Nikto, Acunitx, ZAP, Nessus and Enhanced with AI-Powered Tool ImmuniWe	68
185	Iron Deficiency Diagnosis Using Combined FMM- based Features and SVM on Lemon Leaf Images	76
197	Technology Learning Attitudes in a Libyan Technical Higher Institute: Technology Acceptance Model	82
202	The Impact of Trust, Perceived Credibility, and Perceived Self-Efficacy on The Acceptance of Mobile Banking in Libya	89
208	A Comparative Study of MPLS Layer 2 and Layer 3 VPNs	95
219	Securing Democracy: Implementing a Blockchain-Based E-Voting System in Libya	101

223	Assessing the Readiness of Implementing Strategic Information Systems in Libyan Universities	107
227	The Quality of e-Banking Services and their Role in Achieving Customer Loyalty: A Case Study	112
230	An Automatic Approach for Transforming Relational Databases into OWL Ontologies	118
238	Wireless Sensor Network Hop Count Theory Modeling and Deep Learning Prediction	124
273	Evaluating the Extent of Application of Software Engineering Concepts in Graduation Projects: A Case Study	130
36	Dynamics and Optimal Control of Quadcopter	136
37	Model Predictive Control for Optimizes Battery Charging Process	142
43	Enhancing Lateral Control of Autonomous Vehicles through Adaptive Model Predictive Control	148
51	Comparing Performance of Ultrasonic type and Magnetic Type Flowmeters for Desalination Applications	156
87	Dominance of Neural Networks in Additive Manufacturing Surface Roughness Control	164
91	Enhanced On–Off Control for Wind Energy Conversion System Electromagnetic Torque Ripple Minimization based on Whale Optimization Algorithm	170
121	Comparative Evaluation of PID Controller Tuning through Conventional and Genetic Algorithm	176
124	Control of CSTR Using Active Disturbance Rejection Control and Model Predictive Control	182
146	Effect of VGPN on Missile GNC System Performance	188
165	Sliding-Mode Controller for Collective Transport using Decentralized Multi-Robot Systems	194
167	LQR Control for Pendulum on a Cart Beam System	200
211	Nonlinear Control design for Quadrotor System	206
271	An Upgraded Back-stepping DC-Link Voltage Controller for On-Grid Photovoltaic Systems	214
277	Robustness Analysis of a Class of MPC Tuning Strategy	220
280	Singularity Configurations Investigation of FANUC LR MATE 200ID arm Manipulator	227
294	Modelling and Control of Sphere and Cylinder System	233

297	IoT based system for greenhouses remote monitoring and climate control	239
31	Control Technique of MPPT Utilizing for Boost Converter Applied to Small Renewable Energy System and a DC Microgrid for Remote Area	245
54	Experimental Investigation on The Performance of Solar Cooker (Medium Size) Under Derna City Climate Conditions	251
71	The Influence of Abrupt Symmetrical Voltage Sag on the Characteristics of Doubly Fed Induction Generator-Based Wind Turbine	257
72	Rooftop Solar PV System in Libya	262
98	Design and Implement a PC-Based SCADA Education System, Part I: Power System Frequency Control and Governor Response	267
100	Comprehensive Review and Applications of Solid-State Transformer for Optimal Energy Integration	273
147	An Investigation into the Impact of Symmetrical Voltage Sag on the Performance of Three Phase Induction Motors-Based Simulation	279
152	Assessing Random Power Flow for Vehicle-to-Grid Operation based on Monte Carlo Simulation	285
155	Optimal Sizing of Hybrid Renewable System for Residential Appliances	290
157	Simulating Photovoltaic Emulator Systems for Renewable Energy Analysis	296
190	THD Mitigation in Parallel Voltage Source Converters Through Fuzzy Logic Control and SVPWM Technique	300
198	Practical Evaluation of Overcurrent Protective Relay Performance in Power Distribution System	306
218	Exploring the Feasibility of Implementing a Rooftop PV System at Brega Petroleum Marketing Company and Its Economic Advantages	312
239	Design of 20MW Grid-Connected Photovoltaic Power Plant in Tawergha	316
240	Modified Asymmetric 25-level H-bridge Multilevel Inverter	322
246	A New Topology of Multi-Level Inverter	327
254	Measurement-based Data Center Complete Load Model Construction & Power Quality Assessment at Distribution Level	333
268	Empowering Remote Regions: Modelling and Simulation of a 1.54 MW Off-Grid Fuel-Cell Unit for Sustainable Energy Independence	341
290	Optimizing Unit commitment problem with the daynamic programming method (DP) using MATLAB software	347

22	Electron Mobility Calculations and Scattering Effects in GaN Compound Semiconductor	353
26	A compact band notched ultra-wide band patch antenna with U- shape resonators	359
33	Performance of dynamic Power Assignments for Downlink NOMA System	364
39	Multi-Access Edge Computing Using Intelligent Mobile User Resource Allocation In 6G	369
44	Improving Block Matching and 3 Dimensions (BM3D) Filtering for Image Noise Removal Using Discrete Wavelet Transformation (DWT)	375
45	Design and Simulation of a 3D Model Lower Limb Exoskeleton for Rehabilitation	381
52	Capacity Enhancement Based on mMIMO for Cognitive Radio NOMA in Future 6G Networks	387
53	Flexible Wideband Microwave Absorbers with Frequency Selective Surface Based on Mechanically Treated Foiled Polymer Film	393
55	Improving the security and reliability of SDN controller REST APIs using JSON Web Token (JWT) with OpenID and auth2.0	398
65	An Effect of Huffman Encoding with Hybrid Edge Detection in LSB Image Steganography	403
75	Parallel Decoder of Polar Codes	410
78	Charcoal-Containing Microwave Fiber Absorbers	416
82	Routing Optimization in the Internet of Vehicle: A Systematic Review	422
82 94	Routing Optimization in the Internet of Vehicle: A Systematic Review  On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks	422 428
	On Demand User Association and Load Distribution with Guaranteed Rate in Multi	
94	On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks  A Stable Energy Balancing Based Clustering Routing Protocol for IoUT using Meta-	428
94	On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks  A Stable Energy Balancing Based Clustering Routing Protocol for IoUT using Metaheuristic Technique  Energy-Aware Task Completion Delay Optimization of Space-Aerial Enabled MEC	428
94 96 97	On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks  A Stable Energy Balancing Based Clustering Routing Protocol for IoUT using Metaheuristic Technique  Energy-Aware Task Completion Delay Optimization of Space-Aerial Enabled MEC System  Analysis of Different Architectures for RSSI Based Indoor Localization using	428 433 440
94 96 97 102	On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks  A Stable Energy Balancing Based Clustering Routing Protocol for IoUT using Metaheuristic Technique  Energy-Aware Task Completion Delay Optimization of Space-Aerial Enabled MEC System  Analysis of Different Architectures for RSSI Based Indoor Localization using Trilateration Technique	428 433 440 446
94 96 97 102 119	On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks  A Stable Energy Balancing Based Clustering Routing Protocol for IoUT using Metaheuristic Technique  Energy-Aware Task Completion Delay Optimization of Space-Aerial Enabled MEC System  Analysis of Different Architectures for RSSI Based Indoor Localization using Trilateration Technique  Optimize ISAR Imaging Techniques for Diverse Moving Targets	428 433 440 446 452
94 96 97 102 119	On Demand User Association and Load Distribution with Guaranteed Rate in Multi UAVs Assisted Cellular Networks  A Stable Energy Balancing Based Clustering Routing Protocol for IoUT using Metaheuristic Technique  Energy-Aware Task Completion Delay Optimization of Space-Aerial Enabled MEC System  Analysis of Different Architectures for RSSI Based Indoor Localization using Trilateration Technique  Optimize ISAR Imaging Techniques for Diverse Moving Targets  Adaptive Wavelet Techniques for Pattern Analysis	428 433 440 446 452 459

183	Evaluation of BER, Reliability and throughput during the vertical coexistence of 4G LTE and 5G NR	482
205	Optimizing Network Resilience with Segment Routing: A Comparative Study of SR TI-LFA and rLFA	488
209	An Enhanced Method to Secure The High Embedding Capacity Steganography Based On LSB Indicator	494
212	Toward Security Enhancement for Deep Learning-Based Channel Estimation Model Under Adversarial Attacks in Next-G Wireless Networks	500
215	Enhancing Agricultural Practices through IoT: A Dual-Modality Approach for Network Resilience and User Engagement	505
247	Real-Time Estimation of Vehicle Speed	510
270	Enhancing Deep Semantic Communication Systems (Deep-SC) using the Pre-trained Models; BERT and BART	515
272	Mutual Coupling Suppression Techniques Used for compact 5G MIMO antennas	520
274	Machine Learning-Based Energy Optimization Routing Protocol for Wireless Sensor Networks	525
282	Optimizing Critical Communication Systems for Offshore Oil and Gas Operations via Computational Methods	531
283	Power Control Optimization for Enhanced LTE Network Resilience Against illegal RF Repeaters	538
286	Minimizing the viruses' propagation in interconnected complex networks	544
288	Multiband PIFA Antenna Design with Optimized Defected Ground Plane Using Genetic Algorithm	550
291	Modelling and Simulation of Radar Cross Section Based on Parameters Affecting Surface Shape	555
292	AI-Based QoS Optimization in Post-Disaster Ad Hoc Networks: Top-K Path Enumeration with Multicriteria Decision Analysis	561
5	Named Entity Recognition for Identifying Entities Related to Illegal Migration in Libya: An Analysis of Twitter Textual Data	567
8	Radio Frequency Energy Harvesting with Power Splitting Scheme in Wireless Sensor Network	573
32	Addressing the Libyan Arabic Dialect Identification: A Comparative Study of Ensemble Classification Methods	579
42	Comparison of Network's Performance by Applying Integrated Services and Differentiated Services Quality of Service Models	585
49	Machine Learning Based Real-time Self-driving Car for Sudanese Autonomous Vehicular Markets	589
56	Investigating the Impact of Control Parameters on the Performance of the harmony search algorithm by Parametric Analysis	595
	· · · · · · · · · · · · · · · · · · ·	

60	Solar Radiation Prediction in Libya Using Neural Networks	601
64	Customer Churn Prediction Using Machine Learning: A Case Study of Libyan Internet Service Provider Company	605
68	Detecting Cognitive Decline in Alzheimer's Disease using Brain Signals: An EEG Based Classification Approach	613
69	UTILIZING EEG SIGNALS FOR EPILEPSY SEIZURE DETECTION	619
70	DEPRESSION DETECTION BASED ON EEG SIGNALS USING MACHINE LEARNING ALGORITHMS	625
83	Optimizing the performance of signalized intersection using Synchro Simulation Software	631
115	Human Activity Recognition Using AutoML approach	637
116	Deadlock-free verification of the SACI-1 OBC using Circus Time Action and FDR	642
132	Implementation of a semi-empirical model for controlling radiation sterilization processes	649
140	An Optimal Optimization of Software development Cost Estimation Using Genetic Algorithm	654
151	Diagnosing Diabetes Using Binary Whale Optimization Algorithm-Based Feature Selection	660
164	Long Short-Term Memory Employed for Classifying P300-based BCI	666
169	An Improved Genetic Algorithm Tool for Exam Timetabling Solutions	672
170	Cyber Threat Detection using Machine Learning	678
174	Domain Adaptation Generative Model for Segmenting 3D MRI Pediatric Brain	686
178	Improving Facial Expression Recognition in HCI: Traditional Techniques and Comparative Analysis	693
187	Chest X-ray Image Synthesis Using Deep Convolutional GANs	698
191	Enhancing Speech Emotion Recognition through a Cross-Dataset Analysis: Exploring Improved Models	706
196	Exploring Knowledge Landscapes: Clustering and Topic Modeling of Sebha University Scientific Publications	712
201	Airline Scheduling Model Using Genetic Algorithm	718
217	EEG Motor Imagery Classification using Graphical Neural Networks with Attention Mechanism	723
228	Control the Interval Estimation to Enhance the Performance of Optimized Link State Routing	729

229	Classification of Cervical Cancer using Convolutional Neural Networks	735
235	Virtual Smart Mirror as a Personal Trainer using Machine Learning	740
236	A CNN based Crosswalk Guidance for the visually impaired that combines a Fuzzy Logic Controller and Genetic Algorithm	746
248	Beyond the MRI: Revolutionizing Brain Tumor Detection with Deep Learning	755
255	Sarcasm Detection in Libyan Arabic Dialects Using Natural Language Processing Techniques	761
257	Efficient Real-time Information Extraction from Book Cover Images Using YOLOv8 and SpaCy: A Novel Approach to Text Detection and Recognition	768
262	An Automated Detection Model of Prepaid Mobile Phone Cards Using YOLOv5	773
264	On Object Detection and Explainability with Sonar Imagery	779
267	Building an Affordable Portable Storage Area Network (SAN) with Raspberry Pi: Design, Implementation, and Performance Evaluation	787
275	University Students' Attendance by Utilizing Face Recognition Approach Based on Deep Learning Technique	793
295	Imaging Histopathology of Breast Cancer for Detection	799