# 2024 International Conference on **Ubiquitous Networking** (UNet 2024)

Marrakech, Morocco 26-28 June 2024



**IEEE Catalog Number: CFP24VE2-POD ISBN**:

979-8-3503-5615-1

## 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:
 CFP24VE2-POD

 ISBN (Print-On-Demand):
 979-8-3503-5615-1

 ISBN (Online):
 979-8-3503-5614-4

#### **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









### The 10th International Conference on Ubiquitous Networking

#### **UNet 2024**

June 26-28, Marrakesh, Morocco

https://unet-conf.org

#### **Table of Contents**

Next-Generation Networking and Enablers		
#ID (EDAS)	Paper Title	Page
1571027082	Multi-User Fairness in Reconfigurable Intelligent Surface Assisted mmWave MIMO-NOMA System  Nouran Mohamed Zaghlool Arafat, Engy Aly Maher and Ahmed E. El-Mahdy, Falko Dressler	1
1571019815	Risk-Aware Grant-Free for B5G/6G Ultra-Reliable Low-Latency Communications Amavi Dossa, Halima Elbiaze and Essaid Sabir	9
1571024459	A Sampling and Communication Framework for Synchronization in Metaverse Latif U. Khan, Mohsen Guizani, Haejoon Jung, Mohamed Adel Serhani	17
1571034554	Delay-Based User-Clustering for Critical mMTC MIMO-NOMA Networks Samar Chebbi, Oussama Habachi, Vahid Meghdadi and Jean Pierre Cances	22





	Al-Native Sustainable Communications	
#ID (EDAS)	Paper Title	Page
1571014948	QoS-Constrained Profit Maximization for Primary Users in Competitive Cognitive Radio Networks Lhoussaine Daoudi, Hamid Garmani and Baslam Mohamed	28
1571025653	Advancing Lithium-Ion Battery Prognostics: A Novel Deep Learning Framework for Enhanced SOH and RUL Prediction Accuracy Brahim Zraibi, Mohamed Mansouri and Mohamed Massour El Aoud	35
1571032877	Performance Evaluation of a Hybrid VLC-RF System for Dense Communication Areas Farooq Taha Mohammed, Safwan Younus and Khalil Hassan Sayidmarie	43

	Ambient Intelligence and Internet of Things	
#ID (EDAS)	Paper Title	Page
1571018488	Nightwatch With YOLOv8: Real-Time Vehicle Detection and Speed Analysis for Safer Roads Fouad Agramelal, Mohamed Sadik, Soumia Mouloudi, Youssef Moubarak and Saad Abouzahir	48
1571012932	Towards Smart Ports: Design and Prototyping of an IoT-Based Ship- Generated Oily Waste Collection System Bilal Abdellaoui, Saâd Lissane elhaq and Mohamed Sadik	56
1571026193	Mobile Localization for Indoor Services: Transitioning From Proof of Concept to Real-World Experimentation Youssef Ibnatta, Mohamed Khaldoun and Mohamed Sadik	64
1571026476	In-Depth Exploration of the Present Research Status on Smart Cities Doha Bakir, Zouhair Chiba, Noreddine Abghour and Khalid Moussaid	74
1571030151	Performance Analysis of YOLOv5, YOLOv7, YOLOv8, and YOLOv9 on Road Environment Object Detection: Comparative Study Ghita Ikmel and Najiba El Idrissi El Amrani	81





Mobile Edge/Cloud Computing		
#ID (EDAS)	Paper Title	Page
1571028716	Integrating Reality: A Hybrid SDN Testbed for Enhanced Realism in Edge Computing Simulations Amar Almaini, Tobias Koßmann, Jakob Folz, Martin Schramm, Michael Heigl and Ahmed Y Al-Dubai	86
1571026356	Priority-Driven Task Scheduling and Resource Allocation in Cloud Environment Hicham Ben Alla, Said Ben Alla and Abdellah Ezzati	92
1571029032	Optimizing Resource Allocation in 5G Networks: An Integrated Approach with Mobile Edge Computing, Network Slicing Abdellah Amzil, Taoufyq Elansari, Mohamed Hanini and Abdellah Zaaloul	99
1571026602	Multi-Criteria Virtual Machine Placement in Cloud Computing Environments: A Literature Review Wissal Attaoui and Essaid Sabir	109
1571026951	Examining the Effects of DDoS Attacks on SDN Architectures: Experimental Study Zakariaa jamal, Fatima Lakrami, Hind Sounni, Mohamed El Kamili, Abdellatif Kobbane and Youssef Baddi	120

Security and Privacy		
#ID (EDAS)	Paper Title	Page
1571017412	CP-ABE-LWE-Based Smart Contract: A Novel Post-Quantum Smart Contract-Based Decentralized Application (DApp) for E-Health Records Management Sara Barj	125
1571035344	A Game-Theoretic Approach with Decoy Qubits for Quantum Superdense Coding Security Amal Sayari, Slim Rekhis and Ali Mabrouk	135
1571028586	Sending and Receiving Secure Email Based on Blockchain Abdelhadi Rachad, Gaiz Lotfi,Khalid Bouragba and Ouzzif Mohammed	143
1571027693	Novel Provably Secure and Quantum Resistant Message Authentication Codes (MACs) and Their New Related LWE-Based Key Exchange Protocols (KEPs) Sara Barj	148
1571029331	Securing University Diploma Management Through Blockchain and InterPlanetary File System Adil Attiaoui, Abdellatif Kobbane and Marwane Ayaida	157





Verticals and Pervasive Services		
#ID (EDAS)	Paper Title	Page
1571028768	Artificial Neural Network (ANN) and Genetic Algorithm (GA) Hybrid Method to Enhance the Prediction of Brain Tumors Cancer Hamza Ettakifi and Said Tkatek	163
1571016652	Leveraging Contrastive Learning for Enhanced Skin Diseases Classification Amina Aboulmira, Hamid Hrimech, Mohamed Lachgar and Hafsa Benzzi	170
1571025000	The Readiness of the Healthcare Sector in Jordan to Adopt the Internet of Things Wafa' H. AlAlaween and Abdallah H. Alalawin	176
1571013976	A Low Positive Rate Attendant for Sickle Cell Anemia Screening in Health and Medicine Avewe Bassene and Bamba Gueye	182
1571032957	Modified U-Net Architecture Using Fundus Images for Hemorrhages Semantic Segmentation Amine El hossi, Abdelali El moufidi and Mourad Nachaoui	188
1571032647	Predicting the Moroccan Stock Market Using LSTM Networks: An Evaluation of MASI as Indicator Ayman Mazzouz, Abdelali Elmoufidi, Anouar Hasbaoui and Mohamed Erritali	196
1571028726	Image Indexing Approaches for Enhanced Content Based Image Retrieval: An Overview Abdelkrim Saouabe, Said Tkatek, Hicham Oualla and Imad Mourtaji	204
1571029792	<b>Transforming Graph-Oriented Databases Into OWL 2 Ontologies</b> Oussama Chabih, Sara Sbai, Mohammed Reda Chbihi Louhdi and Hicham Behja	211
1571030890	Unraveling the Parameters of K-Means Clustering for Enhanced Textual Analysis Oussama Chabih, Sara Sbai, Reda Chbihi and Hicham Behja	218