2025 IEEE International Conference on Advanced Healthcare Systems (ICAHS 2025)

Hammamet, Tunisia
5-6 December 2025

IEEE Catalog Number: CFP250Z6-POD
ISBN: 979-8-3315-9987-4

IEEE
Advancing Technology for Humanity

Copyright © 2025, IEEE

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:	CFP250Z6-POD
ISBN (Print-On-Demand):	979-8-3315-9987-4
ISBN (Online):	979-8-3315-9986-7

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

CURRAN ASSOCIATES INC. proceedings .com

TABLE OF CONTENTS

SQWav-Palm: A Hybrid System for S-Palmitoylated Protein Prediction in Arabidopsis thaliana Based on Wavelet Transform and SqueezeNet 1
Saifeddine Ben Nasr, Imen Messaoudi, Afef Elloumi Oueslati, Zied Lachiri

Dynamic Risk Modelling of Musculoskeletal Disorders (MSDs) 9
Ramzi Abidi, Taysir Rezgui, Sami Bennour, Mohamed Ali Kammoun, Sofiene Dellagi

Bi-objective DEA with CART-Based Machine Learning for Optimized Hospital Department Resource Allocation 15
Marwa Hasni, Najla Aissaoui Omrane, Jihed Dhief

Transformer based phoneme sequence prediction from SSL features for Arabic language 20
Mohamed Nadhir Daoud, Mohamed Anouar Ben Messaoud

Explainable Residual Vision Transformer Model for Dermoscopic Images Classification 26
Sirine Mejri, Afef Elloumi Oueslati

Study of woman in labour's emotional responses to birth space ambiance using EDA 32
Ichraf Aroua, Faten Hussein

From Analysis to Design: The Role of Space Syntax and AI in Healthcare Architecture 37
Hakima Trimeche

A new methodology for the classification of exons and introns by MLP based on multifractal features 43
Nadia Selmi, Zeineb Chebbi Babchia, Afef Elloumi Oueslati

Comparative Analysis of Recurrent Neural Network Architectures for Classifying Nanoparticle Properties 49
Wejden Gazehi, Rania Loukil, Mongi Besbes

A Machine Learning-Based Application to Predicting Patient Survival in Peritoneal Treatment 55
Myriam Gharbi, Sondes Hammami, Oussama Ben Ali, Marwa Hasni, Yassine Zammit, Yosra Guedr

AI-Based Tools for Legal Data Extraction using Deep Learning Techniques 62
S.E.Viswapriya, R.Preethi, R.Rajalakshmi

Quality by Innovation In Immunology: Deep Learning for Antinuclear Antibodies Classification Integrating ISO 56000 Principal For Reliable Immunological Diagnostics 68
Mouna Ben Azaiz, Kahena Bouzid, Ines Abdellaziz

Eye-Tracking Data Analysis for Autism Classification 73
Farah Mnif, Feriel Ben Nasr, Afef Elloumi Oueslati

Pharmaceuticals in Tunisia: Shift-Share Analysis of Its Global Value Chain Position 78
Amani Yaich, Rim Kalai

The architectural approach at the service of the Promotion of Public Health Services in Tunisia. Case of Manouba governorate 84
Hayet Badrani, Noura Hosni

CNN-Based Optimized Model for Disease Stratification in Unstructured Medical X-ray Images Dataset 90
Juli Kumari, Ela Kumar

LLM-Enhanced Planning: Extending R-IO SUITE for Operating Room Scheduling 97
Leah Rifi, Audrey Fertier, Safa Bhar Layeb, Aubry De Paule, Sébastien Rebière, Nicolas Salatgé Olivier Oger, Philippe Olivier, Franck Fontanili

Developing a Mobile Application and Dashboard for Proactive Management of Patient No-Shows via Geolocation and Dynamic Scheduling 103
Salma Ben Ayed, Safa Bhar Layeb, Marius Huguet, Franck Fontanili, Nel Samama

Artificial Intelligence Meets IoT for Cardiovascular Diseases Detection 108
Nourchen Zaghden Dammak, Hala Bezine, Moemen Dhieb, Bouthaina Kammoun, Ahmed Said Nouri Nabil Derbel

Potassium measurement on The Atellica® Solution and The Architect® ci8200 114
Kahena Bouzid, Khaled Lajmi, Nawres Selmi

A Simulation-Based Optimization Framework for Healthcare Logistics under Stochastic Travel Times 120
Amina Antit, Safa Layeb Bhar, Chefi Triki, Amel Jaoua

Surgical Planning and Scheduling Under Uncertainty: A Comprehensive Survey 126
Khaled Omrane, Asma Ouled Bedhief, Najla Aissaoui

Optimizing Sales Representatives' Visit Schedules Using a Heuristic Approach: A Case Study in the Pharmaceutical Sector 132
Nadia Bahria, Dorsaf Daldoul

Towards Synergistic Process Improvement in Healthcare: Comparative Insights from Lean, TQM, and Discrete Event Simulation 138
Imen Mejri, Najla Aissaoui, Safa Bhar Layeb

Tracking Antibiotic-Resistant E. coli in Asian Pig Farms 143
Swapnesh Tiwari

An Integrated Nine-Dimensional Framework for Pharmaceutical Digital Transformation : I9D-PDT 149
Chakib Benmhamed, Hakima Reddad, Maria Zemzami, Farouk Yalaoui, Nabil Hmina

Process Analysis and Simulation-Based Optimization of ICU Admissions at Abderrahmen MAMI Hospital 155
Zeineb Boumallessa, Hejer Khlif, Houda Gharbi, Jalila Ben Khelil

Optimizing the Location-Allocation of Autodialysis Centers under Demand Uncertainty: A Chance-Constrained Programming Approach 161
Safa Lasmar, Myriam Gharbi, Hanen Bouchriha

A Privacy-Preserving Architecture Integrating Federated Learning and Digital Twins for Diabetes Care 166
Luigi Fortino, Simone De Vita, Michelangelo Esposito, Christian Esposito

Application for preventive and palliative treatments of patients with allergic rhinitis 172
Libertad Tansini, Regina Motz, Tamara Suárez, Natalia Campiglia

A Metaheuristic Framework for Elective Surgery Scheduling under Ward and Flow Constraints: A Multi-Stage Healthcare Optimization Approach 177
Manel Belkhamssa, Jalel Euchi

PCOS Care: A Machine Learning-Based Web Application for Early Risk Prediction of Polycystic Ovary Syndrome 185
Rachel Cooray, Malarvizhi Kaniappan Chinnathai, Salma Chahed

Process Analysis and Optimization of Emergency Surgical Services Using Value Stream Mapping 191
Amira Brahmi, Asma Ouled Bedhief, Safa Bhar Layeb, Najla Aissaoui

Architectural and inclusive design for neurodiversity 197
Kaouther Ben Amar, Sana Layeb, Abir Hmem, Yassine Boussif

Design and Architecture of an Accessible Mobile System for Danger Detection in Autism Spectrum Disorder: Integrating AR, AI and Machine Learning 203
Eya Hadhri, Sana Layeb, Safa Elkefi, Safa Bhar Layeb

Enhanced two-index formulations for the Target Visitation Problem 208
Ali Balma

Healthcare Waste: Classification Systems and Sustainable Logistical Decisions 214
Amine Bouzid, Monia Rekik, Amina Chelly, André Côté

LLM-Based Code Documentation Generation and Multi-Judge Evaluation 220
Ikbel Ghrab, Mohamed Dhieb, Ismail Khenissi, Ines Abdeljaoued-Tej

Deep Learning-Based Automatic Blood Cell Classification and Anomaly Detection 226
Ahmed Gargouri, Mohamed Ali Khemakhem

Learning from traditional houses in Nefta to enhance environmental quality and wellbeing in healthcare facilities 232
Asma Guedria

Interactive Decision Support System for Surgery Planning and Scheduling 238
Asma Ouled Bedhief, Najla Aissaoui, Wael Yahiaoui, Gaith Ncir, Siwar Missaoui, Houssem Aloui

Risk-based management of the equipment process in the biochemistry laboratory of Charles Nicolle Hospital of Tunis 244
Khaled Lajmi, Kahena Bouzid, Marwa Hajlaoui

Graph-Based Algorithm for Label Noise Detection and Correction in Cervical Cytology 250
Yasuhiro Iida, Bojan Mrazovac, Yasuo Ishigure, Tasuku Mariya, Ikuma Sato, Ayahiko Niimi

AI-Driven Detection of Fetal Alcohol Spectrum Disorders: A Review of Deep Learning Methods 255
Pushpanjali C H, Suma R

Innovative technologies in digital healthcare marketing: impact on patient behavior 261
Bouajaja Hanen

Predicting Diseases and Treatments of Healthcare Management Big Data Based-Deep Learning 267
Ahmed Shihab Ahmed, Safa Bhar Layeb, Hussein Ali Salah

A Transdisciplinary Hybrid Deep Learning Approach for Emotion Recognition Using Eye-Tracking and Gaze in AR Environment 274
Saloni Thakar, Priyanka Sharma

Returns of non-administered drugs: Assessment, influencing factors, and opportunities for improvement – A case study from Liège University Hospital, Belgium 280
Closon Noëlle, Birtles Alixia, Gillain Nicolas, Pollain Natacha, Ledacte Kevin, Kolh Philippe Manon Kokou, Maes Nathalie

Healthcare Sustainability: Eco-Friendly Methods for Integrating Artificial Intelligence in Healthcare 287
Dalal Bardou, Laishui Lv, Hichem Rahab, Oresti Banos, Ting Zhang

Predictive maintenance under uncertainty in smart hospitals: Decision support with belief functions 293
Safa Ben Ayed

Enhancing Brain Tumor Detection: A GAN Benchmark for MRI Data Augmentation 299
Abdussalam Elhanashi, Siham Essahraui, Sergio Saponara, Qinghe Zheng, Nawal Almutairi, Yashbir Singh Farzana Ali, Shahriar Faghani, Orhan Unal, Khaled Younis, Shiba Kuanar

Spine Stenosis Image Segmentation and Detection using Machine Learning 305
Adithyan S, Shital Hajare, Mansi Morey, Nikhil Pardhi

Toward Intelligent Traffic and Healthcare Systems: DST-Induced Crash Patterns and Predictive Insights 312
Avishek Mukherjee, Hussein Almohseni, Sara Shannan

Towards a Tunisian High-Frequency Audiogram Database in Occupational Health for Epidemiological and Sectoral Risk Analysis 318
Yosra Ben Talouba, Mériem Jaïdane

Profile Hidden Markov Models for Modeling Pediatric Palliative Care Pathways 324
Siwar Sbai, Vincent Augusto, Xavier Boucher, Safa Chabouh, Matthias Schell