

The LSI Lab and Association of Artificial Intelligence and Sustainable Development
in collaboration with

Mohamed Premier University, Faculty of Sciences of Oujda, Faculty of Medicine and
Pharmacy of Oujda, National School of Applied Sciences of Oujda, Higher School of
Technology of Oujda, Mohammed VI Hospital Center of Oujda, Franche-Comté University and The
School Of Advanced Engineering
Studies – Oujda, organize:

ICSMAI 2025

2nd International Conference on
Smart Medical, IoT & Ai



TECHNICAL PROGRAM

ABOUT THE CONFERENCE

The **Second International Conference on Smart Medical, IoT & Artificial Intelligence (ICSMAI'25)** brings together researchers, clinicians, engineers, and industry practitioners to advance data-driven healthcare and intelligent connected systems. ICSMAI'25 provides a forum to share cutting-edge results, discuss open challenges, and foster collaborations at the intersection of **medical technologies**, **Internet of Things (IoT)**, and **artificial intelligence**.

Clinical AI and decision support; medical imaging and radiomics; wearable and remote monitoring systems; hospital information systems and digital health; healthcare NLP and conversational agents; bioinformatics, drug discovery and multi-omics; cybersecurity and governance for health data; human factors, education and simulation; smart sensors, edge/embedded AI, and healthcare IoT deployments.

Authors are invited to submit original, unpublished research—including empirical studies, methods and systems, comprehensive surveys, and reports on industrial deployments—that is not under review elsewhere. Submissions should follow the conference guidelines and deadlines published on the ICSMAI'25 website.

ICSMAI'25 is organized by the **LSI Laboratory** together with the **Association of Artificial Intelligence and Sustainable Development (IA2D)**, in collaboration with **Mohammed First University (Oujda)**—including the **Faculty of Sciences**, **Faculty of Medicine and Pharmacy**, the **National School of Applied Sciences**, and the **Higher School of Technology**—the **Mohammed VI University Hospital Center (Oujda)**, and international academic partners: **Université de Franche-Comté (France)**, **Université de Lorraine (France)**, **Université de Moncton (Canada)**, and the **École des Hautes Études d'Ingénierie – Oujda**.



We warmly welcome you to ICSMAI'25 and look forward to your contributions and participation.

- Keynote
- Session
- Workshop
- Panel
- Ceremony
- Registration
- Break
- Social
- Closing

14:00 – 15:00

Welcome and Registration

Main Conference Registration

Registration

15:00 – 16:00

Official Opening Ceremony

Conference Hall
Chair: Moderator: Prof. Kamal GHOU MID
President of Mohammed Premier University
Director of ENSA Oujda
Dean of Faculty of Science
Dean of Faculty of Medicine & Pharmacy
Director of CHU
Organizing Committee

Ceremony

16:00 – 19:00

Keynotes Block #1

Conference Hall
Track: HADDIYA; AKHLOUFI; MESTARI
Keynote #1 – Prof. Intissar HADDIYA: Environmental determinants of hypertension. Moderator: Prof. K. GHOU MID
Keynote #2 – Prof. Moulay AKHLOUFI: Advances and Challenges in AI for Healthcare. Moderator: Prof. O. SEFRAOUI
Keynote #3 – Prof. Mohammed MESTARI: From Complexity and Network Science to Graph Representation Learning: A Graph Neural Network Approach to Polypharmacy Side Effects. Moderator: Prof. A. NAJI

Keynote

19:00 – 20:30

- Keynote
- Session
- Workshop
- Panel
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- Closing

19:00 – 20:30

Session 1: AI in Healthcare & Medical Diagnosis

Session

Parallel Sessions — Room 1

Chair: M. H. Sebbar, A. Saddari, and K. Alaoui

Papers

- Faysal ETROUFI — Benchmarking Machine Learning Models for Early Detection of Chronic Kidney Disease
- Abderrazak SADDARI — Comparative Analysis of Machine Learning Approaches for Antimicrobial Resistance Prediction and Multi-Drug Resistance Classification
- Maryam BENHEDDI — Detection of a rare mutation in exon 20 of the EGFR gene by EasyPGX™ real-time PCR in a case of non-small cell lung cancer at the Oujda pathology laboratory
- Maryam BENHEDDI — The Experience of the Pathology Laboratory at Mohammed VI University Hospital of Oujda in the Molecular Analysis of Colorectal Cancers: A Retrospective Study of RAS Status Assessment by Real-Time PCR with TaqMan Probes
- Jihane BENBRIK — Machine Learning Approaches for Predicting Vitamin D Levels: Comparative Analysis
- Oumaima AAMAROUCHI — Optimizing Brain Tumor Detection: A Novel Approach Using Mixed Initialization Kernels and Genetic Algorithms in Convolutional Neural Networks
- Omar SEFRAOUI — Artificial Intelligence for Diagnosis and Analysis of Multiple Sclerosis: A Data-Driven Approach
- Oussama ABALI — Temporomandibular Joint Osteoarthritis Pathology and Artificial Intelligence: A Brief Systematic Review
- Fatima FATIH — Adaptive optimization of CNN architectures using Tree-structured Parzen Estimator for the diagnosis of lung diseases
- Youssef RAFIK — Cardiovascular diseases prediction by machine learning techniques
- Ali ARBAOUI — Predicting Autoimmune Flares Using AI and Emotional Analysis

20:30 – 22:00

Dinner break

Hotel Restaurants

Break

- Keynote
- Session
- Workshop
- Panel
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- Break
- Social
- Closing

08:00 – 09:00

Welcome and Registration

Main Conference Registration

Registration

09:00 – 11:00

Keynotes Block #2

Conference Hall

Track: BENTATA; VOSHMGIR

Keynote #4 – Prof. Yassamine BENTATA: The Future of Medicine: Horizons and Limits!. Moderator: Prof. M.A. MADANI

Keynote #5 – Prof. Shermin VOSHMGIR: Web3 at the Intersection of Blockchain, AI & IoT. Moderator: Prof. A. KERKRI

Keynote

11:00 – 12:30

Session 2: IoT & Edge AI for Smart Systems

Parallel Sessions — Room 1

Chair: H. Bouali, S. Daoudi and R. Malek

Papers

- Kishan Reddy BHIMAVARAM — IoT-Based Urban Agriculture Container Farm Design and Implementation for Localized Produce Supply
- Vinay DANDAMRAJ — Smart IoT based Hydroponics Farming
- Mirthika B — Intelligent Wildlife Monitoring and Repulsion Using YOLOv8-Based Bounding Box
- Hicham TIKAOUI — An IoT-Based Comparative Study of Machine Learning and Statistical Models for Energy Consumption Forecasting in Moroccan Buildings
- Sidi Omar EL KETTANI — IoT-Edge AI with ISO 42001 Governance for CNC Predictive Maintenance: Multisensor Fusion, Calibration, and Clause-Level Traceability
- Chakib TAYBI — A Dual-Band Reconfigurable Antenna Using a PIN Diode for 2.4 GHz and 5 GHz IoT Applications
- Belaoufi Yassine — SmartRoute+: Toward Intelligent Road Maintenance Ecosystems through Deep Learning and Mobile Crowdsensing in Morocco
- El Miloud AR-REYOUCHI — BAI-PLF: A Blockchain–AI–IoT Framework for Energy-Efficient and Predictive Logistics and Healthcare in Africa
- Vighnan KUMAR — AgroHeal – Intelligent Agricultural Assistant for Early Disease Identification and Organic Pesticide Recommendation.

Session

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11:00 – 12:30

Session 3: AI for Biomedical Research & Drug Design

Session

Parallel Sessions — Room 2

Chair: M. Yandouzi and M. Grari

Papers

- Kaoutar M'RHAR — Exploring Deep Learning for De Novo Drug Design: A Brief Review of Chemical Property Optimization
- Oussama GRARI — Harnessing artificial intelligence to tackle biofilm infections: Advances, challenges, and perspectives
- El Miloud AR-REYOUNCHI — Q2OPT-MED: A Hybrid AI-Heuristic Approach to Healthcare Pathway Optimization
- Nazih ASSABBANE — AI in Aesthetic Medicine: From Subjective Judgment to Algorithmic Precision
- Nazih ASSABBANE — SVHRSP for Skin Ageing: Bioinformatics Rationale and a Microneedle-Delivered Cosmetic Strategy
- Mouad ALAOUI MHAMMEDI — Physics-Constrained Generative Inverse Design for Food-Grade Encapsulation Systems
- Manale CHAKIR — An experimental evaluation of GRU-based architecture for ICD-9 code assignment using MIMIC-III clinical notes
- Omar SEFRAOUI — Integrating IoT and AI for Smart Medical Systems: Tools, Algorithms, and Challenges in Real-World Healthcare Applications
- Alaoui KHADIJA — An extensive categorization of triplestores

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11:00 – 12:30

Session 4: Smart Hospitals & Clinical Decision Support

Parallel Sessions — Room 3

Chair: D. EL MOUJTAHIDE and M. Zeryouh

Papers

- N. HAREESH — AI Stethoscope: Revolutionizing Home Healthcare using Machine Learning
- Oussama GRARI — Precision and measurement uncertainty verification of procalcitonin assay for AI-enhanced sepsis management in smart hospitals
- Dounia EL MOUJTAHIDE — Comparative Analysis of Machine Learning Algorithms for Predicting Creatinine Levels from Blood Parameters
- Dounia EL MOUJTAHIDE — Temporal Stability of Biochemical Phenotypes: A Four-Year Analysis of Blood Biomarker Clusters
- Sara RAMDANI — Artificial Intelligence and the Internet of Things in Smart Hypertension Management: A State-of-the-Art Review and Future Directions
- Yassmine EL MOUSSAOUI — AI-Powered Simulation Platforms for Healthcare Communication Training: Scoping review
- Hakim NASAOUI — MedACT-CL: Knowledge-Enhanced Tri-Modal Contrastive Learning for Medical Action Recognition
- Youssef BADININI — Public-private partnership for bringing healthcare services closer together and digitizing them: The example of connected mobile medical units.
- Nour El Houda BENKADDOUR — KidneyLab 2.0: Innovative Integration of Arduino Technology for Immersive Teaching in Renal Hydrosodic Regulation
- Hind MOUMNI — Use and Perception of AI for Psychological Self-Help Among Medical Students in Morocco

12:30 – 15:30

Lunch break

Dining Hall

15:30 – 17:00

Keynotes Block #3 (Healthcare Innovations)

Conference Hall

Keynote #6 – Prof. Abdelkrim DAOUDI: Telemedicine in the Eastern region.

17:00 – 20:00

- Keynote
- Session
- Workshop
- Panel
- Ceremony
- Registration
- Break
- Social
- Closing

17:00 – 20:00

Session 5: AI, NLP & Cybersecurity

Parallel Sessions — Room 1
Chair: A. KERKOUR ELMIAD and R. Naciri

Session

- Papers
- Omar SEFRAOUI — Adaptive AI Pipeline for Real-Time Cybersecurity Alert Classification: A Multi-Dataset Approach
 - Ayoub JIBOUNI — Similarity Redefined: A Robust Metric for Predicting Links in Complex Networks
 - Anas CHAHID — An Advanced Conversational AI System for Medical Specialty Triage Featuring a RAG-based Dialogue Engine
 - Abdelmounaim KERKRI — Bridging Semantic Gaps: Cross-Lingual Alignment Through Contrastive Subword Regularization
 - Abdelmounaim KERKRI — Stochastic-Approximation Reinforcement Learning for Urban Traffic Lights with Low-Cost Sensing
 - Abdelmounaim KERKRI — Event-Driven Reinforcement Learning on Streams: Drift-Aware Policy Optimization with Reservoir-Constrained Replay

Session 6: Energy Management & Industrial Optimization

Parallel Sessions — Room 2
Chair: M.A. Kassmi and D. Bahia

Session

- Papers
- Sidi Omar EL KETTANI — AI-Powered Energy Management Diagnostics: A Comprehensive Framework for Industrial Predictive Maintenance with Large Language Model Integration
 - Sidi Omar EL KETTANI — Enhanced AI-Powered Energy Management Diagnostics: Expert System Integration with LLM for Predictive Maintenance
 - Mohammed Ali ARBAOUI — Preliminary design choices for a Green Hydrogen production system
 - Ali ARBAOUI — Advanced Control Study of a Heat Exchanger: Efficiency Modeling and Analysis for Control Optimization
 - Hicham TIKAOUI — Vision-Based Angle Detection for Industrial Quality Inspection
 - Hicham TIKAOUI — Few-Shot Learning Hybrid Approach for Visual Quality Inspection with Limited Data
 - Hanae EL FAHFOUHI — Enhancing Solar Radiation Forecasting with Informer Architecture and Bayesian Hyperparameters Selection

20:00 – 22:00

Dinner break

Hotel Restaurants

Break

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08:00 – 09:00

Welcome and Registration

Main Conference Registration

Registration

09:00 – 12:00

Session 7: AI in Education, Ethics & Society

Parallel Sessions — Room 1

Chair: A. El Mezouari, M. Benhaddou and J. Oubaha

Session

Papers

- Nouhaila CHAREF — Artificial Intelligence in Medical Writing: A Systematic Review of Current Practices
- Anas TALHAOUY — Automated Role Classification in Security Policies: A Comparative Study of NLP Approaches
- Somaia EL GHAZI — Artificial Intelligence in Medical Education: An Umbrella Review
- Manal BOUDIH — NLP-based exploratory study of interviews on blood donation awareness campaigns: evidence from the University of Oujda (2023–2024)
- Hicham ARRID — Modeling the Impact of Patient Experience Attributes on Satisfaction: Generalized Additive Models Approach
- Boulerhcha BRAHIM — Sentiment analysis in social media with artificial intelligence
- Hasnae AMNOUN — AI and Big Data in Marketing Decision-Making: A PRISMA-Guided Systematic Review of Scopus-Indexed Studies
- BOUBCHEUR Hanane — Ethical and Pedagogical Dimensions of AI-Assisted Mathematics Teaching for Students with Hearing and Speech Impairments
- Kaoutar GHOMARI — Electrolyte Disorders in Emergency and Intensive Care Units at Mohammed VI University Hospital Center Oujda: Prevalence, Seasonality and Associated Factors (Year 2022)
- Bilal BOURKHA — Artificial intelligence and hospital management: between strategic imitation and innovation – The case of chain clinics in Morocco
- Bilal BOURKHA — Artificial intelligence in hospital management: balancing strategic imitation and contextual innovation in moroccan private hospitals

- Keynote
- Session
- Workshop
- Panel
- Ceremony
- Registration
- Break
- Social
- Closing

09:00 – 12:00

Session 8: Smart Cities, Mobility & Environment

Session

Parallel Sessions — Room 2
Chair: H. Barboucha and E.M. Ar-Reyouchi

- Papers
- Asmae EL MEZOUARI — AI-Driven Radiomics in Oncology: From Early Detection to Personalized Treatment
 - Meryem ELKADI — Groundwater Level Prediction in the Triffa Plain (Morocco) Using Machine Learning Approaches
 - Hanae SENBA — Travel Time Optimization in the Old Medina of Fez
 - Rohit SHITOLE — YOLOv9 Meets CBAM: A Real-Time Smart Traffic Signal System for Emergency Response Optimization
 - Loubna AZIZI — Toward the Integration of Urban Green Spaces and Smart Technologies: An Approach to Strengthening the Sustainability of Smart Cities
 - Elmechdi HASSANI — Towards a Paperless Environment: AI for Smart Invoice Processing
 - Meryem BENKADDOUR — Verification of the First Principle through Joule's Experiments: Determining the Calorie Equivalent in Joules (J) Using Computer-Assisted Experimentation (CAEx)
 - Salwa KHALYL — An Empirical Comparison of Topic Models: LDA, NMF, and BERTopic Applied to Hotel Customer Reviews

12:00

Closing Ceremony

Conference Hall

Closing

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