University of Blida 1

Faculty of Technology

Research laboratories:

المؤتمر الدولي الثاني حول التطورات في الالكترونيات، أنظمة التحكم والاتصالات

The 2nd International Conference on Advances in Electronics, Control and Communication Systems

ICAECCS 2025

IEEE
Algeria Section

جامعة سعد دحلب البليدة
مدخل رقم 1 خاص بالموظفين

Sponsors:

DJEZZY جازي

sonelgaz

sonatrach

2ⁿᵈ International Conference on Advances in Electronics, Control and Communication Systems

Our distinguished keynote speakers

Dr. AYACHE BOUAKAZ
Director of Research at the Imaging and Brain Laboratory
University of Tours, France

Brief Biography: Dr. Ayache Bouakaz obtained his Master degree and his PhD in acoustics in 1992 and 1996 at the National Institute of Applied Sciences in Lyon, France (INSA Lyon). In 2004, he obtained a position as an Inserm researcher and since 2009, he has held the position of research director in the Inserm Imaging and Brain institute (iBrain).

Keynote Title: Therapeutic ultrasound and the brain: Engineering challenges and clinical opportunities

https://www.univ-blida.dz/icaeccs2025/pdf/bouakaz_biography.pdf

---

Dr. TAOUS MERIEM LALEG
Senior Researcher, French National Institute for Research in Digital Science and Technology, **France**

Brief Biography: Dr. Taous Meriem Laleg is a Senior Researcher at Inria, Paris-Saclay, where she leads the BOOST project team. Her research interests lie in control theory and signal processing.

Keynote Title: Semi-Classical Signal Analysis: From Theory to Biomedical Signal and Image Processing

https://www.univ-blida.dz/icaeccs2025/pdf/laleg_biography.pdf

---

Dr. HESHAM ABDELSALAM OMRAN
Associate Professor
Ain Shams University, Egypt

Brief Biography: Dr. Hesham Omran received his Ph.D. from KAUST in 2015. He has received several awards including the UNESCO AlFozan Award for Young Scientists in STEM (2023).

Keynote Title: Breaking the Bottleneck: Reimagining the Analog IC Design Flow

https://www.univ-blida.dz/icaeccs2025/pdf/omran_biography.pdf

2ⁿᵈ International Conference on Advances in Electronics, Control and Communication Systems

Our distinguished keynote speakers

Pr. WALTER THEODOR CZARNETZKI
Esslingen University, Germany

Brief Biography: Pr. Dr.-Ing. Walter Theodor Czarnetzki is a professor of thermodynamics, heat transfer, and energy conversion at Esslingen University of Applied Sciences (Germany). His research focuses on thermodynamics, heat transfer, energy conversion systems, and sustainable technologies.

Keynote Title: Microwave-Plasmalysis: Opportunities and benefits in the context of energy storage

https://www.univ-blida.dz/icaeccs2025/pdf/czarnetzki_biography.pdf

Pr. WILHELM-AUGUST BUCKERMANN
Dean of the Faculty of Science, Energy and Building Services
Esslingen University, Germany

Brief Biography: Dr. Wilhelm-August Buckermann is a Professor of Chemical Business and Dean at Esslingen University, Germany. He obtained his doctorate in physical chemistry from the University of Münster.

Workshop: Open-source conventional AI for Everyone

Dr. ABDELWAHAB HEBA
AI Grid, **Algeria**

Brief Biography: Dr. Abdelwahab Heba is a Senior Applied/Research Scientist specializing in speech processing, machine learning, and AI-driven language modeling. His research has significantly contributed to end-to-end speech recognition, speech translation, and multimodal AI. He completed his PhD in France, focusing on speech sequence modeling, and later conducted research at MILA under the supervision of Mirco Ravanelli and Yoshua Bengio. His work directly powers Microsoft's AI speech solutions and Azure AI services.

2nd International Conference on Advances in Electronics, Control and Communication Systems

Conference Program

Day 1 : Tuesday December 9th 2025			
07h45 – 08h45	**Welcome & Registration**		
09h00 – 09h30	**Opening Ceremony** Honorary chairs: Pr. Mohamed Bezina and Pr. Khalida Boutemak General chairs: Pr. Kamel Kara and Dr. Hocine Ait Saadi		
09h40 – 10h40	**Keynote 1 / Auditorium**	**Pr. Walter Theodor Czarnetzki and Wilhelm-August Buckermann, Esslingen University, Germany** *Microwave-Plasmalysis: Opportunities and benefits in the context of energy storage* **Session Chairs :** Pr. Aissa Chouder and Pr. Aissa Kheldoun	
10h40– 11h10	**Coffee-Break**		
11h10 – 12h20	**Oral Session 1 / Auditorium**	**T1 : Advances in Image, Video and Signal Processing** Session Chairs: Dr. A. Maddi Dr. N. Tidjani	• **ID 161 :** Faiza Benlakhdar, Wahiba Djerir, Abdelkader Safou, Mohand Tazerout, Kamel Sedda, Mohamed Souilah, *Simulation-Based Capacitive Imaging for Internal Defect Detection in Dielectric Materials* • **ID 202 :** Rahil Boumegouas, Mohamed Djendi, *A Powerful Blind Denoising Approach For Audio Signals* • **ID 208 :** Mahfoud Aliouat, *Comparative Study of Bi-Sensor-Based D-FBSS vs. Single-Sensor-Based Deep Learning Models for Noise Reduction and Speech Enhancement* • **ID 209 :** Yacine Abdelhakim Mokdad, Ahmed Krobba, Mohamed Debyeche, *NMF for Defending Speaker Recognition Systems Against Adversarial Attacks*
	Oral Session 2 / Room 1	**T2 : Communication Systems** Session Chairs: Pr. M. Bensebti Dr. S. Zaiter	• **ID 169 :** Kaibou Redouane, *FPGA Implementation of Radio and Video Composite Data Transmission for Signal Detection Applications using Petalinux in Hardware/Software Co-Design Approach* • **ID 186 :** Hadj Abdelkader Benzater, Nacerredine Lassami, Djamal Teguig, Hamza Zeraoula, Redouane Kaibou, Kamal tourche, *Kullback–Leibler Divergence–Driven Cooperative Asynchronous Compressive Spectrum Sensing for Cognitive Radio Networks* • **ID 213 :** Aicha Gherbil, Idris Messaoudene, Massinissa Belazzoug, Choumeyssa Chennouf; Khalida Khodja, Boualem Hammache, Salem Titouni, Ali Mansoul, *Development of an Endfire Antenna Array Fed by a Rotman Lens for Multibeam Beamforming* • **ID 277 :** Hakim Tayakout, Fatma Zohra Bouchibane, Elhocine Boutella, *Multi-Stream Feature Fusion for Robust Modulation Classification in Massive MU-MIMO Networks*
	Oral Session 3 / Room 2	**T4 : Electrical Power Systems** Session Chairs: Pr. A. Chouder Dr. M. Belazzoug	• **ID 177 :** Toufik Roubache, *Design of an Electric Drive System Powered by Renewable Sources* • **ID 259 :** Mohamed Amine Ben Aissa, Hakim Kharroubi, Mahmoud Taleb, Abdenour Ferhaoui, Hocine Moulai, *Design and Implementation of a Prototype Experimental Platform for Green Hydrogen Production via Water Electrolysis* • **ID 262 :** Oussama Merabet, Aissa kheldoun, Houssam Eddine Saadi, *Optimal overcurrent relay coordination in power distribution systems* • **ID 297 :** Selma Tchoketch Kebir; Redouane Drai, *Time Series Analysis for Diagnosing Electric Vehicle Performance*
	Oral Session 4 / Room 3	**T6 : Next-Generation Security: AI, IoT, and Cyber Threats** Session Chairs: Pr. M. Djebari Dr. Y. Kabir	• **ID 220 :** Abdelkader Hadj-Attou, Yacine Kabir, Farid Ykhlef, *Improving Intrusion Detection in IoT Networks Using Tree-Based Ensemble Methods and Mutual Information Feature Selection* • **ID 229 :** Bilal Maameri, Tayeb Kenza, Islam Debicha, Ahmed Hadj Ali, Mohamed Bouslah, *Enhancing IT Network Security through Context-Aware Attribute-Based Zero Trust Network Access* • **ID 249 :** Mehdiya Redadaa, *Vulnerabilities and Countermeasures in Biometric Authentication*
12h30 – 13h45	**Lunch-Break**		

13h45 – 14h45	Keynote 2 / Auditorium		**Dr. Hesham Abdelsalam Omran, Ain Shams University, Egypt** *Breaking the Bottleneck: Reimagining the Analog IC Design Flow* **Session Chairs :** Dr. Abdelhalim Slimane and Dr. Nouma Izeboudjen
14h50 – 15h50	Oral Session 5 / Auditorium	**T1 : Advances in Image, Video and Signal Processing** Session Chairs: Pr. A. Namane Dr. A. Chentir	• **ID 218 :** Khaoula Fergani, *Wavelet-Enhanced Deep Learning with Data Augmentation for Arabic Handwriting Recognition: A Novel Approach* • **ID 224 :** Ayoub Bengherabi, *Matched Filtering and Adaptive Energy for Efficient Pulse Detection in Time-Hopping Pseudolite* • **ID 231 :** Amina Kadir, Mohamed Salah Azzaz, Redouane Kaibou, *Secure Color Image Compression and Encryption Using Convolutional Autoencoders and Chaotic-Based Neural Network*
	Oral Session 6 / Room 1	**T2 : Communication Systems** Session Chairs: Pr. M. Djebari Dr.Y. Bennani	• **ID 287 :** Choumeyssa Chennouf, Idris Messaoudene, Massinissa Belazzoug, Aicha Gherbi, Youcef Braham Chaouche, Boualem Hammache, Salem Titouni, *16-Element Inverted T-Slot Massive MIMO Antenna For Future 5G Smartphone Applications* • **ID 294 :** Meroua Belmir, Wafa Difallah, Abdelkader Ghazli, *A Secure Smart Farming: Lightweight Confidentiality and Integrity for UAV communications in FANET* • **ID 302 :** Zeyneb Mordi, Zahir Hamouda, Mohand Lagha, *Miniature Flexible Dual-Band Antenna for 5G NR Applications* • **ID 303 :** Hayet Dahmri, *Multi-objective Connected Dominating Set with Cardinality, Weight, and Distance Optimization: A Hybrid Genetic–Greedy Approach*
	Oral Session 7 / Room 2	**T3 : Electronics: Devices, Circuits and Systems** Session Chairs: Pr. S. Nacer Dr. A. Taibi	• **ID 201 :** Nadira Demik, Tarek Djerafi, Mohamed Tellache, *Highly Sensitive IDC-Based Microwave Sensor for Soil Moisture Monitoring* • **ID 217 :** Maroua Nour El Houda Benbachir, Fayçal Amrani, *A Low-pass Filtering Wilkinson Power Divider with Wide Harmonic Suppression* • **ID 241 :** Abdelmoumen Guessoum, Mohamed Lazoul, *Proactive laser protection using optical limitation in a nonlinear photonic crystal*
	Oral Session 8 / Room 3	**T6 : Next-Generation Security: AI, IoT, and Cyber Threats** Session Chairs: Pr. A. Guessoum Pr. M. Bensebti	• **ID 295 :** Mohammed Yacine Benyahia, *Secure Bio-inspired MPPT Implementation on FPGA/ASIC for IoT-enabled Smart Photovoltaic Systems* • **ID 304 :** Messaoud Bengherabi, *Enhanced Differential Face morphing detection: Cross-view Quadratic Discriminant Analysis on Hybrid deep-shallow representation* • **ID 306 :** Abdelmalek Bakiri, Samir Fenanir, Lakhdar Goudjil, *Preprocessing-Enhanced Deep Learning for IoT Intrusion Detection* • **ID 312 :** Amira Berrezzek, Hayet Djellali, Lamia Mahnane, *A Survey of Intrusion Detection Systems in Deep Learning Era: Methods and perspectives*
15h50– 16h10			**Coffee-Break**
16h05 – 17h35	Auditorium	**Workshop**	**Dr. Abdelwahab Heba, AI Grid, Algeria** *Open-source conventional AI for Everyone*
16h10 – 17h10	Poster Session 1 / Reception Hall	Session Chairs: Dr. EL G. Boudissa Dr. R. Bendoumia Dr. H. Boughrira Dr. N. Brahimi	• **ID 225 :** *CNN-Based Feature Extraction with KNN Classification for GNSS Multipath Detection* • **ID 289 :** *Comparative Analysis of Semi-Adaptive Beamforming Algorithms for Ultrasound Localization Microscopy* • **ID 270 :** *Performance of ZP-OTFS communication system over transmission channel* • **ID 310 :** *A 28 GHz Substrate Integrated Waveguide Filter with Enhanced Performance for 5G applications* • **ID 240 :** *Design and simulation of avalanche photodetectors based on InAs/GaSb superlattices* • **ID 243 :** *Design and Implementation of an AI-Based Automatic Plastic Waste Sorting System* • **ID 170 :** *Quaternion EKF Approach for Accurate Motion Tracking with Cost-Effective IMU Devices* • **ID 196 :** *Decoupling Control of Multivariable Systems Using Eigenstructure Assignment* • **ID 255 :** *A Comparative Study of Machine Learning Algorithms for P2P Traffic Classification* • **ID 260 :** *Distributed Data Acquisition using MQTT protocol communication, Application to smart farming* • **ID 232 :** *Evaluating the Effectiveness of GAN-Assisted Dermoscopic Preprocessing in Skin Cancer Classification* • **ID 215 :** *Robust Algerian Speaker Identification using Spectral Domain Augmentation and CNN* • **ID 165 :** *Performance Analysis of a Grid-Connected Permanent Magnet Synchronous Generator System* • **ID 263 :** *SCHO Algorithm-Based Optimum Fractional-Order Control Synthesis for Synchronous Generator Excitation*

2nd International Conference on Advances in Electronics, Control and Communication Systems

Day 2 : Wednesday December 10th 2025			
08h45 – 9h45	Keynote 3 Auditorium	**Dr. Ayache Bouakaz, University of Tours, France** *Therapeutic ultrasound and the brain: Engineering challenges and clinical opportunities* **Session Chairs :** Pr. Nadjia Benblidia and Pr. Amina Serir	
09h50 – 10h50	Keynote 4 Auditorium	**Dr. Taous Meriem Laleg, INRIA, France** *Semi-Classical Signal Analysis: From Theory to Biomedical Signal and Image Processing* **Session Chairs :** Pr. Abderrezak Guessoum and Pr. Slimane Mekaoui	
10h50– 11h20	**Coffee-Break**		
11h20 – 12h20	Oral Session 9 Auditorium	**T1 : Advances in Image, Video and Signal Processing** Session Chairs: Pr. N. Benblidia Dr. F. Z. Reguieg	• **ID 248 :** Kaibou Redouane, *Low-Latency FPGA Architecture for Deep Learning–Based License Plate Recognition* • **ID 256 :** Nassira Chadda, *Fourier Decomposition vs. Morphological Pyramid for Retinal Vessel Segmentation* • **ID 258 :** Amina Serir, *Deep Learning Framework for Assessing Knee Osteoarthritis Severity*
	Oral Session 10 Room 1	**T4 : Electrical Power Systems** Session Chairs: Dr. R. Boukenoui Dr. A. Chanane	• **ID 276 :** Amel Smaili, El Ghalia Boudissa, *Performance Evaluation of PSO-Based MPPT Algorithm for PV Systems Under Partial Shading* • **ID 318 :** Aissa kheldoun, Soufian Khettab, Oussama Merabet, Hamza Belmadani, *A Virtual Vector Based DTC and MPTC for B4-Inverter Fed IM Drives* **ID 271 :** Souad Chennoufi, Nacer Tarek, Nadjemi Omar, Ykhlef Farid, *Predicting the Clear-sky and Clearness Indices for GHI Estimation under Two Algerian Climate*
	Oral Session 11 Room 2	**T5 : Control and Automation** Session Chairs: Dr. T. M. Laleg Dr. B. Kazed	• **ID 168 :** Safinaz Ben Messaoud, Mohammed Belkhiri, Hibat Erahmane Makhloufi, *Trajectory Tracking Control of an Elastic Joint Manipulator Using Feedback Linearization and Neural Network Compensation* • **ID 199 :** Rania Amrouche, Mohamed Lamine Fas, Mohamed Benrabah, *Optimal Design of Fuzzy Logic Control System for Quadrotor Trajectory Tracking Using Metaheuristic Algorithms* • **ID 207 :** Abdelrahman Habash, Rostom Nehlil, Mohamed Benrabah, Mohamed Lamine Fas, *Constrained PSO/TLBO-Optimized Neural Network Predictive Control for Nonlinear Quadrotor Systems*
12h20– 13h45	**Lunch-Break**		
13h45– 14h45	Oral Session 12 Auditorium	**T3 : Electronics: Devices, Circuits and Systems** Session Chairs: Pr. A. Namane Dr. R. Serhane	• **ID 244 :** Hakim Kharroubi, Mohamed Amine Ben Aissa, Ayoub Si Salah, Mohamed Islam Menaa, Hocine Mouali, *Intelligent Reverse Vending Machine for Automated Collection and Shredding of PET Bottles Using YOLOv8 and ESP32* • **ID 286 :** Kamel Boudjit, Oussama Slimani, Aghiles Djeradi, *Design and Implementation of a CNN Hardware Accelerator dedicated to Smart Agriculture* • **ID 288 :** Adel Miloudi, Nadjia Benblidia, Hamida Bougherira, Nouma Izboudjen, *Fully Open-Source Implementation, Layout-Level Area and Power Analysis of Ultra-Low Power RISC-V Cores and a Bit-Serial NVM-Enabled Design*
	Oral Session 13 Room 1	**T1 : Advances in Image, Video and Signal Processing** Session Chairs: Dr. A. Bouakaz Dr. F. Z. Reguieg	• **ID 290 :** Salah Eddine Agab, Nafaa Nacereddine, *Corrosion Classification with Synthetic and Real Images: A Comparative Study* • **ID 313 :** Lotfi Mostefai, Brahim Brahmi, Merzoug Bouhamdi, Mohamed Benouis, *A Comprehensive Analysis of Data Driven NN Models for EMG-Based Force Estimation in Rehabilitation Robotics* • **ID 298 :** Messaoud Bengherabi, *Exploring blind face restoration and fusion for hand-drawn face sketch-photo recognition*
	Oral Session 14 Room 2	**T5 : Control and Automation** Session Chairs: Dr. T. M. Laleg Pr. A. Ferdjouni	• **ID 266 :** Mehdi Abdessamad Dahoum, Kamel Kara, Samir Zeghlache, abdelhadi Aouaichia, *Terminal Synergetic Control for Quadcopter Under External Disturbances and Parameter Uncertainties* • **ID 300 :** Mekhalfia Ramadhan, *GSA-Based MPPT Enhancement for Solar Water Pumping Systems under Variable Conditions* • **ID 317 :** Anis El Maharat, *Interval PCA Limitations on Sensor Fault Detection*

2ⁿᵈ International Conference on Advances in Electronics, Control and Communication Systems

14h45 – 15h15	Poster Session 2 Reception Hall	Session Chairs: Pr. M. Mehdi Pr. N. Benoudjit Dr. A. Maddi Dr. M. Mekarzia	• **ID 267 :** *Enhanced Variable Forgetting Factor Fast NLMS Algorithm Based on Variable Step-Size Technique* • **ID 180 :** *Implementation of Context Selection and Modeling in H.266 CABAC+ Algorithm* • **ID 307 :** *Hybrid Algorithm for CFAR detection in non-homogeneous environments* • **ID 190 :** *A Comparative Study of New Adaptive Equalizers Based on PAP and MRNQ Algorithms for High Order Quadrature Amplitude Modulation* • **ID 212 :** *Wideband Antipodal Vivaldi Antenna Integrated with GRIN Lens for High-Gain and Wide-Angle dynamic Beam Scanning in Ka-Band* • **ID 198 :** *Dual Approach to Mutual Coupling Reduction for High-Performance CP Arrays* • **ID 278 :** *ALAVO: An Adaptive Load-Aware VNF Orchestration for Dynamic Fog Computing Environments* • **ID 203 :** *Integrated MRAC-Backstepping Control with PID Attenuation and Genetic Algorithm Optimization for a Nonlinear 12-DOF Quadrotor System* • **ID 221:** *From GSPNs to STAs: Bridging Stochastic Modeling* • **ID 282 :** *In-Orbit Thruster Calibration Methods for Satellite Attitude Determination and Control* • **ID 261 :** *Low-Cost Smart Home Security System Integrating PIC Microcontroller with Raspberry Pi-Based Face Recognition* • **ID 269 :** *Star Spots Extraction Method for Star Tracker in Dynamic Imaging Conditions* • **ID 187 :** *Enhancing Real-Time Crime Detection in Video Surveillance Through GAN-Based Data Augmentation and a Hybrid CNN-Transformer Architecture* • **ID 223 :** *Wearable Monopole AMC-backed Antenna for On-Body Communication*
15h15 – 15h45	**Coffee-Break**		
15h45 – 16h45	**Closing Ceremony**		

Thursday December 11ᵗʰ 2025	
08h30 – 16h	**Cultural Trip to the Casbah of Algiers**