



**Arab Academy**  
for Science, Technology & Maritime Transport

# 34<sup>th</sup> International Conference on Computer Theory and Applications

**ICCTA 2024**

14-16 December 2024  
Alexandria, Egypt

**Under the Auspices of**

**H.E. Dr. Amr Talaat**  
**Minister of Communications and Information Technology**  
**Egypt**

**Conference Program**



**Ministry of Communications  
and Information Technology**

 **IEEE**  
Alexandria Subsection

## **DAY 1 - Saturday, December 14<sup>th</sup>, 2024**

Venue: AASTMT Presidency Building, AbuQir and Online

**10:00 Registration**

**11:00 Opening Session and Keynote Speech**

**Welcoming Speeches**

**Prof. Dr. Ayman Abdel-Hamid**

Dean – College of Computing and Information Technology (Alexandria)  
Arab Academy for Science, Technology, and Maritime Transport  
Conference Coordinator

**Prof. Dr. Maha Elsabrouty**

IEEE Alexandria Subsection Chair  
Egypt-Japan University of Science and Technology, Egypt

**Prof. Dr. Eman Tharwat**

Chair - Sector Committee of Computer Science and Informatics  
Supreme Council of Universities, Egypt

**Prof. Dr. Alaa Abdelbary**

Vice President for Postgraduate Studies and Scientific Research  
Arab Academy for Science, Technology, and Maritime Transport

**H.E. Prof. Dr. Ismail Abdel Ghafar Ismail Farag**

President – Arab Academy for Science, Technology, and Maritime Transport

**H.E. Prof. Dr. Yousry El Gamal**

Former Minister of Education, Egypt  
President, Computer Scientific Society

**H.E. Dr. Amr Talaat**

Minister of Communications and Information Technology, Egypt

**Keynote Speech**

**“Technology Trends Outlook 2024”**

***H.E. Prof. Dr. Yousry El Gamal***

**12:30 Coffee Break**

## **DAY 1 - Saturday, December 14<sup>th</sup>, 2024 (Cont'd)**

**13:30 Keynote Speech**

**Moderator: Prof. Dr. Mohamed Kholief**

**“Shaping and Creating the Future: AI and Machine Learning Driving Tomorrow’s Technology and the Path to Sustainable Technology”**

***Prof. Dr. Walid Salameh***

Professor of Computer Engineering and AI  
Princess Sumaya University for Technology, Jordan

**14:00 Keynote Speech**

**Moderator: Prof. Dr. Mohamed Kholief**

**“Wireless Sensing for Future Smart Home and Society”**

***Prof. Dr. Akira Uchiyama***

Mobile Computing Laboratory  
Osaka University, Japan

**14:30 Keynote Speech**

**Moderator: Prof. Dr. Mohamed Kholief**

**““Torath”: Digitization & Harnessing AI Capabilities to Preserve Egypt's Heritage”**

***Prof. Dr. Hesham ElDeeb***

Professor, Electronics Research Institute, Cairo, Egypt

**15:00 Lunch**

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**End of Day 1 Activities - ICCTA 2024**

## **DAY 2 - Sunday, December 15<sup>th</sup>, 2024**

Registration: Farsi Hall – College of Engineering and Technology- AbuQir

### **2 Parallel Sessions: Session I and Session II**

#### **9:00 - 11:00 Session I**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

<b>Session I Intelligent Computing I</b>
<b>Chairs: Prof. Dr. Khaled Mahar</b>
Defensive Reflexes of Drones
<b>Adnan Akpınar and Ensar Gul (Maltepe University Istanbul, Turkiye)</b> Realisation of Cooperative Conveyor-AGV Smart Luggage Handling System through AI-Based Object Detection and IoT
<b>Ahmed Hebala and Hamdy A. Ashour (AASTMT, Egypt)</b> AI-based Detection of Pressure Vessel Internal Damage Mechanisms
<b>Essam Seddik (AASTMT, Egypt), Mohamed Hewieg (Egyptian Maintenance Company, Egypt), and Rola Afify (AASTMT, Egypt)</b> RNA Encoding and CLARA Clustering Algorithm for Hybrid Intrusion Detection System using UNSW-NB15 Dataset
<b>Omar Fitian Rashid (University of Baghdad, Iraq), Mustafa Tareq (University of Technology, Iraq), and Mohammed Ahmed Subhi (Ministry of Higher Education and Scientific Research, Baghdad, Iraq)</b> Effective State Estimation for a Class of Nonlinear Systems using Soft Actor-Critic Reinforcement Learning
<b>Sohila Megahed and Ayman El-Badawy (German University in Cairo, Egypt)</b> Improving the diagnosis of Gastrointestinal Diseases using a modified Alex Net
<b>Bahaa S. Rabi, Ayman S. Selmy and Wael A. Mohamed (Benha University, Egypt)</b> Class-Level Refactoring Prediction Using Machine Learning Methods
<b>Heba Scandrani, Sarah Swerey, and Mrwan BenIdris (University of Benghazi, Libya)</b> Hybrid Approach for Automatic Stemming of Chichewa Words Using Clustering with 4-grams and Affix Stripping
<b>Stanley Ndebvu, Anderson G and Malema G (University of Botswana, Botswana), Reuben Moyo (Mzuzu University, Malawi), and Francis Ijebu (Harbin Institute of Technology, China)</b> Word Sense Disambiguation of Medical Abbreviations Using Semantic Types Classification
<b>Ghada M. Farouk, Sally S. Ismail and Mostafa M. Aref (Ain Shams University, Egypt)</b>

## **DAY 2 - Sunday, December 15<sup>th</sup>, 2024 (Cont'd)**

**9:00 - 11:00 Session II**

Venue: Room 303 – College of Engineering and Technology- AbuQir and Online

<b>Session II Information Systems and Computer Applications</b>
<b>Chairs: Prof. Dr. Saleh Mesbah</b>
Toward an Advanced Rural Tourism Ontology for Enhancing Visitor Experiences in Morocco's Draa-Tafilalet Region <b>Youness Balaadich and Abdeslam Jakimi (Moulay Ismail University, Meknes Errachidia, Morocco)</b>
Semantic Vector-Based Query Extension for RDF Graphs <b>Hayam A. Hussain, Karam Gouda, Walaa Medhat, and Mona M. Arafa (Benha University, Egypt)</b>
Analysis of MDE Based Gamification Framework for Cognitive Evaluation <b>Mahbubul Islam (United International University (UIU), Bangladesh), Swapnil Biswas (Southern Illinois University Edwardsville, USA), Md. Shakil Ahmed, Md. Jobayer Rahman, Ahmed Rafi Hasan (United International University (UIU), Bangladesh), Al Amin (University of Maryland, Baltimore, USA), and Md Saddam Hossain Mukta (United International University (UIU), Bangladesh)</b>
Software Simulation of Hydrogen Transport Using Dense Phase <b>Rola Afify, Ahmed Samy, Ibrahim Hassan (AASTMT, Egypt), and Hassan El-Gamal (Alexandria University, Egypt)</b>
Prediction of Students' Performance in Flipped Classroom-based Vocational Education Using Data Mining Tools <b>Yousra O. Kamal Eldeen (Misr International Technological University, Egypt), Mohamed AbdelRaheem, and Taysir Hassan A. Soliman (Assiut University, Egypt)</b>
Privacy Preserving Customer Churn Prediction using Deep and Federated Learning <b>Yasmin Gamal Fahmy, Mohamed Waleed Fakhr, and Mohamed Kholief (AASTMT, Egypt)</b>
Web-Based Integrated School Management System for Enhanced Student-Teacher and Resource Accessibility <b>Wessam M. Salama (Pharos University, Egypt) and Moustafa H. Aly (AASTMT, Egypt)</b>
Optimizing SMEs Inventory: A Data-Driven Framework to Address Key Challenges in the Egyptian SMEs <b>Marwa AbdElwahab, Sara ElGazzar, Khaled Mahar (AASTMT, Egypt), and Hatem Abdel Kader (University of Menoufia, Egypt)</b>

**11:00 Coffee Break**

## **DAY 2 - Sunday, December 15<sup>th</sup>, 2024 (Cont'd)**

**11:30- 12:00 Keynote Speech**

**Moderator: Prof. Dr. Mohamed Kholief**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

### **“Toward Energy-Efficient HPC Systems with Dynamic Power-Performance Adjustment”**

***Prof. Dr. Yasutaka WADA***

School of Information Science  
Meisei University, Tokyo, Japan

**12:00- 12:30 Keynote Speech**

**Moderator: Prof. Dr. Waleed Abdel Moez**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

### **“AI Readiness and the Role of Research”**

***Prof. Dr. Ahmed Tantawy***

Strategy Advisor and Former Scientist, Inventor, and Business Executive, USA

**13:00 - 15:00 Session III**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

<b>Session III Cybersecurity, Distributed Systems, and Robotics</b>
<b>Chairs: Prof. Dr. Ayman Abdel-Hamid</b>
QoS Under Attack: A Simulation Study on the Impact of Class Hijacking in Wireless LANs <b>Christos K. Christodoulou, Anastasios C. Politis, and Constantinos S. Hilas (International Hellenic University, Greece)</b>
Outsmarting Spam: Resilient Model for Concept Drift and Evolving Threats <b>George S. Yanni, H. Salah, and Fahima A. Maghraby (AASTMT, Egypt)</b>
A Distributed Network Model for Digital Contracts <b>Yousef Abdelmagid and Mohamed Hammad (Coventry University, Egypt)</b>
Optimal Thrust Vectored Control for Vertical Take Off and Landing Underactuated Unmanned Aerial Vehicle <b>Mohamed Abdel Mageed, Aly Attallah, and Ahmed Taimour Hafez (Military Technical College, Egypt)</b>
Efficient Detection of Black Box Adversarial Attacks in Machine Learning Systems Using Cluster-Based and Class-Based Input Patterns <b>Rghda Salah, Tarek Sharaf, Nada Tayel, and Doaa Shawky (University of Science and Technology, Zewail City, Egypt)</b>

**Session III**  
**Cybersecurity, Distributed Systems, and Robotics**

Data-Driven MPC for Quadrotor UAVs Using SINDy

**Abdullah Rashad, Hashem Ghorab, Mostafa Othman, and Ayman El-Badawy (German University in Cairo, Egypt)**

A Comparative Analysis for Anomaly Detection in Blockchain Networks Using Machine Learning Techniques

**Noha E. El-Attar (Benha University, Egypt), Marwa H. Salama (Tanta University, Egypt), Mohamed Abdelfattah (Benha University, Egypt) and Sanaa Taha (Cairo University, Egypt)**

Enhancing Vulnerability Detection in Smart Contracts Using Transformer-Based Embeddings and Graph Neural Networks

**Vinay Kumar Kasula, Akhila Reddy Yadulla, Mounica Yenugula, Bhargavi Konda, and Abdullah Alshboul (University of the Cumberland, USA)**

**15:00 Lunch**

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**End of Day 2 Activities - ICCTA 2024**

### **DAY 3 - Monday December 16<sup>th</sup>, 2024**

Registration: Farsi Hall – College of Engineering and Technology- AbuQir

**2 Parallel Sessions: Session IV and Session V**

**9:00 - 11:00 Session IV**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

<b>Session IV Intelligent Computing II and Multimedia Processing</b>
<b>Chairs: Prof. Dr. Mohamed Kholief</b>
Dynamic Entropy Tuning in Reinforcement Learning Low-Level Quadcopter Control: Stochasticity vs Determinism
<b>Youssef Mahran, Zeyad Gamal, and Ayman El-Badawy (German University in Cairo, Egypt)</b>
Exploiting Machine Learning and Remote Sensing for Precision Crop Mapping in Africa
<b>Omar Ayman, Mosaab Emad Gamal, Mohamed ElSayed Atwa, Yassin Khaled, and Noha Gamal El-Din Saad (Nile University, Egypt)</b>
Quality of AI-Generated vs. Human-Generated Code
<b>Tasneem Muhammed Eltabakh, Nada Nabil Souidi, and Doaa Shawky (Zewail City, Egypt)</b>
Automating Sanad Continuity Verification in Disconnected Hadith Using Machine Learning
<b>Mona Hendawi, Marwan Torki, Amr Elmasry, and Ayman Khalafallah (Alexandria University, Egypt)</b>
Feature extraction from Hyperspectral Images using RCNN and Vision Transformer
<b>Eman N. Abdelhafez, Ahmed Hagag, and Tamer A. Abassy (Benha University, Egypt)</b>
Stellar Cleanse: Pioneering CosmicNet for Superior Denoising of Space Imagery
<b>Miada M. Aladi, Karam Gouda, Ahmed Hagag (Benha University, Egypt), and Ayman Ahmed (Egyptian Space Agency, Egypt)</b>
BrainDiffU-Net: A Distributed Diffusion-Based U-Net for Brain Tumor Segmentation
<b>Parth Sharma and Pyari Mohan Pradhan (Indian Institute of Technology Roorkee, India)</b>
A Tiered GAN Approach for Monet-Style Image Generation
<b>FNU NEHA, Deepshikha Bhati (Kent State University, USA), Deepak Shukla (Rutgers University, USA), and Md Amiruzzaman (West Chester University, USA)</b>
Data Augmentation of Electromyography Signal for Neuromuscular Disorders Diagnosis
<b>Nahla F. Abdel-Maboud (Ain Shams University, Egypt), Silvia Stoyanova Parusheva (University of Economics Varna, Bulgaria), Marco Alfonse Tawfik, and Abdel-Badeeh M. Salem (Ain Shams University, Egypt)</b>



## **DAY 3 - Monday, December 16<sup>th</sup>, 2024 (Cont'd)**

**9:00 - 11:00 Session V**

Venue: Room 303 – College of Engineering and Technology- AbuQir and Online

<b>Session V Intelligent Computing III</b>
<b>Chairs: Prof. Dr. Mohamed Shaheen</b>
Providing Interpretability Dimension to Bug Severity Prediction using Pseudo-labeling Semi-Supervised Technique <b>Saeed Mostafa Zalat, Noha Mohammad Hamed, Omaima Shoaib Ahmed, and Walid M. Abdel Moez (AASTMT, Egypt)</b>
Vision Language Transformation for Medical Image Captioning: Comparison of Four Pretrained CNN Networks <b>Salma Elgayar (Ain shams University, Egypt), Safwat Hamad (Saint Mary's College of California, USA), and El-Sayed M. El-Horbaty (Ain Shams University, Egypt)</b>
Cross-Modal Embedding Generalized Framework for Audio-Text Alignment <b>Noha Saad (Nile University, Egypt) and Ahmed ElShafee (MSA University, Egypt)</b>
Automated Retail Assortment Optimization Using Machine Learning and Deep Learning in Compact Stores During Crisis Periods <b>Nora Hassan Aboalanin, Mohamed Abo Rizka and Manar Mohamed Hafez (AASTMT, Egypt)</b>
Probabilistic Feature Extraction in Portfolio Optimization: Integrating PPCA with Mean Reversion and Mean-Variance Strategies <b>Ahmed Nabil Atwa, Mohamed Kholief, and Ahmed Sedky (AASTMT, Egypt)</b>
An Explainable Approach for Brain Tumor Segmentation using Grad-CAM based U-Net Models <b>Dina Essam Abd-Elhafeez, Yasser Ahmed Dahab, Nashwa El-Bendary, and Ossama Mohamed Badawy (AASTMT, Egypt)</b>
DeepStream-X: A Two-Stream Deepfake Detection Framework using Spatiotemporal and Frequency Features <b>Nada Mohamed Emara and Mazen Nabil Elagamy (AASTMT, Egypt)</b>
SQLify Me: An Automated Text-To-SQL Query Generator <b>Ahmed Yasser Mohamed, Mohamed Hisham Zain-Elabdeen, Salwa Ahmed Sayed, Samaa Sabry Abdelwahab, Ziad Ezzat Mohamed, Zyad Mahmoud Ali, Yomna A. Kawashti, and Hanan Hindy (Ain Shams University, Egypt)</b>
Intelligent Tools and Techniques for Teaching Children with Autism Spectrum Disorder <b>Aya Hegazy (Pharos University, Egypt), Khaled Mahar, and Nahla Belal (AASTMT, Egypt)</b>

**11:00 Coffee Break**

## **DAY 3 - Monday, December 16<sup>th</sup>, 2024 (Cont'd)**

**11:30- 12:00 Keynote Speech**

**Moderator: Prof. Dr. Amira Zaki**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

### **“AI for Sustainable Energy: Towards Net Zero Emissions”**

**Prof. Dr. Abdel Hamid Soliman**

Professor of Signal Processing and Telecommunication  
School of Digital, Technology, Innovation and Business  
Staffordshire University, UK.

**12:30 - 14:30 Session VI**

Venue: Farsi Hall – College of Engineering and Technology- AbuQir and *Online*

<b>Session VI Networks and Cybersecurity</b>
<b>Chairs: Prof. Dr. Waleed Abdel Moez</b>
Dynamic Scalable Energy-Aware Routing Protocol for Mobile Ad hoc Networks <b>Liana Qabajeh, Yasmeen Amro (Palestine Polytechnic University, Palestine), and Mohammad Qabajeh (Palestine Technical University Kadoorie, Palestine)</b>
Intrusion Detection for IoT Networks Using SVM Algorithm <b>Norhan Elnady, Aya Adel, and Wael Badawy (Egyptian Russian University, Egypt)</b>
Wireless Body Area Networks: Antenna Design <b>Heba Abdelhamid Elkayal (Pharos University in Alexandria, Egypt), Moustafa H. Aly (AASTMT, Egypt), Mazen Tamer Aletreby, Mohamed Atef Sabry, Youssef Adel Elshazly, Youssef Mohamed Bakr, Mohamed Mostafa Ahmed, and Mohamed Saleh (Pharos University in Alexandria, Egypt)</b>
Edge Device Implementation for Smart Agriculture and Insect Pests Detection <b>Adel Eltoweiry, Hania Abouelezz, Mohammed A.-M. Salem, and Mohamed A. Abd El Ghany (German University in Cairo, Egypt)</b>
Smart Grid Prediction Using Federated Learning and Fully Homomorphic Encryption <b>Islam M. Saad, Mohamed Waleed Fakh (AASTMT, Egypt), Tamer Abdel Kader (Galala University, Egypt), and Nada M. Abdel Aziem (AASTMT, Egypt)</b>
Predicting Vulnerability Exploit Complexity Based on Exploit Scripts <b>Daniel Rosenberger and Alexander Jesser (Heilbronn University of Applied Sciences, Germany)</b>
Anomaly Detection of Object-Centric Event Logs Using Event Knowledge Graph <b>Omnia Osama Amin, Walid M. Abdel Moez, and Mohamed Shaheen (AASTMT, Egypt)</b>

**14:30 Coffee Break**

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**End of ICCTA 2024 Activities**

## **ICCTA 2024 Committees**

### **Honorary Chair**

**H. E. Prof. Dr. Ismail Abdel Ghafar Ismail Farag**

President, Arab Academy for Science, Technology, and Maritime Transport (AASTMT), Egypt

### **Conference Chair**

**H. E. Prof. Dr. Yousry S. El-Gamal**

Former Minister of Education

President, Computer Scientific Society

### **AASTMT Liaison**

**Prof. Dr. Alaa Abdel Bary**

Vice President for Postgraduate Studies and Scientific Research, AASTMT

### **Conference Coordinator and Program Chair**

**Prof. Dr. Ayman Abdel-Hamid, AASTMT, Alex., Egypt.**

### **Advisory Committee**

**Prof. Dr. Hussein Mouftah, University of Ottawa, Canada**

**Prof. Dr. Satoshi Goto, Egypt Japan University of Science and Technology, Egypt**

**Prof. Dr. Mohamed Abougabal, Alexandria University, Egypt**

**Prof. Dr. Said El-Khamy, Alexandria University, Egypt**

**Prof. Dr. Ahmed Darwish, Cairo University, Former Minister of State for Administrative Development, Egypt**

**Prof. Dr. Abdel Badeeh Salem, Ain Shams University, Egypt**

**Prof. Dr. Ahmed Tantawy, International Strategy and Management Consultant, USA**

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**Prof. Dr. Ossama Badawy, AASTMT, Alex., Egypt**

**Prof. Dr. Khaled Mahar, AASTMT, Alex., Egypt**

**Dr. Essam Kosba, AASTMT, Alex., Egypt.**

**Prof. Dr. Ahmed Farouk, AASTMT, Alex., Egypt**

**Dr. Mahmoud Farouk, AASTMT, Alex., Egypt**

**Prof. Dr. Mohamed Kholief, AASTMT, Alex., Egypt**

**Prof. Dr. Ahmed Abou Elfarag, AASTMT, Alex., Egypt**

**Dr. Mohamed El-Habrouk, Alex. Univ., Alex., Egypt**

**Prof. Dr. Amira Zaki, AASTMT, Alex., Egypt**

**Eng. Hassan Bakr, AASTMT, Alex., Egypt**

**Mr. Kabary Mohamed, AASTMT, Alex., Egypt**

## **ICCTA 2024 Committees (Cont'd)**

### **Finance Chair**

**Eng. Mahmoud Morsy**

Honorary Secretary, Computer Scientific Society

### **Marketing and Public Relations**

**Dr. Nezar El Shenawy**

Head of Marketing Unit, Postgraduate Studies and Scientific Research, AASTMT

### **Web Committee**

**Eng. Eman Eid**, AASTMT, Alex., Egypt