



# 32<sup>nd</sup> International Conference on Computer Theory and Applications

**ICCTA 2022**

17-19 December 2022  
Alexandria, Egypt

**Under the Auspices of**

**Prof. Dr. Mohamed Ayman Ashour**  
**Minister of Higher Education and Scientific Research**  
**Egypt**

## Conference Program



**DAY 1 - Saturday, December 17<sup>th</sup>, 2022**

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. Ahmed Hassan**

Chair, IEEE Egypt Section  
Dean – Information Technology and Computer Science School, Nile University,  
Egypt

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

Former Minister of Education, Egypt  
President, Computer Scientific Society

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

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

**H.E. Prof. Dr. Mohamed Ayman Ashour**

Minister of Higher Education and Scientific Research, Egypt

**Keynote Speech**

**“A New Dimension to University Education: The Metaversity”**

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

**12:30 Coffee Break**

## **DAY 1 - Saturday, December 17<sup>th</sup>, 2022 (Cont'd)**

**13:00 Keynote Speech**

### **“Technology Trends for Intelligent Automated Electric Transportation Systems in Smart Cities”**

***Prof. Dr. Hussein Mouftah***

Tier 1 Canada Research Chair and  
Distinguished University Professor  
School of Electrical Engineering and Computer Science  
University of Ottawa, Ottawa, Ontario, Canada

**13:30 Keynote Speech**

### **“In Pursuit of Japanese-style Research and Education of Computer Software: Experiences with Software-Centered Research Projects”**

***Prof. Dr. Kazunori Ueda***

Professor of Computer Science and Engineering, Waseda University  
Visiting Professor, Egypt-Japan University of Science and Technology

**14:00 Keynote Speech**

### **“Multi-scale Robotic System”**

***Prof. Dr. Toshio Fukuda***

Vice President for Research  
Egypt Japan University of Science and Technology, Egypt

**14:30 Keynote Speech**

### **“Computer Simulations for Development of Electric Vehicles Thermal Management Systems”**

***Dr. Alaa El-Sharkawy***

Global Manager & Technical Fellow  
FIAT-Chrysler Automobiles (FCA) US LLC, USA

**15:00 Lunch**

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**End of Day 1 Activities - ICCTA 2022**

## **DAY 2 - Sunday, December 18<sup>th</sup>, 2022**

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

9:30 - 12:00

<b>Session I Intelligent Computing I</b>
<b><i>Chairs: Prof. Dr. Khaled Mahar and Prof. Dr. Mohamed Shaheen</i></b>
Cardiovascular Disease Prediction Using Modified Version of ResNet-50 Model <b>Shaimaa Mahmoud, Mohamed Gaber, Gamal Farouk, and Arabi Keshk (Menoufia University, Egypt)</b>
A Comparative Study of Different Transfer Learning Models for Classification of Urban Manhole States <b>Md. Tanvir Ahmed, Md Risfat Amin, Fahim Ur Rahman, Mahedi Hasan Abeer, Nusrat Nabi, and Md. Sazzadur Ahamed (Daffodil International University, Bangladesh)</b>
An Intelligent Framework based on CNN and Neutrosophic Technique for Detecting Code Smells and Ranking Code <b>Ali Kanan, Nada Sherief, and Walid Abdelmoez (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
A Deep Learning-based Emotion Recognition System for Interactive E-Learning <b>Anis Tawfik, Hoda Osama Elkhodary, Sherine Nagy Saleh (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
Reinforcement-Learning Based Method for Accelerating Functional Coverage Closure of Traffic Light Controller Dynamic Digital Design <b>Youstina M. Halim (Ain Shams University, Egypt), Khaled A. Ismail (GSI Helmholtz Center for Heavy-Ion Research GmbH, Germany), Mohamed A. Abd El Ghany (German University in Cairo, Egypt), Sameh A. Ibrahim, and Youssef M. Halim (Ain Shams University, Egypt)</b>
An Ensemble Approach for Improving Short-term Electrical Load Forecasting <b>Wesam Yehia Bakr, Mahmoud Hussein, and Ashraf Elsisy (Menoufia University, Egypt)</b>
Novel framework for Detecting Multiple Sclerosis using Hybrid models <b>Mostafa Elbaz, Sherouk Yassin, Sherief Magdy, Eman Elbadawy, Asmaa Mohamed, and Hitham elwahash (Kafrelsheikh University, Egypt)</b>

**Session I**  
**Intelligent Computing I**

Blur Detection and Deblurring in Covid-19 Chest X-rays Images using Generative Adversarial Networks

**Shaheera Rashwan and Dina Abdelhafiz (City of Scientific Research and Technological Applications, Egypt)**

Ear Recognition Using Ensemble of Deep Features and Machine Learning Classifiers

**Bilal Attallah, Youcef Brik, and Cheyma Nadir (University Mohamed Boudiaf of M'Sila, Algeria)**

Topic Modeling Methods for Document Retrieval

**Ibrahim Reyad, Metwally Rashad, and Mohamed Abdelfatah (Benha University, Egypt)**

**12:00 Coffee Break**

**12:30- 13:00 Keynote Speech**

**“Government Improvement through Scientific Research and Innovation”**

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

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

**13:00 - 15:30**

**Session II**  
**Intelligent Computing II**

***Chairs: Prof. Dr. Mohamed Kholief and Prof. Dr. Saleh Mesbah***

Machine Learning Technique for Credit Card Fraud Detection

**Mahmoud Ghanem (Alexandria University, Egypt), Saleh Mesbah Elkaffas (Arab Academy for Science, Technology and Maritime Transport, Egypt), and Magda Madbouly (Alexandria University, Egypt)**

Local Vegetable Freshness Classification Using Transfer Learning Approaches

**Tasmima Akter, Shafayet Mahamud, Mayesha Iqbal, Tamanna Akter Swarna, Nusrat Nabi, and Md. Sazzadur Ahamed (Daffodil International University, Bangladesh)**

**Session II**  
**Intelligent Computing II**

Framework for Suicide Detection from Arabic tweets using Deep Learning

**Rowan Bassel soudi, Mohamed Saad Zaghoul, and Osama Mohamed Badawy (Arab Academy for Science, Technology and Maritime Transport, Egypt)**

An Approach using Machine Learning to Determine Bangladeshi Jute Yield relying on Weather Patterns

**Silvia Kh Shuversa, Abdullah Al Ryan, Shahriar Mamun, Nusrat Nabi, and Md. Sazzadur Ahamed (Daffodil International University, Bangladesh)**

OnionBangla: A Supervised Machine Learning Approach for Predicting Onion Yield using Bangladeshi Climate Data

**Lamia Binte Iqbal, Md. Mahfujur Rahman, Shahriar Mamun, Nusrat Nabi, and Md. Sazzadur Ahamed (Daffodil International University, Bangladesh)**

Investigation of Local Interpretable Model-Agnostic Explanations (LIME) Framework with Multi-Dialect Arabic Text Sentiment Classification

**Mohamed Salah Awadallah (Arab Academy for Science, Technology and Maritime Transport, Egypt), Francisco de Arriba-Perez, Enrique Costa-Montenegro (University of Vigo, Spain), Mohamed Kholief, and Nashwa El-Bendary (Arab Academy for Science, Technology and Maritime Transport, Egypt)**

Scheduling and Communication Schemes for Decentralized Federated Learning

**Bahaa-Elden A. Abdelghany (Arab Academy for Science, Technology and Maritime Transport, Egypt), M. Fernández-Veiga, A. Fernández-Vilas (University of Vigo, Spain), Ammar M. Hassan, Waleed Abdel Moez, and Nashwa El-Bendary (Arab Academy for Science, Technology and Maritime Transport, Egypt)**

Deep Learning-based Framework for Automatic Diabetic Retinopathy Detection

**Youcef Brik, Bilal Attallah, Ishaq Aiche, Hanine Lahmar, and Ziani Zohra (University Mohamed Boudiaf of M'Sila, Algeria)**

Electroencephalography-based Brain-Computer Interfaces for Robots Control Using Deep Learning

**Zeinab Said Wahba, Marwan Torki, Ayman Samy Abdel-Khalik, (Alexandria University, Egypt)**

**15:30 Lunch**

**End of Day 2 Activities - ICCTA 2022**

### **DAY 3-Monday December 19<sup>th</sup>, 2022**

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

9:30 - 12:00

<b>Session III Mechatronics, Data Communications, and IoT</b>
<b><i>Chairs: Prof. Dr. Moustafa Hussein and Prof. Dr. Ehab Badran</i></b>
Kinematic Analysis of Constrained General Planner Mechanisms Using MATLAB GUI <b>Marian William, Moutaz M. Hegaze (Arab Academy for Science, Technology and Maritime Transport, Egypt), Mohamed I. Abu El-Sebah (Electronics Research Institute, Egypt, and Yasser Elshaer (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
Downlink of Hybrid NOMA with OFDM System Using SIC Receiver <b>Reham A. Ramadan, Ehab F. Badran, and Darwish AE. Mohamed (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
Sustainable Internet of Things (S-IoT) with 5G Smart Antennas for Smart Media Data Services <b>Hegazi Ibrahim and Nesma Abd El-Mawla (Nile Higher Institute of Engineering and Technology, Egypt)</b>
Near Field Communication for Mobile Application: Employees Tracking System <b>Heba Gamal Badie (Pharos University, Egypt), Moustafa H. Aly (Arab Academy for Science, Technology and Maritime Transport, Egypt), Khadr Ayman Gamal, Mohamed Ashraf Hamisa, Abdallah Abdellsattar Bahnasy, and Amr Zakaria Khalil (Pharos University, Egypt)</b>
3D Object Encryption Through a Disruptive Rotational Symmetry Transformation <b>Wassim Alexan, Hana Younis, Marwa Ibrahim, Sara Alajmy, Mohamed Gabr, and Amr Aboshousha (German University in Cairo, Egypt)</b>
Hybrid Genetic Algorithm-based Optimal Computed Torque Control of an Upper-Limb Exoskeleton (SAMA) <b>Mohamed Sayed Abdelbar, Ibrahim Mohamed, Ahmed Abdellatif, and Moutaz M. Hegaze (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>

**Session III**  
**Mechatronics, Data Communications, and IoT**

Design A Microstrip Bandpass Filter Antenna from 2 GHz to 4.7 GHz for Biomedical Applications

**Sara Yehia Abdel Fatah (Chinese University, Egypt), F. Taher (Zayed University, UAE), Khaled Hassan Mohamadien (Arab Academy for Science, Technology and Maritime Transport, Egypt), Mohamed T. Haweel (Shaqra University, KSA), and Mohamed Fathy Abo Sree (Arab Academy for Science, Technology and Maritime Transport, Egypt)**

A Smart Android Parking System

**Mohamed Hassan, Mohamed Mourad, and Moataz Amer (Arab Academy for Science, Technology and Maritime Transport, Egypt)**

Sensitivity Voltage Analysis for Piezoelectric MEMS Gyroscope using Aluminum Nitride (AlN), Zinc Oxide (ZnO) and Barium titanate (BaTiO<sub>3</sub>)

**Sherif A. Ghamry (Arab Academy for Science, Technology and Maritime Transport, Egypt), Ahmed K. Mahmoud (Air Defense College, Egypt), Roshdy A. Abdelrassoul, and Iman Morsi (Arab Academy for Science, Technology and Maritime Transport, Egypt)**

**12:00 Coffee Break**

**12:30- 13:00 Keynote Speech**

**“Smart and Intelligent Farming: The Future of Agriculture”**

***Prof. Dr. Abdel Hamid Soliman***

Professor of Signal Processing and Telecommunication  
School of Digital, Technologies and Arts  
Staffordshire University, UK.



<b>Session IV</b> <b>Image Processing, HPC, and Information Systems</b>
<b><i>Chairs: Prof. Dr. Ayman Abdel-Hamid and Prof. Dr. Waleed Abdel Moez</i></b>
Registerless Multiplierless YCoCg-R and YCoCg Color Space Converters Hardware Implementation  <b>Marwan A. Fetteha (Nile University, Egypt), Wafaa S. Sayed (Cairo University, Egypt), Lobna A. Said (Nile University, Egypt) , Salwa K. Abd-El-Hafiz (Cairo University, Egypt), Ahmed G. Radwan (Nile University, Egypt)</b>
A Mixed Decision-Level Approach for Solving the Operating Room Scheduling Problem: A Case Study  <b>Amira Moustafa (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
Employees' Perception of Electronic Human Resource Management (EHRM) Practices with Mediating Role of knowledge sharing Behaviour: Empirical Study of Egyptian private Universities  <b>Passant A. Ibrahim, Mohamed A. Ragheb (Arab Academy for Science, Technology and Maritime Transport, Egypt), Adel Zayed (Cairo University, Egypt), and Shimaa Farid (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
Implementation on a Parallel Environment of Generalized/Modified Dodgson's Method for Rectangular Determinants Calculation  <b>Armend Salihu, Halil Snopçe, Jaumin Ajdari, and Artan Luma (South East European University, North Macedonia)</b>
University-wide Implementation of Blended Learning through Systematic MOOC Integration  <b>Laila Shoukry and Mustafa Elnainay (Alamein International University, Egypt)</b>
Interactive Bottleneck Detection in Data Driven Business Process Simulation in Healthcare: Egyptian Case Study  <b>Wessam Ahmed AlBakary, Ahmed Ahmed Hesham Sedky, and Walid Abdelmoez (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>
Digital Solutions for Resilient Pharmaceutical Supply Chains: Systematic Literature Review  <b>Ayten Elbeltagy, Noha M. Galal, and Khaled S. El-Kilany (Arab Academy for Science, Technology and Maritime Transport, Egypt)</b>

**Session IV**  
**Image Processing, HPC, and Information Systems**

Towards an Embedding-based Semantic Similarity Measure designed for Mediation Caching

**Ouafa Ajarroud and Ahmed Zellou (Mohamed V University, Morocco)**

A Flexible Digital Twin Framework for Poultry Feed Industrial Factory

**Nehal Tarek (Menoufia University, Egypt), Nancy A. El-Hefnawy (Tanta University, Egypt), Hatem Abdel-Kader, and Amira Abdelatey (Menoufia University, Egypt)**

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**End of ICCTA 2022 Activities**

## **ICCTA 2022 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 Coordinators and Program co-Chairs**

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

**Dr. Essam Kosba**, 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

### **Organizing Committee**

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

**Prof. Dr. Khaled Mahar**, 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 2022 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