Prof. Amr Tolba (Senior Member of IEEE)

Professor, Computer Science Department, Community College, King Saud University, Riyadh, Saudi Arabia

atolba@ksu.edu.sa

CURRICULUM VITAE

AMR TOLBA received the M.Sc. and Ph.D. degrees from the Mathematics and Computer Science Department, Faculty of Science, Menoufia University, Egypt, in 2002 and 2006, respectively. He is currently a full professor of computer science at King Saud University (KSU), Saudi Arabia. He has authored/coauthored over 180 scientific papers in top-ranked (ISI) international journals (such as IEEE IoT, ACM TOIT, IEEE CEMAG, IEEE ACCESS, IEEE SYSTEMS, FGCS, JNCA, NC&A, JAIHC, COMNET, COMCOM, P2PNET, VCOM, WWWJ,... etc.). Prof. Tolba served as General Chair of the 2023 International Conference on Machine Learning and Knowledge Engineering (ICMLKE 2023). Prof. Tolba served as a technical program committee (TPC) member at several conferences (Such as



CAIT 2023, EAI QSHINE 2023, ROBOTFORUM 2023, DSIT 2022, CICA2022, EAI MobiHealth 2021, DSS 2021, AEMCSE 2021, ICBDM 2021, ICISE 2021, DSS 2020, NCO 2020, ICISE2019, ICCSEA 2019, DSS 2019, FCES 19, ICISE 2018, ESG'18, Smart Data'17, NECO 2017, NC'17, WEMNET'17, NET'17, Smart Data'16, ...). He has been included in the list of **the top 2% of influential researchers globally** (prepared by scientists from Stanford University, USA) during the calendar years 2020, 2021, 2022 and 2023 respectively. Prof. Tolba served as Associate Editor/Guest Editor for several ISI journals. He has translated four books into the Arabic language. His main research interests include **Artificial Intelligence (AI), the Internet of Things (IoT), data science, and cloud computing**. Prof. Tolba is a Senior Member of IEEE.

Research Interests

Artificial Intelligence

Machine learning, Deep learning, smart IoT, graph learning, cognitive computing, AI ethics, intelligent systems, smart cities.

Data science

Big data analytics, scholarly big data, recommender systems, urban big data, knowledge graph, digital libraries

Ubiquitous computing

Cloud Computing, internet of things, network science, social computing, mobile computing.

- **Scopus Author ID: 56442428300**
- $\frac{1}{4} \frac{\text{ResearcherID: O-8464-2016}}{\text{ResearcherID: O-8464-2016}}$
- **DPLB** Profile

Google Scholar Profile

ORCID (https://orcid.org/0000-0003-3439-6413)

Selected Publications (Last 5 Years)

- **W** SA-MLP-Mixer: A Compact All-MLP Deep Neural Net Architecture for UAV Navigation in Indoor Environments, IEEE Internet of Things Journal, 2024, (ISI impact factor 10.6 -Q1 top 5 %). 4 Air-to-Ground Integrated Internet of Vehicles Enhanced by LAPSs and RISs: Location, Power, and Phase Shift Optimization, IEEE Internet of Things Journal, 2024, (ISI impact factor 10.6 – Q1 top 5 %). 4 A relay-assisted parallel offloading strategy for multi-source tasks in internet of vehicles, Sustainable Energy Technologies and Assessments, 2024, (ISI impact factor 8 – Q1). \downarrow Dual-path network combining CNN and transformer for pavement crack segmentation, Automation in Construction, 2024, (ISI impact factor 10.3 – Q1 Top 10 %) **W** Artificial neural network-driven federated learning for heart stroke prediction in healthcare 4.0 underlying 5G, Concurrency and Computation: Practice and Experience, 2024, (ISI impact factor 2.0 – Q3). **FedSL:** A Communication Efficient Federated Learning with Split Layer Aggregation, **IEEE** Internet of Things Journal, 2024, (ISI impact factor 10.6 – Q1 top 5 %). 4 A Three-way Clustering Mechanism to Handle Overlapping Regions, IEEE Access, 2024 (ISI impact factor 3.9 - Q2) **W** Progressively Multi-Scale Feature Fusion for Image Inpainting, Mathematics, 2023, (ISI impact factor 2.765 - Q1). A Reservation-Based Multi-Source Distributed Offloading Strategy in Dynamic Environments, IEEE Consumer Electronics Magazine, 2023, (ISI impact factor 4.5 – Q1). **W** Exploring Synergy of Blockchain and 6G Network for Industrial Automation, **IEEE Access**, 2023 (ISI impact factor 3.9 - Q2) An improved WiFi sensing based indoor navigation with reconfigurable intelligent surfaces for 6G enabled IoT network and AI explainable use case, Future Generation Computer Systems (FGCS), 2023, (ISI impact factor 7.5 - Q1). Unmanned Aerial Vehicle Assisted Post-Disaster Communication Coverage Optimization Based on Internet of Things Big Data Analysis, Sensors, 2023, (ISI impact factor 3.9 - Q1). **W** The adaptive constant false alarm rate for sonar target detection based on back propagation neural network access, IET Signal Processing, 2023, (ISI impact factor 4.5 - Q1). 4 Data storage mechanism of industrial IoT based on LRC sharding blockchain, Scientific Reports (NATURE), 2023, (ISI impact factor 5.5 - Q1).
- Fast Visual Tracking with Squeeze and Excitation Region Proposal Network, Human-Centric Computing and Information Sciences, 2023, (ISI impact factor 6.5 - Q1).

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- **ResearcherID:** 0-8464-2016
- **DPLB** Profile

- A Novel Joint Time-Frequency Spectrum Resources Sustainable Risk Prediction Algorithm Based on TFBRL Network for the Electromagnetic Environment, Sustainability, , 2023, (ISI impact factor 3.9 – Q2).
- S-BDS: An Effective Blockchain-based Data Storage Scheme in Zero-Trust IoT, ACM Transactions on Internet Technology, 2023, (ISI impact factor 3.135 Q1).
- GeFL: Gradient Encryption-Aided Privacy Preserved Federated Learning for Autonomous Vehicles, IEEE Access, 2023 (ISI impact factor 3.9 Q2).
- Deep Learning-Based Robust Morphed Face Authentication Framework for Online Systems., CMC-Computers Materials & Continua, 2023, (ISI impact factor 3.58 – Q2).
- Node Selection Algorithm for Federated Learning Based on Deep Reinforcement Learning for Edge Computing in IoT, Electronics, 2023, (ISI impact factor 2.9 - Q2)
- Fight against Future Pandemics: UAV-Based Data-Centric Social Distancing, Sanitizing, and Monitoring Scheme, Drones, 2022, (ISI impact factor 4.135 - Q2)
- A Memory-Aware Spark Cache Replacement Strategy, Journal of Internet Technology, 2022, (ISI impact factor 1.135 Q4).
- Collaborative Team Recognition: A Core Plus Extension Structure, Journal of Informetrics, 2022 (ISI impact factor 4.545 - Q1).
- A Normalized Slicing-assigned Virtualization Method for 6G-based Wireless Communication Systems, ACM Transactions on Multimedia Computing, Communications and Applications, 2022, (ISI impact factor 6.545 - Q1).
- Artificial Intelligence and Exploratory-Data-Analysis-Based Initial Public Offering Gain Prediction for Public Investors, **Sustainability**, 2022, (**ISI impact factor 3.545 - Q2).**
- Efficient anomaly recognition using surveillance videos, PeerJ Computer Science, 2022, (ISI impact factor 2.545 - Q2).
- Energy efficient MIMO-NOMA aided IoT network in B5G communications, Computer Networks, 2022, (ISI impact factor 5.411 - Q1).
- Modular Interactive Computation Scheme for the Internet of Things assisted Robotic Services,
 Swarm and Evolutionary Computation, 2022, (ISI impact factor 7.104 Q1 Top 10%).
- Robust Graph Neural Networks via Ensemble Learning, Mathematics, 2022, (ISI impact factor 2.765 Q1).
- Intrusion Detection System based Security Mechanism for Vehicular ad-hoc Networks for Industrial IoT, IEEE Consumer Electronics Magazine, 2022, (ISI impact factor 3.789 -Q2).
- Data Security Storage Mechanism Based on Blockchain Industrial Internet of Things, Computers & Industrial Engineering, 2022, (ISI impact factor 5.431 - Q1).
- A framework for privacy-preservation of IoT healthcare data using Federated Learning and blockchain technology, Future Generation Computer Systems, 2022, (ISI impact factor 7.187 - Q1 Top 10%).
 - Google Scholar Profile

 - 4 <u>Scopus Author ID: 56442428300</u>
 - $\frac{1}{4} \frac{\text{ResearcherID: } \text{O-8464-2016}}{\text{ResearcherID: } \text{O-8464-2016}}$
 - **DPLB** Profile

- Stochastic Neural Networks-Based Algorithmic Trading for the Cryptocurrency Market, Mathematics, 2022, (ISI impact factor 2.765 - Q1)
- Multi-Functional and Multi-Dimensional Secure Data Aggregation Schemes in WSNs, IEEE Internet of Things Journal, 2022, (ISI impact factor 9.515 - Q1 Top 10%)
- Cryptographically secure privacy-preserving authenticated key agreement protocol for an IoT network: A step towards critical infrastructure protection, Peer-to-Peer Networking and Applications, 2021, (ISI impact factor 3.307 – Q2)
- Privacy preserving authentication system based on non-interactive zero knowledge proof suitable for Internet of Things, Journal of Ambient Intelligence and Humanized Computing, 2021, (ISI impact factor 7.104 – Q1 Top 10%)
- ♣ A cybersecurity user authentication approach for securing smart grid communications, Sustainable Energy Technologies and Assessments, 2021, (ISI impact factor 5.353 – Q2)
- SRAF: Scalable Resource Allocation Framework using machine learning in user-centric internet of things, Peer-to-Peer Networking and Applications, 2021, (ISI impact factor 3.307 Q2)
- Coding-Based Distributed Congestion-Aware Packet Spraying to Avoid Reordering in Data Center Networks, IEEE Access, 2021 (ISI impact factor 3.75 – Q1)
- Coalition-based Interference Mitigation Method for Wearable Sensor Transmitter–Receiver Antenna Communications, Measurement, 2021, (ISI impact factor 3.464 – Q1)
- Accurate performance prediction of IoT communication systems for smart cities: An efficient deep learning-based solution, Sustainable Cities and Society, 2021, (ISI impact factor 7.587 Q1)
- Multi-Functional and Multi-Dimensional Secure Data Aggregation Schemes in WSNs, IEEE Internet of Things Journal, 2021, (ISI impact factor 9.515 – Q1 Top 10%)
- Predictive data analysis approach for securing medical data in smart grid healthcare systems,
 Future Generation Computer Systems, 2021, (ISI impact factor 7.187 Q1 Top 10%)
- A fast and effective multiple kernel clustering method on incomplete data, CMC-Computers Materials & Continua, 2021, (ISI impact factor 4.58 – Q1).
- A two-level traffic smoothing method for efficient cloud–IoT communications, Peer-to-Peer Networking and Applications, 2021, (ISI impact factor 3.307 – Q2)
- Lightweight Feedback Convolution Neural Network for Remote Sensing Images Super-Resolution, **IEEE Access**, 2021 (**ISI impact factor 3.75 – Q1**)
- Independent and tailored network-slicing architecture for leveraging industrial internet of things job processing, Computer Networks, 2021, (ISI impact factor 3.11 – Q2)
- Multiple cloud storage mechanism based on blockchain in smart homes, Future Generation Computer Systems, 2021, (ISI impact factor 6.125 – Q1 Top 10%)
- Design and Evaluation of Large-Scale IoT-Enabled Healthcare Architecture, Applied Sciences, 2021, (ISI impact factor 2.679 – Q2).

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- 4 ORCID (https://orcid.org/0000-0003-3439-6413)
- 4 <u>Scopus Author ID: 56442428300</u>
- + <u>ResearcherID: O-8464-2016</u>
- DPLB Profile

- ♣ A Reliable and Scalable Internet of Military Things Architecture, CMC-Computers Materials & Continua, 2021, (ISI impact factor 4.58 – Q1).
- IEEE Access Special Section Editorial: Artificial Intelligence (AI)-Empowered Intelligent Transportation Systems, IEEE Access, 2021 (ISI impact factor 3.75 – Q1).
- ➡ Wearable sensor-based fuzzy decision-making model for improving the prediction of human activities in rehabilitation, Measurement, 2020 (ISI impact factor 3.464 Q1)
- Real-time dissemination of emergency warning messages in 5G enabled selfish vehicular social networks, Computer Networks, 2020, (ISI impact factor 3.11 – Q2)
- TOSNet: A Topic-based Optimal Subnetwork Identification in Academic Networks, IEEE Access, 2020 (ISI impact factor 3.75 – Q1)
- ♣ A two-level computer vision-based information processing method for improving the performance of human-machine interaction-aided applications, Complex & Intelligent Systems, 2020, (ISI impact factor 3.75 Q2)
- Early-stage reciprocity in sustainable scientific collaboration, Journal of Informetrics, 2020, (ISI impact factor 4.6 Q1).
- Internet of things-based urban waste management system for smart cities using a Cuckoo Search Algorithm, Cluster Computing, 2020 (ISI impact factor 3.458 – Q1)
- SRAF: Scalable Resource Allocation Framework using machine learning in user-centric internet of things, Peer-to-Peer Networking and Applications, 2020, (ISI impact factor 2.793 – Q2)
- Data Secure Storage Mechanism of Sensor Networks Based on Blockchain, CMC-Computers Materials & Continua, 2020, (ISI impact factor 4.58 – Q1).
- LogEvent2vec: LogEvent-to-Vector Based Anomaly Detection for Large-Scale Logs in Internet of Things, Sensors, 2020, (ISI impact factor 3.275 – Q1)
- DORS: A data overhead reduction scheme for hybrid networks in smart cities, International Journal of Communication Systems, 2020 (ISI impact factor 1.319 – Q3)
- TBM: A trust-based monitoring security scheme to improve the service authentication in the Internet of Things communications, Computer Communications, 2020 (ISI impact factor 2.7 – Q2)
- TBI2Flow: Travel behavioral inertia based long-term taxi passenger flow prediction, World Wide Web, 2019, (ISI impact factor 2.892 Q2)
- Utilizing IoT wearable medical device for heart disease prediction using higher order Boltzmann model: A classification approach, Measurement, 2019 (ISI impact factor 3.464 - Q1)
- Emergency warning messages dissemination in vehicular social networks: A trust based scheme, Vehicular Communications, 2019 (ISI impact factor 4.7 Q1)
- A social-based watchdog system to detect selfish nodes in opportunistic mobile networks, **Future Generation Computer Systems** 2019, (**ISI impact factor 5.7 – Q1 top 10%**)

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- **ResearcherID:** 0-8464-2016
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- Content accessibility preference approach for improving service optimality in internet of vehicles, Computer Networks, 2019, (ISI impact factor 3.1 – Q1)
- **MDS**: Multi-level decision system for patient behavior analysis based on wearable device information, **Computer Communications**, 2019 (**ISI impact factor 2.7 Q2**)
- Optimizing the network energy of cloud assisted internet of things by using the adaptive neural learning approach in wireless sensor networks, Computers in Industry,2019, (ISI impact factor 4.6 – Q1)
- Cooperative data forwarding based on crowdsourcing in vehicular social networks, Pervasive and Mobile Computing, 2019, (ISI impact factor 2.99 Q1)
- ♣ A Cross-Layer Approach for Optimization of MolCom Systems Toward the Internet of Bio-NanoThings, IEEE Systems, 2019, (ISI impact factor 4.7 – Q1)
- Design and performance evaluation of mixed multicast architecture for internet of things environment, Journal of supercomputing, 2018 (ISI impact factor 1.532 – Q2)
- Optimized feature selection algorithm based on fireflies with gravitational ant colony algorithm for big data predictive analytics, Neural Computing and Applications, 2018, (ISI impact factor 4.2 – Q1)
- ♣ Soft computing approaches based bookmark selection and clustering techniques for social tagging systems, Cluster Computing, 2018 (ISI impact factor 2.04 Q2)
- Quantifying the impact of scholarly papers based on higher-order weighted citations, PLOS
 ONE, Volume: 13 Issue: 3 Article Number: e0193192, 2018 (ISI impact factor 2.8 Q1)
- Trust-based neighbor selection using activation function for secure routing in wireless sensor networks, Journal of Ambient Intelligence and Humanized Computing, 2018, (ISI impact factor 1.4 – Q3)
- PAVE: Personalized Academic Venue Recommendation Exploiting Co-publication Networks, Journal of Network and Computer Applications, Vol pp, DEC 2017. (ISI impact factor 3.5 – Q1)
- Engineering Molecular Communications Integrated with Carbon Nanotubes in Neural Sensor Nanonetworks, IET Nanobiotechnology, Vol pp, NOV 2017, Pages 1–23 (ISI impact factor 1.463 – Q4)
- From triadic closure to conference closure: the role of academic conferences in promoting scientific collaborations, Scientometrics Vol 113, 2017, Pages 177–193 (ISI impact factor 2.147 – Q2)
- The role of positive and negative citations in scientific evaluation, Vol 5, IEEE Access, 2017 (ISI impact factor 3.2 – Q1)
- LoTAD: long-term traffic anomaly detection based on crowdsourced bus trajectory data , World Wide Web-Internet and Web Information Systems Vol PP, 2017, Pages 1–23 (ISI impact factor 1.405 – Q3)
- Implicit Multi-Feature Learning for Dynamic Time Series Prediction of the Impact of Institutions, Vol 5, IEEE Access, 2017 (ISI impact factor 3.2 – Q1)
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 - 4 <u>Scopus Author ID: 56442428300</u>
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 - **DPLB** Profile

BoDMaS: Bio-inspired Selfishness Detection and Mitigation in Data Management for Ad-hoc Social Networks, Ad Hoc Networks Journal Vol 55, February 2017, Pages 119–131 (ISI impact factor 3.05 – Q1)

Performance Evaluation of a Dual Coverage System for Internet of Things Environments, Mobile Information Systems, Article ID 3464392, 2016 (ISI impact factor 1.458 – Q2)

- ERGID: An Efficient Routing Protocol for Emergency Response Internet of Things, Journal of Network and Computer Applications, 2016. (ISI impact factor 3.5 – Q1)
- Geo-Social Distance-Based Data Dissemination for Socially Aware Networking, **IEEE** Access, 2016 (**ISI impact factor 3.2 – Q1**)
- Exploiting Publication Contents and Collaboration Networks for Collaborator Recommendation, 2016 PLOS ONE (ISI impact factor 3.324 Q1)
- Surface-Surface Tissue Reconstruction and Visualization for MRI/CT Engineering Design, Journal of Medical Imaging and Health Informatics, 2016 (ISI impact factor 0.832 – Q2)
- User popularity-based packet scheduling for congestion control in ad-hoc social networks, Journal of Computer and System Sciences, Vol 82 No 2 pp 93- 112, 2016 (ISI impact factor 1.583 – Q1)
- A Greedy Model with Small World for Improving the Robustness of Heterogeneous Internet of Things, Computer Networks 2016 Vol 101 pp 127- 143, 2016 (ISI impact factor 1.442 – Q2)

Professional Activities

- Guest Editor:
 - IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS Special issue on "Alempowered Internet of Things for Data-Driven Psychophysiological Computing, 2023, IEEE.
 - CMES: Computer Modelling in Engineering and Science, Special issue on Artificial Intelligence of Things (AIoT): Emerging Trends and Challenges, 2023.
 - Wireless Communications and Mobile Computing Special Issue on Machine Learning for Ubiquitous Internet of Things, 2021, Wiley.
 - Wireless Communications and Mobile Computing Special Issue on Deep Feature Learning for Big Data, , 2020, Wiley.
 - IEEE ACCESS Special Issue on Artificial Intelligence (AI)-Empowered Intelligent Transportation Systems 2019, IEEE
 - Computers & Electrical Engineering, Special Issue on HYBRID ARTIFICAL INTELLIGENCE APPLICATIONS, 2017 ELSEVIER
 - Int. J. of Reasoning-based Intelligent Systems, Special Issue on Challenges in Smart Reasoning Intelligent Systems, 2017
 - Int. J. of Computer Aided Engineering and Technology, Special Issue on Future Directions in Computer-Aided Engineering and Technology, 2017

Google Scholar Profile

- ORCID (https://orcid.org/0000-0003-3439-6413)
- Scopus Author ID: 56442428300
- ResearcherID: 0-8464-2016
- DPLB Profile

Electronic Government, an Int. J., Special Issue on Cloud-based Data Processing in Electronic Government, 2017

- *Technical Program Committee*: CAIT 2023, EAI QSHINE 2023, ROBOTFORUM 2023, DSIT 2022, CICA2022, EAI MobiHealth 2021, DSS 2021, AEMCSE 2021, ICISE 2021, DSS 2020, ICCSEA 2019, DSS 2019, FCES 19, ICISE 2018, Smart Data'16, Smart Data'17, NECO 2017, ESG'18, NC'17, WEMNET'17, NET'17.
- Invited Reviewer for numerous prestigious journals, including e.g.:
 - IEEE Transactions on Industrial Informatics
 - 🕂 IEEE Systems Journal
 - IEEE Sensors
 - 🖶 IEEE Internet of Things
 - 💶 IEEE ACCESS
 - 💶 IEEE Communications Magazine
 - IEEE Transactions on Intelligent Transportation Systems
 - 💶 IEEE Wireless Communications
 - IEEE Transactions on Vehicular Technology
 - 📫 IEEE Network Magazine
 - Neural Computing and Applications
 - Computers and Electrical Engineering
 - 📫 International Journal of Communication Systems

 - 💶 Information Fusion
 - Computer Communications
 - Digital Communications and Networks
 - 📫 Electronics
 - Journal of Networks and Applications

Teaching

- Cyber Security Foundation
- 🕂 Computer Maintenance
- 🗕 Data Structure
- Programming with python
- + Fundamentals of Database System
- Computer Networks
 - Google Scholar Profile
 - + <u>ORCID (https://orcid.org/0000-0003-3439-6413)</u>
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 - DPLB Profile

- Network Security
 Network Defense
 Cyber Treats
 Undergraduate Project
 Programming with Java
 Artificial Intelligence
 Operating Systems
 Expert Systems
 System Analysis and Design
 Algorithms
 Natural language Processing
- 🗕 File Systems
- Advanced Expert Systems
- + Advanced Operating System
- 🕂 Fundamentals of Data Science

Translated Books

- Cloud Computing: Principles and Paradigms, edited by Rajkumar Buyya, James Broberg, Andrzej Goscinski, 2017.
- Logic & Computer Design Fundamentals edited by M. Morris Mano, 2018.
- Big-Data Analytics for Cloud, IoT and Cognitive Computing, edited by Kai Hwang, Min Chen, 2021.
- Internet of Things: Technologies and Applications for a New Age of Intelligence, 2nd Edition edited by Vlasios Tsiatsis, Stamatis Karnouskos, Jan Holler, David Boyle, Catherine Mulligan. 2022.

Membership of Committees and Boards

- KSU-Board of Assessors (BoA)
- Egyptian Syndicate of Scientific Professions
- 🖶 Egyptian Computer Society
- 💶 IEEE Society (IEEE Senior Member)

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