# Digital Transformation and Cybersecurity: Challenges and Solutions in Arab Countries

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## Abstract

Cybersecurity and privacy threats exploit the increased complexity and connectivity of critical infrastructure systems, placing the Nation's security, economy, public safety, and health at risk. Historically, reliance on subtle assumptions at interface boundaries between hardware components, between hardware and software components, and between software components, as well as between a system and its operators and maintainers, has been a source of vulnerability and can be especially troublesome in these critical systems. Increasing digital device sales; increasing regulatory requirements; increasing generation and storage of digital transactions through the integration of the diverse entities within the 'Internet of Things' all increase the attack surface for users. As technology becomes increasingly ubiquitous in daily life, cybercrime and cybersecurity tools and techniques evolve concurrently. This fuels the need to develop innovative managerial, technological and strategic solutions. The tight coupling of the technologies and tools necessitates a variety of responses to address the resulting concerns. For example, malware generally uses deception to disguise what it is doing, and cybersecurity techniques such as digital forensics can be used to identify deception in technologies and the "real story" about what has occurred or will occur. Due to the constant evolution of cybercrimes and technologies advancements, identifying and validating technical solutions in order to access data from new technologies, investigating the impact of these solutions and understanding how technologies can be abused is crucial to the viability of government, commercial, academic, and legal communities, all of which affect national security.

## SHORT Biography

Dr. Mohamed Elhoseny is currently an Assistant Professor at the Faculty of Computers and Information, Mansoura University where he is also the Director of Distributed Sensing and Intelligent Systems Lab. Besides, he has been appointed as an ACM Distinguished Speaker from 2019 to 2022. Collectively, Dr. Elhoseny authored/co-authored over 85 ISI Journal articles in high-ranked and prestigious journals such as IEEE Transactions on Industrial Informatics (IEEE), IEEE Transactions on Reliability (IEEE), Future Generation Computer Systems (Elsevier), and Neural Computing and Applications (Springer). Besides, Dr. Elhoseny authored/edited Conference Proceedings, Book Chapters, and 10 books published by Springer and Taylor& Francis. His research interests include Smart Cities, Network Security, Artificial Intelligence, Internet of Things, and Intelligent Systems. Dr. Elhoseny serves as the Editor-in-Chief of International Journal of Smart Sensor Technologies and Applications, IGI Global. Moreover, he is an Associate Editor of many journals such as IEEE Access (Impact Factor 3.5), IEEE Future Directions, PLOS One journal (Impact Factor 2.7), Remote Sensing (Impact Factor 3.5), and International Journal of E-services and Mobile Applications, IGI Global (Scopus Indexed). Also, he is an Editorial Board member in reputed journals such as Applied Intelligence, Springer (Impact Factor 1.9). Moreover, he served as the co-chair, the publication chair, the program chair, and a track chair for several international conferences published by IEEE and Springer. Dr. Elhoseny is the Editor-in-Chief of the Studies in Distributed Intelligence Springer Book Series, the Editor-in-Chief of The Sensors Communication for Urban Intelligence CRC Press-Taylor& Francis Book Series, and the Editor-in-Chief of The Distributed Sensing and Intelligent Systems CRC Press-Taylor& Francis Book Series. He has been awarded the Young Researcher Award in Artificial Intelligence from the Federation of Arab Scientific Research Councils in 2019, the Egypt National Prize for Young Researchers in 2018, the best Ph.D. thesis in Mansoura University in 2015, the SRGE best young researcher award in 2017, and the membership of The Egyptian Young Academy of Science (EYAS) in 2019. Besides, he is a TPC Member or Reviewer in 50+ International Conferences and Workshops. Furthermore, he has been reviewing papers for 80+ International Journals including IEEE Communications Magazine, IEEE Transactions on Intelligent Transportation Systems, IEEE Sensors Letters, IEEE Communication Letters, Elsevier Computer Communications, Computer Networks, Sustainable Cities and Society, Wireless Personal Communications, and Expert Systems with Applications.