Wael Deabes, Ph.D.

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Overview

A highly motivated and detail-oriented professional with excellent organizational and results-driven capabilities. My academic background and diverse experiences equip me with comprehensive expertise and practical skills in Embedded System Design, Smart Sensors and Measurement Systems, Signal Processing, Wireless Communications, Electrical Tomography Techniques, and Bioelectronics. My work bridges emerging technologies like Artificial Intelligence, Deep Learning, and Intelligent Transportation Systems with impactful applications in Smart Cities and Global Optimization Algorithms. Passionate about teaching, research, and industry collaboration, I am committed to advancing knowledge and fostering innovation in engineering and technology fields.

Research Interest

- **Machine Learning Models for Imaging Materials Distribution in Industrial Applications:** Developing novel artificial intelligent algorithms to generate fast and accurate images using Electrical Tomography (ET) methods which largely applied for industrial applications such as the multi-phase flow in the Oil and Gas industry.
- **Energy Consumption Optimization in Smart Environments:** Producing a cost-effective, energy-efficient, and comfortable environment using Wireless Sensors Actuators Networks (WSAN) devices that are supervised by intelligent control schemes implemented on cloud computing resources.
- **Environmental-Friendly Intelligent Transportation System:** Implementing advanced artificial intelligent techniques which provide more efficient and faster estimations of traffic states and travel time. These techniques help in controlling traffic and reducing congestion in urban segments.
- **Deep Meta-Heuristics Framework for Continuous Global Optimization:** Developing a general framework for automating and enhancing the search process and procedures in metaheuristics which utilizes search memories to equip the search with applicable sensing features and adaptive learning elements to find a better solution and explore more diverse ones.
- **Intelligent Systems for Predicting Short-Term Solar Radiation:** Design intelligent models to predict the energy output of solar and other renewable energy sources in the near future. These models aim to predict short-term solar energy output to help operators manage their solar energy efficiently and cost-effectively.
- **Visual Crowd Mining:** Developing deep learning models to detect and track individuals in crowded scenes to improve crowd analysis and crowd behavior prediction. Also investigating the impact of different demographic factors, such as age, gender, and cultural background, on crowd behavior and dynamics using visual crowd mining.
- **Advanced control systems for robotic manipulators:** Implementing Machine Learning (ML) techniques used to develop more accurate models of the robot's dynamics and control algorithms that can improve the efficiency and accuracy of industrial processes and reduce the need for external sensors and complex mathematical models.

Education

- **Ph.D.** Engineering. Tennessee Technological University, Cookeville, TN, USA, *(GPA 4.0/4.0)*, 2010. Dissertation Title: “Electrical Capacitance Tomography for Conductive Materials”.
- **M.S.** Automatic Control Systems Engineering. Mansoura University, Mansoura, Egypt, 2002. Thesis Title: “Fuzzy Adaptive Control through Sliding Motion Phenomena”
- **B.Sc.** Electronics Engineering. Mansoura University, Mansoura, Egypt, 1999.

Appointments and Teaching Experience

- **Sep. 2023 to present**: Instructional Associate Prof. and ESET Program Coordinator, Dept. of Computational, Engineering, and Mathematical Sciences, Art and Sciences College, Texas A&M University-San Antonio, San Antonio, USA.
- **June 2020 to June 2023:** Associate Professor, Dept. of Computer, University College in Al-Jamoum, Umm Al-Qura University, Saudi Arabia.
- **May.2011 to 2020:** Assistant Professor, Dept. of Computer, University College in Al-Jamoum, Umm Al-Qura University, Saudi Arabia.
- **Sept. 2013 to June 2023:** Member of the Assessment and Accreditation Committee & the SSR editor, Dept. of Computer, University College in Al-Jamoum, Umm Al-Qura University, Saudi Arabia.
- **Sep. 2013 to June 2023:** Department coordinator for graduation projects at Computer Science Department (ABET accreditation), University College in Al-Jamoum, Umm Al-Qura University, Saudi Arabia.
- **July 2015 to Aug. 2015:** Visiting Researcher, Texas A&M University.
- **Aug. 2005 to March. 2010:** Graduate Research Assistant, Center for Manufacturing Research, Tennessee Tech. University (TTU), TN, USA.
- **In summer of (2006-2008)**: Coordinated and supervised students in Research Experience for Undergraduate (REU) project 2006, 07&08 at TTU. Designed experiments, assigned responsibilities to each team, analyzed the systems and the results.
- **June 1999 to Aug. 2005:** Lecturer, Dept. of Computer and Systems, Mansoura University, Mansoura, Egypt.

Courses Taught

- DC/AC Circuits
- Analog Circuits
- Digital Electronics
- Wireless Communication
- Automatic Control Systems
- Discrete Control Systems
- Digital Logic Design Circuits
- Programmable Logic Controllers
- Sensors and Measurements Systems
- Electronics Testing
- Linear Systems
- Expert Systems
- Artificial Intelligence Electrical Circuits I/II
- Robotic Design and Implementation - Mechatronics
- Computer Architecture and Organization Numerical Methods
- Design and Analysis of Algorithms

Awarded Grant

- **"An Environmental-Friendly Intelligent Transportation System by Controlling Traffic and Reducing Congestion in Urban Segments"** ($160.000)
  Role: Co-PI, Funded by the National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science and Technology, KSA, 2019.
- **"An Extended Kalman Filter Image Reconstruction Algorithm in Electrical Capacitance Tomography for Monitoring Multi-Phase Flow",** ID#: 17-ENG-1-01-0001 ($58,000)
  Role: PI, Funded by Scientific Research Deanship at the University of Umm Al-Qura, KSA, 2017.
- **"Wireless Portable Tomography (WiPot) System for Monitoring the Multi-Phase Flow in Oil-Gas Pipelines",** ID#: 13-ELE469-10 ($510,000)
  Role: PI, Funded by the National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science and Technology, KSA, 2015.
- **"Parallel Meta-Heuristics Toolbox for Continuous Global Optimization"**, Project 13-INF544-10 ($434,000)
  Role: Co-PI, Funded by the National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science and Technology, KSA, 2013.
- **"Energy Saving Using Cloud-Based Supervisor Wireless Network Control System for Smart Environment",** ID#.: 13-ENE2356-10 ($450,000)

Role: Co-PI, Funded by the National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science and Technology, KSA, 2014.

- **"Standalone Tomography System for Monitoring the Multi-Phase Flow in Oil Pipelines"**
  ID#.: 43308004 ($23,000)
  Role: PI, Funded by the Institute of Scientific Research and Revival of Islamic Heritage, KSA, 2014.
- **"Visual Crowd Mining: Interpreting Challenging Crowd Scenes in Big Gatherings"**
  ($62,000)
  Role: Consultant, Funded by the Institute of Scientific Research and Revival of Islamic Heritage, KSA, 2017.
- **"Biologically-Inspired Artificial Neural Networks and its Application in Sound Recognition"**
  Role: Consultant, Funded by the Institute of Scientific Research and Revival of Islamic Heritage, KSA, 2014.

Submitted Grants to Research, Development and Innovation Authority (RDI), Saudi Aribia

- **"CrowdWise: An Intelligent Real-Time Crowd Simulation and Management Framework for Risk Mitigation, and Decision Support to Enhance Public Safety in Grand Gatherings",** Submitted to Exploratory Consortium Grant (ECG) and passed the first phase.
- **"Envisioning Sustainable Smart Cities: An Integrated Approach to Developing Resilient Urban Environments in Saudi Arabia (ENVISION)",** Submitted Exploratory Consortium Grant (ECG) and passed the first phase.
- **"Portable Electrical Capacitive Tomography Imaging System for Monitoring Crude Oil, Gas, And Petrochemical Pipelines",** Submitted to Technology Development Grant (TDG) and passed the first phase.

Developing Engineering and Computer Programs and Courses

- Wrote the proposal for the **Electrical Engineering (EE) program** in the CEMS Department at TAMUSA, aligning it with ABET accreditation standards and successfully securing approval from both the department and university curriculum committees for submission to the THECB, aligned with APET accreditation (Spring 24).
- Registered the new EE program into the CourseLeaf platform within the TAMU system.
- Designed a new **Electronic Systems Engineering Technology (ESET)** curriculum for the CEMS Department at TAMUSA, aligning it with ABET accreditation standards and achieving approval from both the department and university curriculum committees (Spring 24).
- Developed comprehensive course content, including descriptions, syllabi, and materials, for the **Electronic Systems Engineering Technology (ESET)** program in the CEMS Department at TAMUSA (Fall 2023–present).
- Contributed to the development of the **Computer Science program** in the Computer Department at University College, Umm Al-Qura University, Saudi Arabia, achieving ABET accreditation twice (2010–2023).
- Participated in to the design of the **graduate Computer Science program** in the Computer Department at University College, Umm Al-Qura University, Saudi Arabia (2022).
- **Some developed courses for the ESET program at TAMUSA**:
  - **ESET 4309 Capstone Project I** 3 (0-0-3)
    Project management tools for a formal technical proposal; addresses scope, schedule, risk, cost, milestones and deliverables; planning and initial design of prototype implemented in ESET 4304; teams must have sponsor and technical advisor. Prerequisite: ESET 3301; must be taken the fall or spring semester immediately prior to ESET 4304.
  - **Biomedical Electronics:** 3 (2-1-0)
    This course is an interdisciplinary field that combines principles of electronics with medical and biological sciences to develop and maintain advanced medical devices and equipment. This field focuses on designing, analyzing, and troubleshooting electronic circuits used in healthcare settings, including diagnostic and therapeutic devices such as MRI scanners, pacemakers, wearable health devices, and patient monitors. Biomedical electronics technologists and engineers work in hospitals, laboratories, and manufacturing settings, ensuring the functionality and safety of clinical equipment.
  - **Embedded System Security:** 3 (2-1-0)

SETThis course studies the security issue related to hardware, especially embedded systems. It covers basic knowledge about microcontrollers, includes its architecture, peripherals, and commands. Then different security related schemes will be introduced, such as encryption (MD5), side channel analysis, hardware trojans, and physical layer identifications. This course will also focus on hardware/software project implementations on a simple ARM development kit. It will introduce the students to several security topics with a focus on threats that are especially concerning for embedded systems. These topics include: embedded software security, cryptographic protocol attacks, JTAG and UART probing, side-channel analysis and fault-injection, and hardware Trojans. Performing security assessments of multiple implementations of embedded systems.

- **Embedded Intelligent System Design:** 3 (2-1-0)
  integrates artificial intelligence capabilities into small-scale devices to enhance their functionality and efficiency. These systems leverage machine learning (ML) and deep learning (DL) algorithms to enable devices such as smart appliances, wearables, and network devices to perform intelligent tasks autonomously. Embedded AI systems require high performance microcontroller and processor.

- **Some developed courses in CS program at Saudi Aribia:**
  - **2316611-3: Computational Intelligence.** (Credit, 3 hours) (Lecture, 3 Hours) – This course is intended to teach students the concepts of the fundamentals of Deep Learning are based on neural network architectures and their learning techniques. This course introduces both the theory and practice of Deep Learning, as being the most important technique in AI in current times.
  - **231671xx-3: Modeling and Simulation.** (Credit, 3 hours) (Lecture, 3 Hours) – provides in-depth exposure to the field of modeling and simulation (M&S) from the perspective of M&S as an essential tool for systems. This course covers Verification, Validation, and Accreditation techniques; Generating uniform random variables, Methods for non-uniform random variables, Statistical hypotheses and tests, Monte-Carlo simulation, Modeling discrete event systems.
  - **2316617-3: Advanced Expert Systems:** (Credit, 3 hours) (Lecture, 3 Hours) **–** This course is designed to investigate the advanced topics in expert systems, especially as it relates to machine learning. This course teaches the students Data and feature analysis tools, Advanced topics in Neural networks, Deep learning techniques, Pattern recognition, Machine learning State-of-the-art topics.

Honors and Awards

- Promoted in the Computer Department at University College, Umm Al-Qura University on June 23, 2020.
- Distinguishing award for applying E-Learning System, Umm Al-Qura University, 2019.
- Distinguish recognition for assisting Umm Al-Qura University National Academic Accreditation (NCAAA), 2019.
- "Visiting Researcher", Texas A&M University from July 2015 to Sep. 2015.
- "Doctoral Scholarship", Department of Energy, USA, from Aug. 2005 to Aug. 2010, to obtain the Doctor Degree from Tennessee Tech. University, TN, USA.
- NSBE BCA Scholarship (The award is given to student who demonstrated high scholastic performance, dedicated service to the Society and other organizations, and who possess high professional promise, 2009).
- Ron & Glenn Birtwistle Mem. Scholarship (In recognizing great achievement in the metal casting industry during the Foundry Education Foundation Conference, Oct. 2008).
- FEF Tennessee Tech. chapter outstanding academic achievement scholarship, Feb. 2008.
- Listed in Marquis Who's Who in America 2010.
- TTU Graduate Student Research Award 2010
- Monetary award (from Boeing and Dr. Allen Atkins) in recognition of presenting the best poster, 2010.
- Tau Beta Pi, the Engineering Honor Society Award, Aug. 2009.
- First Rank Graduate in MS, Mansoura University, Mansoura, Egypt (2003).
- Second Rank Graduate in BS, Mansoura University, Mansoura, Egypt (1999).

Master Students Supervision

- Wasl Algthami, "**Smart Fuzzy Petri Nets Temperature Control Framework for Reducing Building Energy Consumption**", M.Sc., Umm Al-Qura University, KSA, Expecting graduation in Spring (2023).
- Abdallah Elshehri, "**Predicting travelling duration using deep learning techniques**", M.Sc., Umm Al-Qura University, KSA, Expecting graduation in Spring (2023).
- Mohamed Elshehri, "**Traffic lights control using deep learning techniques**", M.Sc., Umm Al-Qura University, KSA, Expecting graduation in Spring (2023).

Publications

Patent

1. **W. Deabes** and Majid Almarashi, "Portable electrical capacitive tomography imaging device and method of operation", U.S. Patent 10/041,899, 2018.

Books

1. **Wael Deabes** and Mohamed Abdelrahman, "Electrical Capacitance Tomography for Conductive Materials", VDM Verlag, Saarbrucken, ISBN-13: 978-3639358841, Germany, 2011.

Selected Journal Papers

1. AR Hedar, AE Abdel-Hakim, **W. Deabes**, Y Alotaibi, KE Bouazza, "Deep Memory Search: A Metaheuristic Approach for Optimizing Heuristic Search", arXiv preprint arXiv:2410.170421, 2024
2. AE Abdel-Hakim, **W Deabes**, KE Bouazza, AR Hedar, "Dynamic Deployment of Mobile Roadside Units in Internet of Vehicles", IEEE Access, 2024
3. A. Abdelhamid, O. Akinniyi, G. A Saleh, G., **W. Deabes**, and F. Khalifa, "An Ensemble Neural Architecture for Lung Diseases Prediction Using Chest X-rays", International Journal of Computing and Digital Systems, Vol. 16, no. 1, pp. 189-198, 2024.
4. **W. Deabes**, Alaa E. Abdel-Hakim, "CGAN-ECT: Reconstruction of Electrical Capacitance Tomography images from capacitance measurements using Conditional Generative Adversarial Networks," Flow Measurement and Instrumentation, Vol. 96, pp. 102566, 2024. https://doi.org/10.1016/j.flowmeasinst.2024.102566.
5. **W. Deabes,** K.E. Bouazza, W. Algthami, "Smart Fuzzy Petri Net-Based Temperature Control Framework for Reducing Building Energy Consumption.", Sensors, Vol. 23, pp. 5985, 2023. https://doi.org/10.3390/s23135985
6. **W. Deabes**, K. E. Bouazza, "Residual Autoencoder Deep Neural Network for Electrical Capacitance Tomography", Computers, Materials & Continua, vol. 73, no. 3, pp. 6307--6326, 2022. https://doi.org/10.32604/cmc.2022.030420
7. **W. Deabes**, A. E. Abdel Hakim, K. E. Bouazza, H. Althobaiti, "Adversarial Resolution Enhancement for Electrical Capacitance Tomography Image Reconstruction". Sensors, vol. 22, no. 9, pp. 3142, 2022 https://doi.org/10.3390/s22093142
8. **W. Deabes**, K. M. J. Khayyat, "Image Reconstruction in Electrical Capacitance Tomography Based on Deep Neural Networks", IEEE Sensors Journal, 2021.
9. A. R. Hedar, **W. Deabes**, H. H. Amin, M. Almaraashi, M. Fukushima, "Global sensing search for nonlinear global optimization", Journal of Global Optimization, pp. 1-50, 2021.
10. **W. Deabes**, A. Sheta, M. Braik, "ECT-LSTM-RNN: An Electrical Capacitance Tomography Model-Based Long Short-Term Memory Recurrent Neural Networks for Conductive Materials", IEEE Access 9, pp. 76325-76339, 2021.
11. A. Allam, **W. Deabes**, "Model-Based Hardware-Software Codesign of ECT Digital Processing Unit", Modelling and Simulation in Engineering, 2021.
12. **W. Deabes**, K. E. Bouazza, "Efficient Image Reconstruction Algorithm for ECT System Using Local Ensemble Transform Kalman Filter", IEEE Access 9, pp.12779-12790, 2021.
13. **W. Deabes**, H. H. Amin, "Image reconstruction algorithm based on PSO-tuned fuzzy inference system for electrical capacitance tomography", IEEE Access 8, pp. 191875-191887, 2020.

14. M. Almarashi, **W. Deabes**, H. H. Amin, A. R. Hedar, "Simulated Annealing with Exploratory Sensing for Global Optimization", Algorithms 13 (9), 230, 2020.
15. A.R. Hedar, **W. Deabes**, M. Almaraashi, H.H. Amin, "Evolutionary Algorithms Enhanced with Quadratic Coding and Sensing Search for Global Optimization", Mathematical and Computational Applications, vol. 25, Issue 7, 2020.
16. **W. Deabes**, A. Sheta, K. E. Bouazza, and M. A. Abdelrahman, "Application of Electrical Capacitance Tomography for Imaging Conductive Materials in Industrial Processes", Journal of Sensors, vol. 2019, Article ID 4208349, 22 pages, 2019.
17. Hedar, A.-R., Allam, A.A., and **W. Deabes**, "Memory-Based Evolutionary Algorithms for Nonlinear and Stochastic Programming Problem", Mathematics, vol. 7, Issue 1126, 2019.
18. Alaa E. Abdel Hakim and **W. Deabes**, "Can People Really Do Nothing? Handling Annotation Gaps in ADL Sensor Data", Algorithms, vol. 12, Issue 217, 2019.
19. K. E. Bouazza and **W. Deabes**, "Smart Petri Nets Temperature Control Framework for Reducing Building Energy Consumption", Sensors, vol. 19, Issue 11, p.p. 2441, 2019.
20. **W. Deabes**, "FPGA Implementation of ECT Digital System for Imaging Conductive Materials", Algorithms, vol. 12, Issue 2, 2019.
21. M. A. Abdelrahman, A. Gupta, and **W. Deabes**, "A Feature based solution to Forward Problem in Electrical Capacitance Tomography of Conductive Materials", IEEE Instrumentation and Measurement, vol. 60, Issue 2, pp. 430-441, 2011.
22. **W. Deabes**, M. A. Abdelrahman, "Nonlinear Fuzzy Assisted Image Reconstruction Algorithm for Electrical Capacitance Tomography", ISA Trans., vol. 49, pp. 10 -18, 2010.
23. **W. Deabes**, M. Abdelrahman, P. K. Rajan, "A New Wide Frequency Band Capacitance Transducer with Application to Measuring Metal Fill Time", Sensors & Transducers Journal, vol. 100, Issue 1, pp. 72-84, 2009.
24. **W. Deabes**, M. A. Abdelrahman," Electrical Capacitive Tomography Sensor for Estimating Metal Fill Profile in Lost Foam Casting," AFS Trans. vol. 116, pp. 995-1004, 2008.
25. M. Baswell, M. A. Abdelrahman, **W. Deabes**, "An Impedance Measurement Device for Non-Destructive Greensand Mold Inspection," AFS Trans. vol. 116, pp. 433-444, 2008.
26. **W. Deabes**, M. A. Abdelrahman," A Quantitative Method for Characterization of Surface Properties of Lost Foam Patterns," AFS Trans. vol. 115, pp. 939-948, 2007.

Project Reports

1. **W. Deabes**, H. H. Amin, Atef Allam, K. M. J. Khayyat, "Wireless Portable Tomography (WiPot) System for Monitoring the Multi-Phase Flow in Oil-Gas Pipelines", Project Number: 13-ELE469-10, Final report (2015 – 2020) by National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science.
2. K. E. Bouazza, **W. Deabes**, H. H. Amin, G. A. Elsayed, "An Extended Kalman Filter Image Reconstruction Algorithm in Electrical Capacitance Tomography for Monitoring Multi-Phase Flow", Project Number: 17-ENG-1-01-0001, Final report (2017 – 2021) by National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science.
3. A. R. Hedar, **W. Deabes**, H. H. Amin, M. Almaraashi , "Parallel Meta-Heuristics Toolbox for Continuous Global Optimization", Project Number: 13-INF544-10, Final report (2014 – 2019) by National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science.

Selected Conference papers

1. **W. Deabes**, F. Khalifa, A. E. Abdel-Hakim, and K. E. Bouazza, "Advancing ECT Imaging: Residual UNet Deep Neural Network Approach", International Conference on Intelligent Systems, Blockchain, and Communication Technologies, 2024.
2. **W. Deabes** and Alaa E. Abdel Hakim, "Teaming Up Pre-Trained Deep Neural Networks", International Conference on Signal Processing and Information Security (ICSPIS), p.p. 1-4, 2018.
3. Alaa E. Abdel Hakim, **W. Deabes**, "Impact of Sensor Data Glut on Activity Recognition in Smart Environments", IEEE International Conference on Ubiquitous Wireless Broadband ICUWB'2017, Salamanca, Spain, 2017.
4. H. H. Amin**, W. Deabes** and K. Bouazza, "Hybrid spiking neural model for clustering smart environment activities," 2017 IEEE 15th International Conference on Industrial Informatics (INDIN), Emden, Germany, 2017, pp. 206-21.
5. H. H. Amin, **W. Deabes** and K. Bouazza, "Clustering of user activities based on adaptive threshold spiking neural networks," IEEE Ninth International Conference on Ubiquitous and Future Networks (ICUFN), Milan, Italy, 2017,

pp. 1-6.

6. K. E. Bouazza, **W. Deabes**, H. H. Amin and G. A. Elsayed, "Energy consumption reduction by integrating Wireless Sensors and Actuators Networks Supervisory Controller with the Cloud Computing," IECON 2016 - 42nd Annual Conference of the IEEE Industrial Electronics Society, Florence, Italy, 2016, pp. 134-139.
7. **W. Deabes**, M. A. Abdelrahman, "Shape Reconstruction Method for Imaging Conductive Materials in Electrical Capacitance Tomography", IEEE 42nd Industrial Electronics Society, Florence, Italy, on Oct. 24-27, 2016.
8. Atef Allam, **W. Deabes**, "Electrical Capacitance Tomography Digital Processing Platform (ECT-DPU)", IEEE 42nd Industrial Electronics Society, Florence, Italy, on Oct. 24-27, 2016.
9. **W. Deabes**, H. Hamed, "Fast Intelligent Image Reconstruction Algorithm for ECT System", IEEE 13th International Conference on Distributed Computing and Artificial Intelligence, Spain, 2016
10. **W. Deabes**, H. Hamed, M. A. Abdelrahman, "Optimized Fuzzy Image Reconstruction Algorithm for ECT Systems", IEEE World Congress on Computational Intelligence (IEEE WCCI), IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2016), Vancouver, Canada, 2016.
11. **W. Deabes**, M. A. Abdelrahman, and P. K. Rajan "Nonlinear Single Step Fuzzy Image Reconstruction Algorithm for Grounded Conductors in ECT", American Control Conference, 2010.
12. M.A. Abdelrahman, A. Gupta, and **W. Deabes**, "A Feature based solution to Forward Problem in Electrical Capacitance Tomography", American Control Conference, 2010.
13. Y. D. Barve, M. A. Abdelrahman, **W. Deabes**, "Experiments with Transmission Power Control in Industrial Wireless Sensor Networks", International Instrumentation and Measurements Technology Conference, 2010.
14. **W. Deabes**, M. A. Abdelrahman, "Direct Fuzzy Reconstruction Algorithm for Grounded Conductive Materials", International Instrumentation and Measurements Technology Conference, 2010.
15. Y. D. Barve, M. A. Abdelrahman, **W. Deabes**, "Integrated Technique for Data Transmission Reliability in Metal Fill Monitoring Using Wireless Sensor Network", The International Conference on Information Technology ITNG, 2010.
16. M. A. Abdelrahman, A. F. Sheta and **W. Deabes**, "Fuzzy Mathematical Modeling for Reconstructing Images in ECT", ICCES09 International Conference on Computer Engineering and Systems, Dec. 2009.
17. **W. Deabes**, M. A. Abdelrahman, "Solution of the Forward Problem of Electric Capacitance Tomography of Conductive Materials," In proceedings of the 13th World Multi-Conference on Systemic, Cybernetics and Informatics: WMSCI, pp. 115-122, 2009.
18. **W. Deabes**, Mohamed Abdallah, Omar Elkeelany and Mohamed Abdelrahman," Reconfigurable Wireless Stand-alone Platform for Electrical Capacitance Tomography," IEEE Symposium on Computational Intelligence in Control and Automation CICA, 2009.
19. A. R. Smith, M. A. Abdelrahman and **W. Deabes**," A Confidence Prediction System for Metal Fill Visualization Using Electrical Capacitance Tomography" 41st Southeastern Symposium on System Theory SSST, 2009.
20. A. Gupta, M. A. Abdelrahman, **W. Deabes**," A Feature based solution to Forward Problem in Electrical Capacitance Tomography", 41st Southeastern Symposium on System Theory SSST, 2009.
21. L. L. Longanecker, M.A. Abdelrahman, **W. Deabes**," A Novel PID Controller for a Counter Gravity Casting Machine", World Congress on Electronics and Electrical Engineering (WCEEENG), 2009.
22. **W. Deabes**, Fyez Areed" Fuzzy Sliding Motion Controller for Six-Degree-of-Freedom Robotic Manipulator" 41st Southeastern Symposium on System Theory SSST, 2009.
23. **W. Deabes**, M. A. Abdelrahman, and P. K. Rajan "A Fuzzy-Based Reconstruction Algorithm for Estimating Metal Fill Profile in Lost Foam Casting", In proceedings of The American Control Conference, pp. 230-234, 2008.
24. **W. Deabes**, M. A. Abdelrahman, "An Iterative Reconstruction Algorithm for Electrical Capacitive Tomography Using Fuzzy System," In proceedings of the 12th World Multi-Conference on Systemic, Cybernetics and Informatics: WMSCI, pp. 161-166, 2008.
25. **W. Deabes**, M. A. Abdelrahman, "Metal Fill Profile Detection in Lost Foam Casting Process Using Capacitive Sensors", In proceedings of The IEEE Southeast Conference, pp. 384-388, 2008.
26. **W. Deabes**, M. A. Abdelrahman, C. F. Murray, P. K. Rajan, and J. L. Russell," A Wide Frequency Range Circuit for Measuring Mutual Capacitance with Application to Monitoring of Metal Fill Profile," In proceedings of The IEEE Southeast Conference, pp. 362-367, 2008.
27. **W. Deabes**, M. A. Abdelrahman," Analysis Design and Application of a Capacitance Measurement Circuit with Wide Operating Frequency Range," In proceedings of The IEEE Multi-conference on Systems and Control, pp. 230-234, 2008.

28. A. M. Khader, M. A. Abdelrahman, Charles C. Carnal, and **W. Deabes**, "Modeling and Control of a Counter-Gravity Casting Machine," In proceedings of The American Control Conference, pp. 230-234, 2008.
29. Phaneeth K. R. Junga, M. Abdelrahman, C. Thurmer, **W. Deabes**, "Reliable Metal-fill Monitoring System using Wireless Sensor Networks," In proceedings of the 5th International Conference on Information Technology: New Generations, ITNG, pp. 230-234, 2008.
30. Phaneeth K. R. Junga, M. A. Abdelrahman, C. Thurmer, **W. Deabes**, "Algorithms for Reliable Data Transmission for Metal Fill Monitoring Using Wireless Sensor Networks," In proceedings of The IEEE Southeast Conference, pp. 7-14, 2008.
31. **W. Deabes**, M. A. Abdelrahman, E. C. Whitman, M. Davis, "Design and Implementation of a Control System for a Counter Gravity Casting Machine," In proceedings of The IEEE 39th Southeastern Symposium on System Theory, pp. 230-234, 2007.
32. **W. Deabes**, M. A. Abdelrahman, "An Image Processing Approach for Surface Characterization of the Foam Patterns," In proceedings of The IEEE 39th Southeastern Symposium on System Theory, pp.71-75, 2007.
33. D. Patil, M. A. Abdelrahman, **W. Deabes**, P. K. Rajan, "Characterization of Capacitive Sensors and Monitoring of Metal Fill in Lost Foam Casting," In proceedings of The IEEE 39th Southeastern Symposium on System Theory, pp.230-235, 2007.

Professional development

- "Grant Writing Workshop", Hanover Research, Dec. 9, 2023
- How TO WRITE A CONCEPT PAPER" webinar, Nov. 11, 2023.
- Cyber Security Leadership one-day workshop, Umm Al-Qura University, June 8, 2022.
- Two days – Quality Education for Minorities (QEM) Network, Virtual Proposal Development Workshop, April 14-15, 2022.
- Completion of an online Cyber Awareness Challenge training, March 9, 2022.
- External Assessment Moderator for the CE Department at Umm Al-Qura University, KSA, December 2020.
- Five days – "Advanced Course on Data Science & Machine Learning (ACDL)", summer school at Certosa di Pontignano, Siena – Tuscany, Italy, 2019.
- Certificate from Quality Assurance (QA) of Independent Applying the QA Rubric (APPQAR), Oct. 2019
- Session chair at the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Vancouver, Canada, 2016.
- National Science, Technology and Innovation Plan, King Abdul-Aziz City for Science and Technology Proposal Development workshop, Hilton Makkah, June 24, 2016.
- Session chair at the IEEE 13th International Conference on Distributed Computing and Artificial Intelligence, Spain, 2016.
- Workshop attendance on Sep. 7, 2014. two full proposals were submitted on October 4, 2014, as a result of this workshop.
- Member of IEEE Computational Intelligence Society.
- Member of American Foundry Society (AFS).
- Member of Egyptian Engineers Syndicate.
- Session chair at the International Conference on Computer Engineering and Systems, Dec. 2009, USA.
- An active member in the IEEE student chapter at the Tennessee Tech. University (2006-2009).

Synergistic Activities

- **ESET Program Coordinator, CEMS Dept., TAMUSA:**
  - *Curriculum Development and Review*: Actively worked on the development and review of new course offerings and program curricula to ensure alignment with industry standards and accreditation requirements.
  - Scheduling classes, managing department resources, and maintaining laboratory equipment.
  - *Establishing ESET Labs and development*: Led the development and setup of all ESET laboratories, including designing lab exercises and selecting equipment for hands-on learning. Examples include Electronics Lab, Embedded Systems Lab, Digital System Lab, Sensors and Instrumentation lab, Wireless Communication lab, Control Systems Lab, and Programmable Logic Controllers (PLCs)

- *Advising and Mentorship:* Provided academic advising and mentorship to undergraduate students, guiding them in course selection, and career development.
- *Committee Participation:* Served on various departmental committees, such as hiring committees, to support departmental governance and decision-making.
- *Program Assessment and Continuous Improvement:* Conducted assessments of student learning outcomes and contributed to enhancing program quality through data-driven strategies and actionable feedback.
- *Industry Partnerships and Collaboration:* Worked to establish and maintain partnerships with industry leaders for student internships, research collaborations, and curriculum development to ensure the program's relevance to current technological trends.
- *Student Recruitment and Outreach: Participated in student recruitment efforts through open houses, career fairs, and outreach programs to attract high-caliber students to the department's programs.*

- **Department and College Services at CS Dept, Umm Al-Qura University, Saudi Aribia:**
  - A committee member in the qualifying exam of M.S. student's names: Wael Elsobhi, Nouf Elsohaly March 7, 2020.
  - "Advanced Computer Science" Master Program committee (member), Computer Dept., Umm Al Qura University, KSA, 2018-2023.
  - Serve as a chairperson of the Research and Development Department in the Initiatives Management and Vision Realization Office, Umm Al-Qura University, KSA, 2018-2020.
  - Quality Assurance & Academic Development committee (member), Computer Dept., Umm Al-Qura University, (ABET Accreditation obtained in 2016 and renewed in 2023).
  - The Computer Department assessment committee (member) 2018-2023.
  - The Computer Department graduates committee (chair) 2016-2023.
  - The IEEE Student Advisory Committee (member) 2015-2023.
  - The Computer Department Recruiting/Outreach Committee (member).
  - Mentor six (6) students in Tennessee Tech. Summer REU program, Summer 2006-2008.
- **Journal Reviewer:**
  - IEEE Sensors
  - IEEE Transactions on Instrumentation and Measurement
  - IEEE Access
  - IEEE Sensors Letter
  - ISA Transactions
  - Technologies, Processes, Remote Sensing, MDPI
- **Technical Conference Reviewer:**
  - American Control Conference.
  - IEEE Multi-conference on Systems and Control.
  - IEEE 13th International Conference on Distributed Computing and Artificial Intelligence.
  - (FUZZ-IEEE) International Conference on Fuzzy Systems, 2016.
  - International Instrumentation and Measurements Technology Conference
  - (WMSCI) World Multi-Conference on Systemic, Cybernetics and Informatics.
  - (SSST) 41st Southeastern Symposium on System Theory, 2009.
- **Workshops Organizer**

  Workshops and visits are part of the Computer Department Outreach to increase students' enrolment in the Computer Department.

- One-day workshop for undergraduate students of different courses in the Computer Department at University College, April 28, 2022.
- Research seminar, “Generative Adversarial Network Between Practice and Theory”, University College – March. 28, 2021.
- One-day workshop, for graduate students, “Using Reference Management Tools”, Computer Department at University College – Oct. 08, 2020.
- One-day workshop, for graduate students, “Using LATEX on Overleaf Platform”, Computer Department at University College – Oct. 22, 2020.
- Research seminar, “Tomography Systems Practice and Theory in Medical and Industrial Applications”, University College – March. 28, 2018.

Skills

- LabVIEW, MatLab, Unix-cshell.
- C/C++, Java, Python.
- Proficient in AI tools and frameworks, including TensorFlow and PyTorch.

Google Scholar

https://scholar.google.com/citations?user=FSXLwG4AAAAJ&hl=en

References

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