

## RESUME OF PROF. UBAID M. AL-SAGGAF

### **SUMMARY**

Accomplished electrical engineer with a multifaceted career spanning academia, entrepreneurship, and innovation. Holds a Ph.D. and M.Sc. in electrical engineering from Stanford University and dual B.Sc. degrees in electrical engineering and mathematics from King Fahd University of Petroleum & Minerals. His professional journey includes roles at prestigious institutions such as the Ministry of Defense, King Fahd University of Petroleum and Minerals, and King Abdulaziz University. He demonstrates a keen interest in cutting-edge fields, including space technology, defense and security systems, and technology transfer. His contributions to the field are documented by a portfolio of 32 patents, 117 journal publications, 43 conference papers, and 8 book chapters.

### **PERSONAL DATA**

Name: Ubaid M. Al-Saggaf  
Nationality: Saudi  
E-Mail: [usaggaf@kau.edu.sa](mailto:usaggaf@kau.edu.sa)  
[usaggaf@gmail.com](mailto:usaggaf@gmail.com)  
Web Sites: <http://usaggaf.kau.edu.sa>  
<https://scholar.google.com/citations?user=8M9CwJYAAAAJ>  
<https://www.linkedin.com/in/ubaid-al-saggaf-8b9245153>

### **FIELDS OF INTEREST AND SPECIALIZATION:**

- Signal and image processing, communication systems
- Artificial Intelligence
- System theory, control, and model reduction
- Design and Application of robust control
- Embedded systems and digital systems design
- Optronics
- Complete system design and prototyping
- Engineering Education

### **ACADEMIC HISTORY**

**Ph.D.:** (March 31, 1983 – June 15, 1986), Electrical Engineering, Stanford University, USA.

Thesis Title: "On Model Reduction and Control of Discrete Time Systems," Sponsored by NASA (Grant NAG2-223)

**M.Sc.:** (September 30, 1981 – March 31, 1983), Electrical Engineering, Stanford University, USA.

**B.Sc.:** October 1980 (Highest Honors) Mathematics,  
King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia.

**B.Sc.:** June 1980 (Highest Honors) Electrical Engineering,  
King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia.

**Elementary, Middle, and High School Education:**

Al-Thager Model Schools, Jeddah, Saudi Arabia

## **WORK EXPERIENCE**

### **February 2023 to present:**

Adjunct Professor

[Electrical and Computer Engineering Department](#)

King Abdulaziz University, Jeddah, Saudi Arabia

### **February 2015 to January 2023 :**

Professor

[Electrical and Computer Engineering Department](#)

King Abdulaziz University, Jeddah, Saudi Arabia

### **April 2014 to January 2023:**

Founder and Director

[Center of Excellence in Intelligent Engineering Systems \(CEIES\)](#)

<https://twitter.com/ceieskau>

King Abdulaziz University, Jeddah, Saudi Arabia

### **April 2014 to October 2021:**

Founder and Supervisor

KAU FABLAB

<https://www.fablabs.io/labs/kaufablab>

[https://twitter.com/kau\\_fablab?lang=ar](https://twitter.com/kau_fablab?lang=ar)

King Abdulaziz University, Jeddah, Saudi Arabia

### **December 2017 to October 2021:**

Founder and Director

[Innovation and Prototyping Center \(IPC\)](#)

[https://twitter.com/ipc\\_kau](https://twitter.com/ipc_kau)

King Abdulaziz University, Jeddah, Saudi Arabia

### **August 2011 to January 2023:**

Founder and Executive Director,

[Autonomous Systems Techniques \(AST\)](#), Houses of Expertise, Knowledge and Business

Alliance, King Abdulaziz University, Jeddah, Saudi Arabia

### **September 2010 to February 2015:**

Associate Professor

[Electrical and Computer Engineering Department](#)

King Abdulaziz University, Jeddah, Saudi Arabia

### **March 1992 to August 2010:**

Executive Technical Advisor, R&D Department

Ministry of Defense, Saudi Arabia

(On leave from King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia)

**January 1991 to February 1992:**

Associate Professor

[Electrical Engineering Department](#)

King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia

**July 1986 to December 1990:**

Assistant Professor

[Electrical Engineering Department](#)

King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia

**September 1981 to June 1986:**

Graduate Student and Research Assistant sponsored by NASA

[Electrical Engineering Department](#)

Stanford University, USA.

**June 1980 to August 1981:**

Graduate Assistant

[Electrical Engineering Department](#)

King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia

**SUMMER COLLABORATION****Summer 2012**

Visiting Research Fellow

[School of Engineering](#)

University of Leicester, Leicester, UK.

**Summer 1991**

Honorary Visiting Associate

[School of Engineering](#)

University of Leicester, Leicester, UK.

**Summer 1990**

Visiting Research Fellow

Industrial Control Unit

[University of Strathclyde, Glasgow, U.K.](#)

**Summer 1989**

Visiting Research Fellow

Industrial Control Unit

[University of Strathclyde, Glasgow, U.K.](#)

**Summer 1988**

Visiting Engineer,

Instrumentation & Control Systems Department

[Chiyoda Corp., Yokohama, Japan](#)

## **Summer 1987**

Visiting Research Fellow

[Electrical Engineering Department](#)

Stanford University, USA

## **RECENT OTHER ADMINISTRATIVE AND LEADERSHIP ACTIVITIES**

- |  |                              |
|--|------------------------------|
| • Member, a committee to study the executive rules for scientific promotions.  | June 2021– May 2022          |
| • Member, MOE Advisory Committee on Innovation and Entrepreneurship  | March 2019                   |
| • Member, KAU Supervisory Committee of the University's Programs for the Prison Directorate in the Makkah Region   | March 2020                   |
| • Chairman, KAU Faculty Appointment Committee  | January 2017 - February 2019 |
| • Member, KAU Faculty Appointment Committee  | August 2013 - December 2016  |
| • Member, KAU Scientific Council.  | September 2016 – August 2020 |
| • Member, KAU Faculty of Engineering Council   | May 2018 – August 2020       |
| • Member, Supervisory Committee for the Vice Presidency for Business and Knowledge Creativity.   | December 2017 - October 2021 |
| • Member, KAU Executive Committee to supervise the criteria for attracting collaborators to teach from outside the university.                             | May 2019                     |
| • Member of the ECE Graduate Program Committee.  | 2013 – January 2023          |
| • Member, a Committee to study and evaluate the number of faculty members, lecturers, demonstrators, and collaborators in all academic departments at KAU. | December 2018                |

## **OTHER PREVIOUS ACTIVITIES**

- Group Head, [The Autonomous Systems Research Group \(ASRG\)](#)
- KAU ECE Ph.D. program advisor
- Established and supervised 3 new research labs
  - Robotics and Unmanned Systems Lab
  - Intelligent Control Systems Lab
  - Wireless Communications and Signal Processing Lab

## **PROFESSIONAL MEMBERSHIP**

- Certified Consultant, Saudi Council of Engineers
- Member SPIE (The International Society for Optical Engineering)
- Vice-Chairman, IEEE Saudi Arabia Section (1988-89)

## **RECENT RECOGNITIONS**

- KAU Faculty of Engineering recognition for outstanding performance in the highest number of Patents Award for the year 2023.
- KAU Faculty of Engineering recognition for outstanding performance in the highest number of Patents Award for the year 2022.

- KAU Award for Distinguished Contributions to 2021 Patents.
- KAU Award for Distinguished Contributions to 2020 Patents.

## **INDUSTRIAL PROPOSALS**

### **Recently Submitted Proposals to the KAU Financial Sustainability Realization Office**

- Jeddah Techno Park Company
- Ultrasound Medical Imaging Equipment Manufacturing Company
- Military Technologies Academy
- A company to integrate innovation and industrialization into teaching and learning

## **RESEARCH**

### **Recently Approved Funded Research Projects**

#### **2024**

52. Principal Investigator for two research projects out of three projects awarded by GADD to King Abdulaziz University (KAU) in 2024.
51. Advisor or Co-advisor for three graduate student research projects, part of a total of seven grants awarded by GADD to the Faculty of Engineering at King Abdulaziz University (KAU) in 2024.
50. "Rapid chest infection and COVID-19 diagnosis using ensemble multi-stream deep neural network", General Program for Indexed Publications(GPIP), KAU, CO-PI, 2024.

#### **2022**

49. "Design of two-dimensional filters for image denoising using Quantum calculus for Intelligent IoT applications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, PI, 2022.
48. "Statistical Beamforming Aided Spectrum Sensing in Cooperative Cognitive Radio Networks for Military Communications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, PI, 2022.
47. "AI-Based Statistical Method for Waveforms Optimization in MIMO Radar for Military Applications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, PI, 2022.
46. "Ergodic Capacity Maximization based Beamforming Design for MU-MIMO Downlink Communication Systems," DSR General Program, KAU, PI, 2022.
45. "Efficient deployment of tiny ML Algorithms on low power edge devices for emotion detection in IoT Applications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.

44. "Visual Place Recognition for Autonomous Robots," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
43. "Diffusion Tensor Least Mean Squares algorithm for cooperative estimation in IoT," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
42. "Design of Uplink Receive Combining in Centralized Cell-Free Massive MIMO System for Military Communications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
41. "Deep Learning Based Anomaly Detection in Crowd Surveillance Videos," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
40. "Quantification of Body Posture using MEMS for Healthy Lifestyle," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
39. "Image Enhancement in Harsh Environments for Security Surveillance Applications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
38. "Algorithmic Optimization of Semantic Segmentation using Deep Neural Networks for Deployment on IoT Edge Devices," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
37. "Coronavirus Disease (COVID-19) Detection using CT Images," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
36. "Large Scale Face Recognition for Surveillance Applications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2022.
35. "Indoor Robot Localization using Fusion of Inertial and Visual Sensor Data," DSR General Program, KAU, CO-PI, 2022.
34. "Intelligent Control Techniques and the use of Artificial Intelligence (AI) for Biomedical Industrial and physical systems," KAU DSR Knowledge-Excellence Program, CO-PI, 2022.
33. "Artificial Intelligence Assisted semi-blind methods for channel estimation and data recovery in multi-carrier MIMO communications," KAU DSR Knowledge-Excellence Program, CO-PI, 2022.
32. "Artificial Intelligence Algorithms Design via Covariance Matrix Estimation in Large-dimensional Applications," KAU DSR Knowledge-Excellence Program, CO-PI, 2022.

## **2021**

31. "Energy-efficient SSD-LMS algorithm for state-space estimation in distributed networks," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, PI, 2021.
30. "Distributed Posterior LMS Algorithms based Cooperative Estimation in Wireless Sensor Networks for Intelligent IoT applications," Institutional Fund for Research and Development, Indexed Scientific Publication Program, KAU, CO-PI, 2021.
29. "Investigation on a Novel Method to Identify Mental Stress Resilience using EEG Modality in a Virtual Reality Environment," FRGS, Ministry of Education (MOE), Malaysia, CO-PI, 2021.
28. "AI based Real-Time Mental Healthcare Assessment System, "Major Research Projects-Research capabilities," Institutional Fund for Research and Development, KAU, PI, 2021.
27. "Explainable Artificial Intelligence-based High Quality Medical Ultrasound Imaging for Improved Diagnosis Using Low-Cost System," Institutional Fund for Research and Development, KAU, CO-PI, 2021.
26. "Power electronics-based controller for Wind turbines towards Sustainable and Secure energy, "Major Research Projects-Research capabilities," Institutional Fund for Research and Development, KAU, CO-PI, 2021.
25. "Crowd Flow Monitoring in the Holy Places using Artificial Intelligence and Machine Learning," Makkah digital portal for research and innovation, KAU, Co\_PI, 2021.

## **2020**

24. "Artificial Intelligence Method for Extracellular Matrix Proteins Prediction using Latent Space Encoding," High Impact Research Publication, Institutional Fund for Research and Development, KAU, PI, 2020.
23. "Deep Learning Aided Adaptive Modulation for Communications in High Mobility Military Systems," High Impact Research Publication, Institutional Fund for Research and Development, KAU., CO-PI, 2020.
22. "Artificial-Intelligence based Secure Ultra-Reliable and Low-Latency Communications for Modern Military Wireless Systems," High Impact Research Publication, Institutional Fund for Research and Development, KAU, CO-PI, 2020.
21. "KAU LOW-COST VENTILATOR", KAU DSR, PI, 2020.
20. "High-Performance Controller Design for Fully Automated Mechanical Ventilation to serve the New Corona COVID-19 Patients", KAU DSR, CO-PI, 2020.

## **2019**

19. "Robustness Improvement of the Fractional order LADRC scheme for Integer High order system," MOE High Quality/Impact Research Publication Initiative, PI, 2019.
18. "Nonsingular Terminal Synergetic Observer for Synchronization of Fractional-Order Chaotic Systems," MOE High Quality/Impact Research Publication Initiative, CO-PI, 2019.

17. "An Efficient Normalized LMS. Algorithm for adaptive beamforming in Massive MIMO systems," MOE High Quality/Impact Research Publication Initiative, CO-PI, 2019.
16. "Non-Iterative Data-Driven Fractional Order Controller: Tuning and Applications," KAU DSR Knowledge-Excellence Program, PI, 2019.
15. "Development and hardware implementation of new chaotic based encryption algorithms: Application to speech secure communication," KAU DSR Knowledge-Excellence Program, PI, 2019.
14. "Performance Analysis and Blind Beamforming Design of Multi-Cell Association in Downlink MU-MIMO System," KAU DSR, CO-PI, 2019.
13. "Hardware Implementation of Computer Vision Systems for Driverless Cars," M.O.E. Post-Doctoral Fellowships, CO-PI, 2019

## **2018**

12. "EEG Signals based stress prediction and classification using Deep Learning Neural Networks," KAU CEIES, CO-PI, 2018.

## **2017**

11. "Waveform Optimization for Future Wireless Radio and Underwater Acoustic Communication Systems," KAU CEIES, PI, 2017.)
10. "Efficient Cooperative Hybrid Automatic Repeat reQuest (HARQ) protocol to achieve QoS requirements using delay and throughput analysis for cognitive radio networks," KAU CEIES, CO-PI, 2017.
9. "Design of Fractional Controllers: Implementation and Testing on Physical Processes, Part 2", KAU CEIES, PI, 2017.

## **2016**

8. "New Approach for speckle reduction in medical ultrasound imaging with real-time implementation on` an ultrasound imaging research system," KAU CEIES, CO-PI, 2016.
7. "Characterization and Beamforming of Interference Limited MIMO Cellular Networks: An Indefinite Quadratic Forms Approach," KAU DSR, CO-PI, 2016.
6. "Design of Chaos Based Secure Data Communication Systems: Application to Image Transmission," KAU CEIES, PI, 2016.

## **2014**

6. "Distributed Optimization for Cooperative Estimation and Control in Multi-agent Systems," KAU DSR, PI, 2014.
5. "Gyro-Stabilized Platform Design and Air-to-Ground Video Target Tracking in Urban Environments," KACST ADVANCED AND STRATEGIC TECHNOLOGIES Program, Approved, PI, 2014.



## 2013

4. "Design of Fractional Controllers: Implementation and Testing on Physical Processes," KAU DSR, PI, 2013.
3. "A Novel Class of Stochastic Gradient Adaptive Algorithms Based on q-Derivative," KAU DSR, Distinct Research Study, PI, 2013.
2. "Modeling and Flight Control System Design for Autonomous UAV," KACST ADVANCED AND STRATEGIC TECHNOLOGIES Program, PI, 2013.
1. "Night Vision Based on Laser Gated Imaging," KACST ADVANCED AND STRATEGIC TECHNOLOGIES Program, PI, 2013.

## Journal Publications

### 2025

118. Muhammad Arif, Muhammad Moinuddin, Abdulrahman U. Alsaggaf, Imran Naseem, Ubaid M. Al-Saggaf, "The Two-Dimensional q-Least Mean Square Algorithm", submitted.

### 2024

117. Maaz Mahadi, Tarig Ballal, Muhammad Moinuddin, Tareq Y. Al-Naffouri, and Ubaid M. Al-Saggaf, "Regularized Linear Discriminant Analysis Using a Nonlinear Covariance Matrix Estimator," IEEE Transactions on Signal Processing, vol. 72, pp. 1049-1064, 02 February 2024 doi: 10.1109/TSP.2024.3361715. (ISI) (IF 5.4), (Q1 Quartile).
116. N. U. Zaman, K. Munawar, M. Moinuddin, A. K. Hassan, and U. M. Al-Saggaf, "Sum Capacity Based Modeling and Secrecy Analysis of MISO-NOMA Cooperative IoT Framework," in IEEE Open Journal of the Communications Society, vol. 5, pp. 156-167, 2024, doi: 10.1109/OJCOMS.2023.3338775. (ISI) (IF 7.9), (Q1 Quartile).

### 2023

115. Ubaid M. Al-Saggaf, Jawwad Ahmad, Mohammed A. Alrefaei, and Muhammad Moinuddin. 2023. "Optimized Statistical Beamforming for Cooperative Spectrum Sensing in Cognitive Radio Networks" Mathematics 2023, 11, no. 16: 3533. <https://doi.org/10.3390/math11163533> (ISI) (IF 2.592), (Q1 Quartile).
114. M. S. Hanif, M. Bilal, K. Munawar and U. M. Al-Saggaf, "Enhancing Conventional Geometry-Based Visual Odometry Pipeline Through Integration of Deep Descriptors," in IEEE Access, vol. 11, pp. 58294-58307, 2023, doi: 10.1109/ACCESS.2023.3284463. (ISI) (IF 3.476), (Q2 Quartile).
113. Ahmad Kamal Hassan, Ubaid M. Al-Saggaf, and Muhammad Moinuddin, "Statistical Method based Waveform Optimization in collocated MIMO Radar Systems" Mathematics, 2023, 11, 680. <https://doi.org/10.3390/math11030680> (ISI) (IF 2.592), (Q1 Quartile).

112. Abdulah Jeza Aljohani, Muhammad Moinuddin, Ubaid M. Al-Saggaf, Mohammed El-Hajjar, and Soon Xin Ng, "Statistical Beamforming for Multi-Set Space-Time Shift-Keying-Based Full-Duplex Millimeter Wave Communications" *Mathematics* 11, no. 2: 433. <https://doi.org/10.3390/math11020433> (ISI) (IF 2.592), (Q1 Quartile).
111. Hanif, M.S., Bilal, M., Balamash, A.S., Al-Saggaf, U.M. (2023). Hypotheses generation and verification based framework for crowd anomaly detection in single-scene surveillance videos. *Traitement du Signal*, Vol. 40, No. 1, pp. 115-122. <https://doi.org/10.18280/ts.400110> (ISI) (IF 2.299), (Q3 Quartile).
110. Belkacem Kada, Khalid Munawar, Muhammad Shafique Shaikh, Muhammad Bilal, Ubaid M. Al-Saggaf, "UAV Attitude Prediction using a new EKF and Stochastic Disturbed Process Noise Model," *Mathematical Statistician and Engineering Applications*, 72(1), 2156–2168. <https://www.philstat.org/index.php/MSEA/article/view/2713>

## 2022

- 109 Ubaid M. Al-Saggaf, Ahmad Kamal Hassan, and Muhammad Moinuddin, "Ergodic Capacity Analysis of Downlink Communication Systems under Covariance Shaping Equalizers" *Mathematics* 10, no. 22: 4304. <https://doi.org/10.3390/math10224304> (ISI) (IF 2.592), (Q1 Quartile).
108. Azzedine Zerguine, Jawwad Ahmad, Muhammad Moinuddin, Ubaid M. Al-Saggaf, and Abdelhak M. Zoubir, "An efficient normalized LMS algorithm," *Nonlinear Dyn* (2022). <https://doi.org/10.1007/s11071-022-07773-0> (ISI) (IF 5.741), (Q1 Quartile).
107. M. Mahadi, T. Ballal, M. Moinuddin and U. M. Al-Saggaf, "Portfolio Optimization Using a Consistent Vector-Based MSE Estimation Approach," in *IEEE Access*, vol. 10, pp. 86636-86646, 2022, doi: 10.1109/ACCESS.2022.3197896. (ISI) (IF 3.476), (Q2 Quartile)
106. Muhammad Moinuddin, Ahmad Kamal Hassan, and Ubaid M. Al-Saggaf, 2022. "Performance Analysis of Multi-Cell Association in Downlink MU-MIMO System with Arbitrary Beamforming" *Mathematics*, vol. 10, no. 15, p. 2611, Jul. 2022, <https://doi.org/10.3390/math10152611> (ISI) (IF 4.755), (Q1 Quartile).
105. Ibrahim M. Mehedi, K. Prahlad Rao, Ubaid M. Al-Saggaf, Hadi Mohsen Alkanfery, Maamar Bettayeb, Rahtul Jannat, "Intelligent Tomographic Microwave Imaging for Breast Tumor Localization", *Mathematical Problems in Engineering*, vol. 2022, Article ID 4090351, 9 pages, 2022. <https://doi.org/10.1155/2022/4090351> (ISI) (IF 1.43 ), (Q4 Quartile).
104. I. M. Mehedi, A. J. Aljohani, U. M. Al-Saggaf, A. I. Iskanderani, T. Palaniswamy et al., "Control of linear servo carts with integral-based disturbance rejection," *Computers, Materials & Continua*, vol. 73, no.1, pp. 453–463, 2022. [doi:10.32604/cmc.2022.022921](https://doi.org/10.32604/cmc.2022.022921) (ISI) (IF 3.86), (Q2 Quartile).
103. Maamar Bettayeb, Rachid Mansouri, Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, and Mohammed Moinuddin, "New LADRC scheme for fractional-order system," *Alexandria Engineering Journal*, Volume 61, Issue 12, 2022, Pages 11313-11323, ISSN 1110-0168, <https://doi.org/10.1016/j.aej.2022.05.008> (ISI) (IF 6.626), (Q1 Quartile).
102. Maamar Bettayeb, Rachid Mansouri, Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, and Mohammed Moinuddin, "Linear Active Disturbance Rejection Control with a

Fractional Order Integral Action,” CMC-Computers, Materials & Continua, vol. 73, no.2, pp. 3057–3079, 2022. <https://doi.org/10.32604/cmc.2022.025751> (ISI) (IF 3.86), (Q2 Quartile).

101. Rumaisa Abu Hasan, Muhamad S.B. Yusoff, Tong B. Tang, Yasir Hafeez, Mazlina C. Mustafa, Masayu Dzainudin, Juppri Bacotang, Ubaid M. Al-Saggaf, and Syed S.A. Ali, "Resilience-Building for Mental Health among Early Childhood Educators: A Systematic Review and Pilot-Study towards an EEG-VR Resilience Building Intervention," International Journal of Environmental Research and Public Health 19, no. 7: 4413, 2022. <https://doi.org/10.3390/ijerph19074413> (ISI) (IF 4.614), (Q1 & Q2 Quartile)
100. Yasser M. Kadah, Ahmed F. Elnokrashy, Ubaid M. Alsaggaf and Abou-Bakr M. Youssef, "Principal Component Analysis Based Hybrid Speckle Noise Reduction Technique for Medical Ultrasound Imaging" International Journal of Advanced Computer Science and Applications, Vol. 13, Issue 12, 2022. <http://dx.doi.org/10.14569/IJACSA.2022.0131256> (ISI)
99. Ubaid M. Al-Saggaf, Syed Faraz Naqvi, Muhammad Moinuddin, Sulhi Ali Alfakeh, and Syed Saad Azhar Ali, "Performance Evaluation of EEG Based Mental Stress Assessment Approaches for Wearable Devices," Frontiers in Neurorobotics, Vol. 15, 2022, DOI=10.3389/fnbot.2021.819448, <https://www.frontiersin.org/article/10.3389/fnbot.2021.819448> (ISI) (IF 3.493), (Q2 & Q3 Quartile)
98. Muhammad Bilal, Khalid Munawar, Muhammad Shafique Shaikh, Ubaid M Al-Saggaf, Belkacem Kada, "Hyperspectral Image Segmentation using End-to-End CNN Architecture with built-in Feature Compressor for UAV Systems," International Journal of Advanced Computer Science and Applications, Vol. 13, Issue 12, 2022. (ISI)
97. Ubaid M Al-Saggaf, Abdelaziz Botalb, Muhammad Faisal, Muhammad Moinuddin, Abdulrahman U Alsaggaf, and Sulhi Ali Alfakeh, "Constraints on Hyper-parameters in Deep Learning Convolutional Neural Networks", International Journal of Advanced Computer Science and Applications, Vol. 13, Issue 11, 2022. (ISI)
96. Muhammad Moinuddin, Shujaat Khan, Abdulrahman U. Alsaggaf, Mohammed Jamal Abdulaal, Ubaid M. Al-Saggaf and Jong Chul Ye, "Medical ultrasound image speckle reduction and resolution enhancement using texture compensated multi-resolution convolution neural network," Frontiers in Physiology, 13, 2022. <https://doi.org/10.3389/fphys.2022.961571> (ISI) (IF 4.755), (Q1 Quartile)
95. Yasser M. Kadah, Ahmed F. Elnokrashy, Ubaid M. Alsaggaf and Abou-Bakr M. Youssef, "Speckle Reduction in Medical Ultrasound Imaging based on Visual Perception Model" International Journal of Advanced Computer Science and Applications, Vol. 13, Issue 11, 2022. <http://dx.doi.org/10.14569/IJACSA.2022.0131166> (ISI)
94. Maaz Mahadi, Tarig Ballal, Muhammad Moinuddin, and Ubaid M. Al-Saggaf, "A Recursive Least-Squares with a Time-Varying Regularization Parameter. Applied Sciences. 2022; 12(4):2077. <https://doi.org/10.3390/app12042077> (ISI) (IF 2.838), (Q2 & Q3 Quartile)
93. I. M. Mehedi, N. Saad, M. A. Magzoub, U. M. Al-Saggaf, and A. H. Milyani, "Simulation Analysis and Experimental Evaluation of Improved Field-Oriented Controlled Induction

- Motors Incorporating Intelligent Controllers," in IEEE Access, vol. 10, pp. 18380-18394, 2022, <https://doi.org/10.1109/ACCESS.2022.3150360>. (ISI) (IF 3.476), (Q2 Quartile)
92. Shahriar Mostufa, Tarik Bin Abdul Akib, Md. Masud Rana, Ibrahim M. Mehedi, Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, Mohammed U Alsaggaf, and Md. Sarowar Alam, "Numerical approach to design the graphene-based multilayered surface plasmon resonance biosensor for the rapid detection of the novel coronavirus," Opt. Continuum 1, 494-515 (2022) <https://doi.org/10.1364/OPTCON.445255> (ISI)
  91. Ubaid M Al-Saggaf, Maamar Bettayeb, Said Djenoune, "Fixed-time synchronization of memristor chaotic systems via a new extended high-gain observer," European Journal of Control, Volume 63, 2022, Pages 164-175, ISSN 0947-3580, <https://doi.org/10.1016/j.ejcon.2021.10.002> (ISI) (IF 2.649), (Q3 Quartile)
  90. Muhammad Arif, Imran Naseem, Muhammad Moinuddin, Abdulrahman U. Alsaggaf, Ubaid M. Al-Saggaf, "Energy-efficient SSD-LMS algorithm for state-space estimation in distributed networks," Digital Signal Processing, 2021, 103362, ISSN 1051-2004, <https://doi.org/10.1016/j.dsp.2021.103362>. (ISI) (IF 2.92), (Q2 Quartile)
  89. Said Djenoune, Maamar Bettayeb, Ubaid Muhsen Al-Saggaf, "Fixed-time convergent sliding-modes-based differentiators," Communications in Nonlinear Science and Numerical Simulation, Volume 104, 2022, 106033, ISSN 1007-5704, <https://doi.org/10.1016/j.cnsns.2021.106033>. (ISI) (IF 4.186), (Q1 Quartile)
  88. Ibrahim M. Mehedi, Rachid Mansouri, Ubaid M. Al-Saggaf, et al., "Fractional Order Linear Active Disturbance Rejection Control for Linear Flexible Joint System," CMC-Computers, Materials & Continua, 70(3), 5133–5142., <https://doi.org/10.32604/cmc.2022.021018> (ISI) (IF 3.86), (Q2 Quartile)
  87. Rachid Mansouri, Maamar Bettayeb, Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, and Muhammad Moinuddin, "Extended State Observer Based Fractional Order Controller Design for Integer High Order Systems," Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science. December 2022, <https://doi.org/10.1177/09544062211062100> (ISI) (IF 1.758), (Q3 Quartile)
  86. Mehedi, I. M., Al-Saggaf, U. M., Vellingiri, M. T., Milyani, A. H., Saad, N. B. et al., "OBDO Based Fractional PID for MPPT-Pitch Control of Wind Turbine Systems. CMC-Computers, Materials & Continua," 71(2), 4001–4017, (2022). <https://doi.org/10.32604/cmc.2022.021981> (IF 3.86), (Q2 Quartile)
  85. Muhammad Arif, Muhammad Moinuddin, Imran Naseem, Abdulrahman Al-Saggaf, Ubaid M Al-Saggaf, "Diffusion Quantum-Least Mean Square Algorithm for Distributed Estimation," Circuits Syst Signal Process (2022). <https://doi.org/10.1007/s00034-021-01934-z>. (ISI) (IF 2.311), (Q3 Quartile)
  84. Ibrahim M. Mehedi, Maher H. Al-Sereihy, Asmaa U. Al-Saggaf, Ubaid M. Al-Saggaf, "A Non-integer Order Control Scheme for the Core Power of a Pressurized Water Reactor," CMC-Computers, Materials & Continua, 72(1), 651–662, <https://www.techscience.com/cmc/v72n1/46839>, (ISI) (IF 3.86), (Q2 Quartile)

## 2021

83. Ubaid M. Al-Saggaf, Muhammad Usman, Imran Naseem, Muhammad Moinuddin, Ahmad A. Jiman, Mohammed U. Alsaggaf, Hitham K. Alshoubaki, and Shujaat Khan, "ECM-LSE: Prediction of Extracellular Matrix Proteins using Deep Latent Space Encoding of k-Spaced Amino Acid Pairs," *Front. Bioeng. Biotechnol.*, 2021, <https://www.frontiersin.org/articles/10.3389/fbioe.2021.752658> , (ISI) (IF 5.89), (Q1 Quartile)
82. Yasir Hafeez, Syed Saad Azhar Ali, Rumaisa Abu Hasan, Syed Hasan Adil, Muhammad Moinuddin, Mansoor Ebrahim, Muhamad Saiful Bahri Yusoff, Hafeezullah Amin, Ubaid Al-Saggaf, "Development of Enhanced Stimulus Content to Improve the Treatment Efficacy of EEG–Based Frontal Alpha Asymmetry Neurofeedback for Stress Mitigation," in *IEEE Access*, vol. 9, pp. 130638-130648, 2021, DOI: 10.1109/ACCESS.2021.3114312. (ISI) (IF 3.367), (Q2 Quartile)
81. U. M. Al-Saggaf, R. Mansouri, M. Bettayeb, I. M. Mehedi, and K. Munawar, "Robustness Improvement of the Fractional-Order LADRC Scheme for Integer High-Order System," in *IEEE Transactions on Industrial Electronics*, Vol. 68, no. 9, pp. 8572-8581, Sept. 2021, DOI: 10.1109/TIE.2020.3016258. (ISI) (IF 8.236), (Q1 Quartile)
80. Ibrahim M. Mehedi, Jahin Al Hasan Joy, Md. Rafiqul Islam, Nayeema Hasan, Ubaid M. Al-Saggaf, Ahmad H. Milyani, Ahmed I. Iskanderani, Abdullah Abusorrah, Muhyaddin Rawa, Hussain Bassi, "Reducing Fault Current by Using FACTS Devices to Improve Electrical Power Flow," *Mathematical Problems in Engineering*, vol. 2021, Article ID 8116816, 9 pages, 2021. <https://doi.org/10.1155/2021/8116816> (ISI) (IF 1.305), (Q3, Q4 Quartile)
79. Ubaid M. Al-Saggaf, Ibrahim M. Mehedi, Rachid Mansouri, Maamar Bettayeb, "Fractional Order Linear ADRC-Based Controller Design for Heat-Flow Experiment," *Mathematical Problems in Engineering*, vol. 2021, Article ID 7291420, 8 pages, 2021. <https://doi.org/10.1155/2021/7291420> (ISI) (IF 1.305), (Q3, Q4 Quartile)
78. Muhammad Kashif Yaqoob, Syed Farooq Ali, Muhammad Bilal, Muhammad Shehzad Hanif, Ubaid M Al-Saggaf, "ResNet Based Deep Features and Random Forest Classifier for Diabetic Retinopathy Detection," *Sensors* 21, no. 11: 3883. <https://doi.org/10.3390/s21113883>. (ISI) (IF 3.576 ), (Q1 & Q2 Quartile)
77. Ibrahim M. Mehedi, Heidir S. M. Shah, Ubaid M. Al-Saggaf, Rachid Mansouri, Maamar Bettayeb, "Adaptive Fuzzy Sliding Mode Control of a Pressure-Controlled Artificial Ventilator," *Journal of Healthcare Engineering*, vol. 2021, Article ID 1926711, 10 pages, 2021. <https://doi.org/10.1155/2021/1926711> (ISI) (IF 2.682), (Q2 Quartile)
76. Ibrahim M. Mehedi, Heidir S. M. Shah, Ubail M. Al-Saggaf, Rachid Mansouri, Maamar Bettayeb, "Fuzzy PID Control for Respiratory Systems," *Journal of Healthcare Engineering*, vol. 2021, Article ID 7118711, 6 pages, 2021. <https://doi.org/10.1155/2021/7118711> (ISI) (IF 2.682), (Q2 Quartile)
75. S. M. Amrr, M. Nabi, U. M. Al-Saggaf and M. Bettayeb, "Attitude Control of Spacecraft under Restricted Network Using Robust Event Triggered Optimized Strategy," in *IEEE Journal on Miniaturization for Air and Space Systems*, vol. 2, no. 4, pp. 179-188, Dec. 2021, doi: 10.1109/JMASS.2021.3069938.

74. Maher H. Al-Sereihy, Ibrahim M. Mehedi, Ubaid M. Alsaggaf, Khalid Munawar, Rachid Mansouri, Maamar Bettayeb, "Fractional Data-Driven Control for a Rotary Flexible Joint System," International Journal of Advanced Robotic Systems. <https://doi.org/10.1177%2F1729881421998580> (ISI) (IF 1.652)

## 2020

73. Waleed Aldosari, Muhammad Moinuddin, Abdulah Jeza Aljohani, Ubaid M Al Saggaf, "Distributed Extended Kalman Filtering based Techniques for 3-D UAV Jamming Localization," Sensors 2020, 20, 6405. <https://doi.org/10.3390/s20226405> (ISI) (IF 3.275), (Q1 & Q2 Quartile)
72. Nur Afande Ali Hussain, Syed Saad Azhar Ali, Pere Ridao, Patryk Cieslak and Ubaid M. Al-Saggaf, "Implementation of Nonlinear Adaptive U-Model Control Synthesis Using a Robot Operating System for an Unmanned Underwater Vehicle," IEEE Access, vol. 8, pp. 205685-205695, 2020, doi: 10.1109/ACCESS.2020.3037122. (ISI) (IF 3.745) (Q1 Quartile)
71. Syed Faraz Naqvi, Syed Saad Ali, Norashikin Yahya, Mohd Azhar Mohd Yasin, Yasir Hafeez, Ahmad Rauf Subhani, Syed Hasan Adil, Ubaid Al-Saggaf, and Muhammad Moinuddin, "Real-Time Stress Assessment Using Sliding Window Based on Convolutional Neural Network," SENSORS. Sensors 2020, 20(16), 4400; <https://doi.org/10.3390/s20164400> (ISI) (IF 3.275), (Q1 & Q2 Quartile)
70. A. S. Balamash, Maamar Bettayeb, Said Djennoune, Ubaid Muhsen Al-Saggaf, and M. Moinuddin, "Fixed-Time Terminal Synergetic Observer for Synchronization of Fractional-Order Chaotic Systems," Chaos 30, 073124 (2020); <https://doi.org/10.1063/1.5142989>. (ISI) (IF 2.832), (Q1 Quartile)
69. A. K. Hassan, M. Moinuddin, U. M. Al-Saggaf, O. Aldayel, T. N. Davidson, and T. Y. Al-Naffouri, "Performance Analysis and Joint Statistical Beamformer Design for Multi-User MIMO Systems," in IEEE Communications Letters, doi: 10.1109/LCOMM.2020.3001556 (ISI) (IF 3.457), (Q2 Quartile)
68. Ibrahim Mustafa Mehedi, Uzair Ansari, and Ubaid M. Al-Saggaf, "Three degrees of freedom rotary double inverted pendulum stabilization by using robust generalized dynamic inversion control: Design and Experiments," Journal of Vibration and Control, March 2020, <https://doi.org/10.1177%2F1077546320915333> (ISI) (IF 2.169), (Q2 Quartile)
67. Ibrahim Mustafa Mehedi, Uzair Ansari, Ubaid M. Al-Saggaf, Abdulrahman H. Bajodah, Belkacem Kada, and Muhyaddin J. Rawa, "Underactuated Rotary Inverted Pendulum Control using Robust Generalized Dynamic Inversion," Journal of Vibration and Control, March 2020, <https://doi.org/10.1177%2F1077546320916022>, (ISI), (IF 2.169), (Q2 Quartile)
66. Maher H. Al-Sereihy, Ibrahim M. Mehedi, Ubaid M. Alsaggaf, and Maamar Bettayeb, "State Feedback based Fractional Order Control Approximation for Rotary Flexible Joint System," Mechatronic Systems and Control. DOI: 10.2316/J.2020.201-0106, (ISI)
65. Ibrahim Mustafa Mehedi, Uzair Ansari, Ubaid M Al Saggaf, and Abdulrahman H Bajodah "CONTROLLING A ROTARY SERVO CART SYSTEM USING ROBUST GENERALIZED



## 2019

64. Nur Afande Ali Hussain, Syed Saad Azhar Ali, Mark Ovinis, Mohd Rizal Arshad, and Ubaid M. Al-Saggaf, "Underactuated Coupled Nonlinear Adaptive Control Synthesis Using U-Model for Multivariable Unmanned Marine Robotics," IEEE Access, vol. 8, pp. 1851-1865, 2020, DOI: [10.1109/ACCESS.2019.2961700](https://doi.org/10.1109/ACCESS.2019.2961700), (ISI) (IF 3.745) (Q1 Quartile)
63. Said Djenoune, Maamar Bettayeb, Ubaid Muhsen Al-Saggaf, "Impulsive observer with predetermined finite time convergence for synchronization of fractional order chaotic systems based on Takagi-Sugeno fuzzy model," Nonlinear Dynamics, October 2019, Volume 98, Issue 2, pp 1331–1354, <https://doi.org/10.1007/s11071-019-05266-1> , (ISI) (IF 4.867) (Q1 Quartile)
62. Yasir Hafeez, Syed Saad Ali, Wajid Mumtaz, Muhammad Moinuddin, Syed Hasan Adil, Ubaid Al-Saggaf, and Aamir Malik, "Investigating Neurofeedback Protocols for Stress Mitigation: A Comparative Analysis of Different Stimulus Contents," IEEE Access, Volume: 7, Page(s): 141021 – 141035, <https://doi.org/10.1109/ACCESS.2019.2944202> , (ISI) (IF 3.745) (Q1 Quartile)
61. Said Djenoune, Maamar Bettayeb, Ubaid M Al-Saggaf, "Modulating function-based fast convergent observer and output feedback control for a class of nonlinear systems," IET. Control Theory & Applications, 2019, DOI: 10.1049/iet-cta.2018.5313, IET. Digital Library, <https://digital-library.theiet.org/content/journals/10.1049/iet-cta.2018.5313> (ISI) (IF 3.343) (Q1 & Q2 Quartile)
60. Ibrahim Mustafa Mehedi, Ubaid M Al-Saggaf, Rachid Mansouri, Maamar Bettayeb, "Stabilization of a double inverted rotary pendulum through fractional order integral control scheme," International Journal of Advanced Robotic Systems, Volume: 16 Issue: 4, <https://doi.org/10.1177/1729881419846741> , (ISI) (IF 1.482) (Q4 Quartile)
59. Muhammad Arif, Imran Naseem, Muhammad Moinuddin, Ubaid M. Al-Saggaf, "Modified Incremental LMS with Improved Stability via Convex Combination of Two Adaptive Filters," Circuits, Systems, and Signal Processing (2019), <https://doi.org/10.1007/s00034-019-01061-w> (ISI) (IF 1.681) (Q3 Quartile)
58. Said Djenoune, Maamar Bettayeb, Ubaid Muhsen Al-Saggaf, "Synchronization of Fractional-Order Discrete-Time Chaotic Systems by Exact Delayed State Reconstructor: Application to secure communication" Int. J. Appl. Math. Comput. Sci., 2019, Vol. 29, No. 1, 179–194 DOI: [10.2478/amcs-2019-0014](https://doi.org/10.2478/amcs-2019-0014). (ISI) (IF 0.967) (Q3, Q4 Quartile)
57. Ibrahim Mustafa Mehedi, Ubaid M. Al-Saggaf, Rachid Mansouri, and Maamar Bettayeb, "Two degrees of freedom fractional controller design: Application to the ball and beam system," Measurement, Volume 135, March 2019, Pages 13-22, <https://doi.org/10.1016/j.measurement.2018.11.021> (ISI) (IF 3.364) (Q1 Quartile)
56. Peng Lin, Wei Ren, Hao Wang, Ubaid M. Al-Saggaf "Multi-agent Rendezvous with Shortest Distance to Convex Regions with Empty Intersection: Algorithms and Experiments," IEEE Transactions on Cybernetics, March 2019. DOI: [10.1109/TCYB.2018.2794506](https://doi.org/10.1109/TCYB.2018.2794506) (ISI) (IF 11.079) (Q1 Quartile)

55. Mohammed Abdul Hai Muzammil, M Moinuddin, U M Al-Saggaf, AK Hassan" Outage probability analysis and adaptive combiner for the multi-user multi-polarized antenna systems" Turk J Elec Eng & Comp Sci, (2019) 27: 67 – 79, [DOI:10.3906/elk-1711-308](https://doi.org/10.3906/elk-1711-308), (ISI) (IF 0.682 ) (Q4 Quartile)

## 2018

54. Uzair Ansari, Ibrahim Mustafa Mehedi, Abdulrahman H. Bajodah, and Ubaid M. Al-Saggaf, "Positional control of rotary servo cart system using generalized dynamic inversion," Journal of Vibroengineering, Sep2018, Vol. 20 Issue 6, p2403-2413. (ISI) (IF 0.398) (Q4 Quartile)
53. Maamar Bettayeb, Ubaid Muhsen Al-Saggaf, Said Djennoune, "Single Channel Secure Communication Scheme Based on Synchronization of Fractional-Order Chaotic Chua's Systems," Sage, Transaction of the Institute of Measurements and Control, DOI: <https://doi.org/10.1177/0142331217729425>, 2018. (ISI) (IF 1.649) (Q3 Quartile)
52. M. Saim, S. Ghapani, W. Ren, K. Munawar, U. M. Al-Saggaf, "Distributed Average Tracking in Multi-Agent Coordination: Extensions and Experiments," IEEE SYSTEMS JOURNAL, VOL. 12, NO. 3, SEPTEMBER, 2018, DOI: [10.1109/JSYST.2017.2685465](https://doi.org/10.1109/JSYST.2017.2685465). (ISI) (IF 3.987) (Q1 Quartile)
51. A. K. Hassan, M. Moinuddin, and U. M. Al-Saggaf, "Sum Ergodic Capacity Analysis Using Asymptotic Design of Massive MU-MIMO Systems," Wireless Personal Communications, (2018) 100: 1743. <https://doi.org/10.1007/s11277-018-5669-6>. (ISI) (IF 1.061) (Q4 Quartile)
50. M. Arif, I. Naseem, M. Moinuddin, U. M. Al-Saggaf, "Design of an Intelligent q-LMS Algorithm for Tracking a Non-stationary channel," Arabian Journal for Science and Engineering, (2018) 43:2793–2803 <https://doi.org/10.1007/s13369-017-2883-6> , (ISI) (IF 1.711) (Q3 Quartile)
49. A. K. Hassan, M. Moinuddin, U. M. Al-Saggaf, M. S. Shaikh, "On the Kernel Optimization of Radial Basis Function Using Nelder Mead Simplex," Arabian Journal for Science and Engineering, (2018) 43:2805–2816, <https://doi.org/10.1007/s13369-017-2888-1>. (ISI) (IF 1.711) (Q3 Quartile)
48. Salar Rahili, Jiahui Lu, Wei Ren, and Ubaid M. Al-Saggaf, "Distributed Coverage Control of Mobile Sensor Networks in Unknown Environment Using Game Theory: Algorithms and Experiments," IEEE TRANSACTIONS ON MOBILE COMPUTING, VOL. 17, NO. 6, JUNE 2018, DOI: [10.1109/TMC.2017.2761351](https://doi.org/10.1109/TMC.2017.2761351), (ISI) (IF 5.112) (Q1 Quartile)
47. W. Ren, U. M. Al-Saggaf, "Distributed Kalman–Bucy Filter with Embedded Dynamic Averaging Algorithm," IEEE SYSTEMS JOURNAL, VOL. 12, NO. 2, JUNE, 2018, DOI: [10.1109/JSYST.2017.2657765](https://doi.org/10.1109/JSYST.2017.2657765). (ISI) (IF 3.987) (Q1 Quartile)
46. S.M. Dildar Alia , U. Iqbal Bhattia, K. Munawwar, U. Al-Saggaf, Shoaib Mansoor, Jamshaid Ali, "Gyroscopic drift compensation by using low cost sensors for improved attitude determination," Measurement, Volume 116, February 2018, Pages 199–206, DOI: <https://doi.org/10.1016/j.measurement.2017.11.003> (ISI) (IF 3.364) (Q1 Quartile)



45. A. Ahmed, M. Moinuddin, U. M. Al-Saggaf, "q-State Space Least Mean Family of Algorithms," *Circuits, Systems, and Signal Processing*, February 2018, Volume 37, Issue 2, pp 729–751. <https://doi.org/10.1007/s00034-017-0569-7> (ISI) (IF 1.681) (Q3 Quartile)
44. A. K. Hassan, M. Moinuddin, U. M Al-Saggaf, "On modeling and performance analysis of non-cooperative multiantenna multi-user MIMO systems," *Journal of the Chinese Institute of Engineers*, Volume 41, 2018 - Issue 1 DOI: [10.1080/02533839.2017.1419077](https://doi.org/10.1080/02533839.2017.1419077). (ISI) (IF 0.667) (Q1 Quartile)

## 2017

43. Shaocheng Wang, Wei Ren, Ubaid M. Al-Saggaf, "Effects of Switching Network Topologies on Stealthy False Data Injection Attacks against State Estimation in Electric Power Networks," *IEEE SYSTEMS JOURNAL*, Dec. 2017, DOI: [10.1109/JSYST.2015.2494521](https://doi.org/10.1109/JSYST.2015.2494521). (ISI) (IF 3.987) (Q1 Quartile)
42. Ubaid M. Al-Saggaf, Ibrahim M. Mehedi, Rachid Mansouri, and Maamar Bettayeb "Rotary Flexible Joint Control by Fractional Order Controllers," *Springer, International Journal of Control, Automation and Systems*, DOI: [10.1007/s12555-016-0008-8](https://doi.org/10.1007/s12555-016-0008-8), December 2017, Volume 15, Issue 6, pp 2561–2569. (ISI) (IF 2.181)
41. R. Ahmed, M. Moinuddin, U. M. Al-Saggaf, A. K. Hassan, "Mitigation of Self Interference and Multi-User Interference in Downlink Multi-User MIMO System," *IET Communications*, DOI: [10.1049/iet-com.2017.0880](https://doi.org/10.1049/iet-com.2017.0880), Sept. 2017. (ISI) (IF 1.779)
40. M. Bettayeb, U. Al-Saggaf, S. Djennoune, "High gain observer design for fractional-order nonlinear systems with delayed measurements: Application to synchronization of fractional-order chaotic systems," *IET. Control Theory & Applications*, DOI: [10.1049/iet-cta.2017.0396](https://doi.org/10.1049/iet-cta.2017.0396), Aug 2017. (ISI) (IF 3.526) (Q1 & Q2 Quartile)
39. U. M. Al-Saggaf, M. Bettayeb, S. Djennoune, "Super-Twisting Algorithm-Based Sliding-Mode Observer for Synchronization of Nonlinear Incommensurate Fractional-Order Chaotic Systems Subject to Unknown Inputs," *Arabian Journal for Science and Engineering*, July 2017, Volume 42, Issue 7, pp 3065–3075. (ISI) <https://doi.org/10.1007/s13369-017-2548-5> (ISI) (IF 1.711) (Q3 Quartile)
38. A. K. Hassan, M. Moinuddin, U. M. Al-Saggaf, T. Y. Al-Nafouri, T. Y., "Performance Analysis of Beamforming in MU-MIMO Systems for Rayleigh Fading Channels," *IEEE Access*, 5, 3709-3720, 2017. (ISI) DOI: [10.1109/ACCESS.2017.2682791](https://doi.org/10.1109/ACCESS.2017.2682791) (ISI) (IF 3.745) (Q1 Quartile)
37. Maamar Bettayeb, Mansouri Rachid, Ubaid M Al-Saggaf, Ibrahim M Mehedi, "Smith Predictor Based Fractional-Order-Filter P.I.D. controllers design for long time delay systems," *Asian Journal of Control*, 2017. DOI: [10.1002/asjc.1385](https://doi.org/10.1002/asjc.1385) (ISI) (IF 2.005)
36. R. Ahmed, U. M. Al-Saggaf, M. Moinuddin, "Coverage Analysis of Multi-User Multi-Antenna System with Spatial Combining," *Indian Journal of Science and Technology*, DOI: [10.17485/ijst/2017/v10i16/112456](https://doi.org/10.17485/ijst/2017/v10i16/112456), April 2017.
35. Muhammad Saim, Khalid Munawar, Ubaid Al-Saggaf, "An Overview of Localization Methods for Multi-Agent Systems," *International Journal of Engineering Research and Applications*, 2017. DOI: [10.9790/9622-0701041924](https://doi.org/10.9790/9622-0701041924)

## 2016

34. Karima Amoura, Rachid Mansouri, Maamar Bettayeb, Ubaid M. Al-Saggaf, "Closed-loop step response for tuning PID-fractional-order-filter controllers," ISA Transactions, Volume 64, September 2016, Pages 247–257, <https://doi.org/10.1016/j.isatra.2016.04.017> (ISI) (IF 4.305) (Q1 Quartile)
33. U.M Al-Saggaf, I.M. Mehedi, M. Bettayeb, R. Mansouri, "Fractional order controller design for a heat flow process," Proceedings of the Institution of Mechanical Engineers Part I Journal of Systems and Control Engineering, Aug 2016, DOI: [10.1177/0959651816649917](https://doi.org/10.1177/0959651816649917) (ISI) (IF 1.101) (Q4 Quartile)
32. Maaz Butt, Khalid Munawar, Umar I. Bhatti, Sohail Iqbal, Ubaid M. Al-Saggaf and Washington Ochieng, "4D Trajectory Generation for Guidance Module of a UAV for a Gate-to-gate Flight in Presence of Turbulence", Int J Adv Robot Syst, 2016, 13:125. DOI: [10.5772/64063](https://doi.org/10.5772/64063) (ISI) (IF 1.482) (Q4 Quartile)
31. Arif Ahmed, Muhammad Moinuddin, Ubaid M. Al-Saggaf, "State Space Least Mean Fourth Algorithm for Dynamic State Estimation in Power Systems," Arab J Sci Eng., Volume: 41 Issue: 2 Pages: 527-543, 2016, <https://doi.org/10.1007/s13369-015-1698-6> (ISI) (IF 1.711) (Q3 Quartile)
30. Kahina Titouche, Rachid Mansouri, Maamar Bettayeb and Ubaid M. Al-Saggaf, "Internal Model Control–Proportional Integral Derivative–Fractional-Order Filter Controllers Design for Unstable Delay Systems," J. Dyn. Sys. Meas., Control, Volume: 138 Issue: 2 Pages: 21006-21006, Feb 2016, DOI: [10.1115/1.4032131](https://doi.org/10.1115/1.4032131), (ISI) (IF 1.304) (Q3 Quartile)
29. Syed Ussama Ali, Raza Samar, M. Zamurad Shah, Aamer I. Bhatti, Khalid Munawar, and Ubaid M. Al-Sggaf, "Lateral guidance and control of UAVs using second-order sliding modes," Aerospace Science and Technology, Volume 49, February 2016, <https://doi.org/10.1016/j.ast.2015.11.033> Pages 88-100 (ISI) (IF 4.499) (Q1 Quartile)
28. U.M. Al-Saggaf, I.M. Mehedi, R. Mansouri, M. Bettayeb, "State feedback with fractional integral control design based on the Bode's ideal transfer function," International Journal of Systems Science, Volume: 47 Issue: 1 Pages: 149-161, 2016, <https://doi.org/10.1080/00207721.2015.1034299> (ISI) (IF 2.149) (Q2 Quartile)

## 2015

27. I. Mehedi, T. Kubota, and U. M. Al-Saggaf, "3-Dimensional Analytical Solution for Lunar Descent Scheme", IJST, Transactions of Electrical Engineering, Vol. 39, No. E1, pp 67-77, DOI: [10.22099/IJSTE.2015.3061](https://doi.org/10.22099/IJSTE.2015.3061) (ISI) (IF 0.657) (Q4 Quartile)
26. U. M. Al-Saggaf, M. Moinuddin, M. Arif, and A. Zerguine, "The q-Least Mean Squares Algorithm," Signal Processing, Vol 111, pages 50-60, 2015, DOI: <https://doi.org/10.1016/j.sigpro.2014.11.016> (ISI) (IF 4.384) (Q1 Quartile)
25. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Arif Ahmed, "Family of state space least mean power of two-based algorithms," EURASIP Journal on Advances in Signal Processing 2015, 2015:39 (April 30, 2015), <https://doi.org/10.1186/s13634-015-0219-9> (ISI) (IF 1.14) (Q4 Quartile)

24. I. Mehedi, T. Kubota and U. M. Al-Saggaf, "3-Dimensional Advanced Solution for Lunar Descent and Landing", Journal of Vibroengineering, Vol. 17, Issue 1, 2015, p. 527 543. **(ISI) (IF 0.398) (Q4 Quartile)**

## 2014

23. Arif Ahmed, Ubaid M. Al-Saggaf, Muhammad Moinuddin "State Space Least Mean Fourth Algorithm for State Estimation of Synchronous Motor," Asian Journal of Engineering, Sciences & Technology, Vol 4, Issue 1, 2014.
22. Yasenjiang Aimaiti, Khalid Munawar, Ubaid M. Al-Saggaf, "Android Based Control Software for Small Unmanned Aerial Vehicles," International Journal of Engineering Research & Technology (IJERT), Vol. 3 Issue 4, April 2014
21. M. Bettayeb, C. Boussalem, R. Mansouri, and U. M. Al-Saggaf "Stabilization of an inverted pendulum-cart system by fractional PI-state feedback," ISA Transactions, Volume 53, Issue 2, March 2014. **(ISI) (IF 4.305) (Q1 Quartile)**

## 1995 and older

20. U. M. Al-Saggaf and M. A. Ubaid "Approximate Balanced-Truncation Model Reduction for Weakly Coupled Discrete-Time Systems", Int. J. Syst. Sci. Vol. 26, pp.2403-2416, 1995. **(ISI) (IF 2.149) (Q2 Quartile)**
19. S. A. Al-Baiyat, M. Bettayeb, and U. M. Al-Saggaf, "New Model Reduction Scheme for Bilinear Systems, Int. J. Syst. Sci. Vol. 25, pp.1631-1642, 1994. **(ISI) (IF 2.149) (Q2 Quartile)**
18. U. M. Al-Saggaf, "Comments on A computer-Aided Method for Digital Controller Design via Optimization," Computers and Electrical Engineering, Vol. 20, Issue 5, pp. 437-438, Sept. 1994. **(ISI) (IF 1.747) (Q2 Quartile)**
17. U. M. Al-Saggaf and M. Bettayeb, "Comments on Minimum Sensitivity I.I.R. Filter Design Using Principal Component Approach," IEE Proceedings, Part G, Vol.140, No.4, 1993. **(ISI)**
16. U. M. Al-Saggaf, "Reduced Order Models for Dynamic Control of Power Plants with an Improved Transient and Steady State Behavior," Electrical Power Systems Research, 26, 1993. **(ISI) (IF 3.022) (Q2 Quartile)**
15. U. M. Al-Saggaf, "Approximate Balanced-Truncation Model Reduction for Large Scale Systems," Int. J. Contr., Vol. 56, No.2, pp. 1263-1273, 1992. **(ISI) (IF 2.78) (Q2 Quartile)**
14. U. M. Al-Saggaf, "Robust Digital Control of a High Performance Engine," Dynamics and Control, Vol.2, Issue 4, pp. 363-383, Oct. 1992. **(ISI) (IF 0.708)**
13. M. Bettayeb and U. M. Al-Saggaf, "Practical Model Reduction Techniques for Power Systems," Electrical Power Systems Research 25, pp. 169-176, 1992. **(ISI) (IF 3.022) (Q2 Quartile)**
12. U. M. Al-Saggaf, "Model Reduction for Discrete Unstable Systems Based on Generalized Normal Representations," Int. J. Contr., Vol. 55, No.2, pp. 431-443, 1992. **(ISI) (IF 2.78) (Q2 Quartile)**

11. U. M. Al-Saggaf, "Subsystem Interconnection and Near Optimum Control of Discrete Balanced Systems," IEEE Trans. Automat. Contr., Vol. AC-37, pp. 1026-1033, 1992. DOI: [10.1109/9.148364](https://doi.org/10.1109/9.148364) . (ISI) (IF 5.625) (Q1 Quartile)
10. M. Bettayeb and U. M. Al-Saggaf, "DCS. Control and Application Software: Present and Future Trends" Journal of Engg., Vol. 1, No. 1, India, 1991.
9. U. M. Al-Saggaf, "An Approximation Technique to Tune P.I.D. Controllers", Computers and Elect. Engg., Vol. 17, Issue 4, pp. 313-320, 1991. (ISI) (IF 2.189) (Q2 Quartile)
8. U. M. Al-Saggaf and G. F. Franklin, "Reduced Order Controller Design for Discrete Time Systems," Int. J. Syst. Sci., Vol. 22, No. 10, pp. 1743-1756, 1991. (ISI) (IF 2.149), (Q2 Quartile)
7. U. M. Al-Saggaf, "Approximation of Discrete Linear Systems Based on a Dual Criterion," Int. J. Syst. Sci. Vol. 22, No. 2, pp. 383-392, 1991. (ISI) (IF 2.149) (Q2 Quartile)
6. U. M. Al-Saggaf and M. Bettayeb, "Optimization in Model Reduction," Arab. J. Sci. and Engg. Vol. 15, No. 4B, pp. 705-715, Oct. 1990. (ISI) (IF 1.711) (Q2 Quartile)
5. M. Bettayeb and U. M. Al-Saggaf, "Correspondence: Linear System Reduction using Approximate Moment Matching," IEE Proc., Vol. 137, Pt. D, No. 5, Sept. 1990. (ISI)
4. U.M. Al-Saggaf and G.F. Franklin, "Model reduction via balanced realizations: an extension and frequency weighting techniques," IEEE Transactions on Automatic Control, Volume: 33, Issue: 7, Jul 1988. DOI: [10.1109/9.1280](https://doi.org/10.1109/9.1280) (ISI) (IF 5.625) (Q1 Quartile)
3. U.M. Al-Saggaf and G.F. Franklin, "An Error Bound for A Discrete Reduced Order Model of a Linear Multivariable System," IEEE Trans. on Automatic Control, Vol. AC-32, No. 9, pp. 815-819, Sept. 1987. DOI: [10.1109/TAC.1987.1104712](https://doi.org/10.1109/TAC.1987.1104712) (ISI) (IF 5.625) (Q1 Quartile)
2. M. Alam and U. Al-Saggaf, "Reliability Modeling and Evaluation of Phased-Mission Systems," Int. J. Sys. Sc., Vol. 17, No. 12, pp. 1699-1707, Dec. 1986. (ISI) (IF 2.14) (Q2 Quartile)
1. M. Alam and U. Al-Saggaf, "Quantitative Reliability Evaluation of Phased-Mission Systems," IEEE Trans. on Reliability, Vol. R-35, No. 5, pp. 498-503, Dec. 1986. DOI: [10.1109/TR.1986.4335529](https://doi.org/10.1109/TR.1986.4335529). (ISI) (IF 3.177) (Q1 Quartile)

## Conference Publications

### 2023

43. Ubaid M. Al-Saggaf, Muhammed Ahsan Shaikh, Abdulrahman U. Alsaggaf, and Muhammad Moinuddin, "Spectrum efficiency of BeamSpace MIMO NOMA for mmWave communication with imperfect knowledge of channel estimates," The 3rd International Engineering Conference and Exhibition, Riyadh, 27th Feb - 2nd Mar 2023. <https://iece.saudieng.sa/admin/Documents/ScientificPapers2023/Spectrum%20Efficiency%20of%20BeamSpace%20MIMO%20NOMA%20for%20mmWave%20communication.pdf>

42. Muhammed Moinuddin, Ahmad Kamal Hassan, Ubaid M. Al-Saggaf , and Yazeed A. Alhaqbani, " Taxonomy of the Statistical Characterization of Outage Probability under Indefinite Quadratic Forms," The 3rd International Engineering Conference and Exhibition, Riyadh, 27th Feb - 2nd Mar 2023. <https://iece.saudieng.sa/admin/Documents/ScientificPapers2023/Taxonomoy%20of%20OP%20usig%20IQF.pdf>
41. Maaz Mahadi, Muhammed Moinuddin, and Ubaid M. Al-Saggaf, " A Small Sample Size LCMP Beamformer," The 3rd International Engineering Conference and Exhibition, Riyadh, 27th Feb - 2nd Mar 2023. <https://iece.saudieng.sa/admin/Documents/ScientificPapers2023/A%20Small%20Sample%20Size%20LCMP%20Beamformer.pdf>

## 2021

40. Ubaid M. Al-Saggaf, Abdelaziz Botalb, Muhammad Moinuddin, Sulhi Ali Alfakeh, Syed Saad Azhar Ali, Tang Tong Boon, "Either crop or pad the input volume: What is beneficial for Convolutional Neural Network?" 8th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, July 2021. **(ISI)**
39. Mohd Heidir Mohd Shah, Ibrahim M. Mehedi, Ubaid M. Al-Saggaf, Ahmad H. Milyani, Nordin B Saad, Nor Zaihar Yahaya, "Balancing a Rotary Double Inverted Pendulum using Two-loops Adaptive Controller based on Dynamic Inversion Technique," 8th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, July 2021. **(ISI)**
38. Mohammed Ali Ahmed Alrefaei, Ubaid M. Al-Saggaf, Muhammad Moinuddin, Asmaa U. Alsaggaf, "Clustering Genetic Algorithm for Cooperative Spectrum Sensing in Cognitive Radio Network," 8th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, July 2021. **(ISI)**
37. Ubaid M. Al-Saggaf, Muhammad Moinuddin, Syed Sajjad Hussain Rizvi, Syed Saad Azhar Ali, Muhammad Faisal, "Machine Learning based Channel Equalization for Filter Bank Multi-Carrier Communications," 8th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, July 2021. **(ISI)**
36. Ahmad Kamal Hassan, Muhammad Moinuddin, Abdulrahman U. Alsaggaf, Ubaid M. Al-Saggaf, "Semi Blind Beamforming in Massive MIMO Communications for 5G Technology," 8th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, July 2021. **(ISI)**
35. M. Mahadi, T. Ballal, M. Moinuddin, T. Y. Al-Naffouri and U. Al-Saggaf, "Low-Complexity Robust Beamforming for a Moving Source," 2020 28th European Signal Processing Conference (EUSIPCO), Amsterdam, Netherlands, 2021, pp. 1846-1850, doi: 10.23919/Eusipco47968.2020.9287699. **(ISI)**
34. M. Mahadi, T. Ballal, M. Moinuddin, T. Y. Al-Naffouri and U. Al-Saggaf, "A Robust LCMP Beamformer with Limited Snapshots," 2020 28th European Signal Processing Conference (EUSIPCO), Amsterdam, Netherlands, 2021, pp. 1831-1835, doi: 10.23919/Eusipco47968.2020.9287811. **(ISI)**

## 2020

33. S. Park, S. Khan, M. Moinuddin and U. M. Al-Saggaf, "GSSMD: A new standardized effect size measure to improve robustness and interpretability in biological applications," 2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Seoul, Korea (South), 2020, pp. 1096-1099, doi: 10.1109/BIBM49941.2020.9313582. (ISI)
32. Mohammed A. Alrefaei, Muhammad Moinuddin, Ubaid M. Al-Saggaf, Asmaa U. Al-Saggaf, "An Optimized Cognitive Radio Network for 5G Communications," International Engineering Conference and Exhibition," The 2nd International Engineering Conference and Exhibition, Riyadh, Mar 2-5, 2020.
31. Abdullah Al-Gafri, Ubaid M. Al-Saggaf, Muhammad Moinuddin, "Graph Neural Networks for Structured Data and Proposed Graph Diffusion Embedding Network," International Engineering Conference and Exhibition," The 2nd International Engineering Conference and Exhibition, Riyadh, Mar 2-5, 2020.
30. Mohammad S. Alhazmi, Ubaid M. Al-Saggaf, Muhammad Moinuddin, "Performance of MMSE Equalizer for Filter Bank Multi-Carrier with Offset QAM (FBMC-OQAM) in Rician Fading Channel," International Engineering Conference and Exhibition," The 2nd International Engineering Conference and Exhibition, Riyadh, Mar 2-5, 2020.
29. Muhammad Bilal, Muhammad Shehzad Hanif, Khalid Munawar, Muhammad Shafique Shaikh, Ubaid M. Al-Saggaf, "Rapid Prototyping of IoT Systems on FPGAs using High-level Synthesis Tools," International Engineering Conference and Exhibition," The 2nd International Engineering Conference and Exhibition, Riyadh, Mar 2-5, 2020.
28. Abdelaziz Botalb, Muhammad Moinuddin, Ubaid M. Al-Saggaf, "Why and when Deep Learning can perform better than the classical Multi-layer Perceptron Neural Networks," International Engineering Conference and Exhibition," The 2nd International Engineering Conference and Exhibition, Riyadh, Mar 2-5, 2020.
27. A. Al-Gafri, M. Moinuddin, U. M. Al-Saggaf (2020) "Combining Diffusion Processes for Semi-supervised Learning on Graph Structured Data." In Bi Y., Bhatia R., Kapoor S. (eds) Intelligent Systems and Applications. IntelliSys 2019, London, United Kingdom. Advances in Intelligent Systems and Computing, vol 1038. Springer, Cham. [https://doi.org/10.1007/978-3-030-29513-4\\_40](https://doi.org/10.1007/978-3-030-29513-4_40) (ISI)

## 2019

26. Uzair Ansari, Ibrahim Mustafa Mehedi, Abdulrahman H. Bajodah, and Ubaid M. Al-Saggaf, "Design and Implementation of Robust Generalized Dynamic Inversion Control for Stabilizing Rotary Inverted Pendulum," the 2019 European Control Conference, Napoli, Italy, June 25-28, 2019. DOI: [10.23919/ACC.2019.8795624](https://doi.org/10.23919/ACC.2019.8795624) (ISI)
25. Alishba Sadiq, Muhammad Usman, Shujaat Khan, Imran Naseem, Muhammad Moinuddin, and Ubaid M. Al-Saggaf, "q-LMF: Quantum Calculus-based Least Mean Fourth Algorithm," In Yang, X.S., Sherratt, S., Dey, N., Joshi, A. (eds) Fourth International Congress on Information and Communication Technology ICICT 2019, London, UK, February 25-26 2019. Advances in Intelligent Systems and Computing, vol 1041. Springer, Singapore. [https://doi.org/10.1007/978-981-15-0637-6\\_25](https://doi.org/10.1007/978-981-15-0637-6_25). (ISI)

## 2018

24. Said Djenoune, Maamar Bettayeb, and Ubaid Al-Saggaf, "Exact Impulsive Observer with Predetermined Finite-Time Convergence of Fractional-Order Systems with Unknown Input," (July 1, 2018). Proceedings of International Conference on Fractional Differentiation and its Applications (ICFDA) 2018. Available at SSRN: <https://ssrn.com/abstract=3271387> or <http://dx.doi.org/10.2139/ssrn.3271387>
23. Abdelaziz Botalb, M. Moinuddin, U. M. Al-Saggaf and Syed S. A. Ali, "Contrasting Convolutional Neural Network (CNN) with Multi-Layer Perceptron (MLP) for Big Data Analysis," 7th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2018. **(ISI)**
22. Ibrahim Mustafa Mehedi, Ubaid M Al-Saggaf and Syed Saad Azhar Ali, "Design and Simulation of Fractional Order Control Scheme for Rotary Flexible Link," 7th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2018. **(ISI)**
21. Uzair Ansari, Ibrahim Mustafa Mehedi, Abdulrahman H. Bajodah, and Ubaid M. Al-Saggaf, "Robust Generalized Dynamic Inversion Control for Stabilizing Rotary Double Inverted Pendulum," 6th International Conference on Control Engineering & Information Technology (CEIT), Istanbul, Turkey, Oct. 2018. **(ISI)**

## 2017

20. Abdul Hai Muzammil Mohammed, Muhammad Moinuddin, Ubaid M. Al-Saggaf and Rafeeq Ahmed, "Derivation and Analysis of Outage Probability for Multi-User Multi-polarized Antenna in Uplink System," IEEE International Conference on Signal Processing and Communication (ICSPC), Coimbatore, INDIA, JUL 2017. **(ISI)**

## 2016

19. Belkacem Kada, Khalid Munawar, Muhammad Shafique Shaikh, Mohammed Abdullah Hussaini, and Ubaid M. Al-Saggaf, "UAV Attitude Estimation Using Nonlinear Filtering and Low-Cost Mems Sensors," the 7th IFAC Symposium on Mechatronic Systems, September 5-8, 2016, Loughborough University, UK **(ISI)**
18. Salman Ali Shaukat, Khalid Munawar, Aamir Iqbal Bhatti, Umer Iqbal Bhatti, Muhammad Arif, and Ubaid M. Al-Saggaf, "Robust Vehicle Localization with GPS. Dropouts," 6th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2016. DOI: [10.1109/ICIAS.2016.7824135](https://doi.org/10.1109/ICIAS.2016.7824135) **(ISI)**
17. Muhammad Bilal, Khalid Munawar, Muhammad Shafique Shaikh, and Ubaid M. Al-Saggaf, "Resource-Optimized Bare-Metal DSP Implementation of UAV Flight Control Software," 6th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2016. DOI: [10.1109/ICIAS.2016.7824125](https://doi.org/10.1109/ICIAS.2016.7824125) **(ISI)**
16. Muhammad Saim, Khalid Munawar, Muhammad Moinuddin, and Ubaid M. Al-Saggaf, "A Localization Approach in a Distributed Multi-Agent Environment," 6th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2016. DOI: [10.1109/JSYST.2017.2685465](https://doi.org/10.1109/JSYST.2017.2685465) **(ISI)**



15. M. Arif, I. Naseem, M. Moinuddin, and U. M. Al-Saggaf, "Design of optimum error nonlinearity in the presence of class-A impulsive noise," 6th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2016. DOI: [10.1109/ICIAS.2016.7824137](https://doi.org/10.1109/ICIAS.2016.7824137) (ISI)
14. A. Hassan, M. Moinuddin, and U. M. Al-Saggaf, "Beamforming in massive MU-MIMO cellular networks: A Stochastic Geometry Approach" 6th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2016. DOI: [10.1109/ACCESS.2017.2682791](https://doi.org/10.1109/ACCESS.2017.2682791) (ISI)
13. A. U. Al-Saggaf, M. Arif, U. M. Al-Saggaf, and M. Moinuddin, "The q-Normalized Least Mean Square Algorithm," 6th International Conference on Intelligent and Advanced Systems (ICIAS), UTP, Malaysia, Aug. 2016. DOI: [10.1109/ICIAS.2016.7824098](https://doi.org/10.1109/ICIAS.2016.7824098) (ISI)

## 2015

12. Ubaid M. Al-Saggaf, "KAU FABLAB and Engineering Education", ICEE 2015, Madinah, Saudi Arabia

## 2014

11. Arif Ahmed, Muhammad Moinuddin, and Ubaid M. Al-Saggaf, "State Space Least Mean Fourth Algorithm," ICECE 2014, DOI: [10.1109/ICECE.2014.7026885](https://doi.org/10.1109/ICECE.2014.7026885) (ISI)
10. Ubaid Al-Saggaf, Mohammad Moinuddin, Azzedine Zerguine, "An Efficient Least Mean Squares Algorithm based on q-Gradient," 48th Asilomar Conference on Signals, Systems and Computers, Nov. 2014. DOI: [10.1109/ACSSC.2014.7094580](https://doi.org/10.1109/ACSSC.2014.7094580) (ISI)

## 1995 and older

9. U. M. Al-Saggaf and M. A. Ubaid, "Generalized Balanced Model Reduction", Proceedings of the Fourth Saudi Engineering Conference, Jeddah, Vol. 3, pp. 75-85, Nov. 1995.
8. M. Bettayeb and U. M. Al-Saggaf, "Weighted Balanced and Hankel-Norm Model Reduction of Power Systems," MEPCON-92, Assiut, Egypt, pp. 451-455, Jan. 1992
7. U. M. Al-Saggaf and M. Bettayeb, "I.I.R. Filter Design via Weighted Balanced and Hankel-Norm Approximations," COMCONEL 91, Cairo, Dec. 1991.
6. H. N. Al-Duwaish and U. M. Al-Saggaf, "Reduced Order LQG/LTR Compensator Design for A Distillation Column," Third Saudi Engg. Conf., Riyadh 1991
5. U. M. Al-Saggaf, "Robust Digital Control of a High Performance Engine: A Case Study," Third Saudi Engg. Conf., Riyadh 1991.
4. M. Bettayeb and U. M. Al-Saggaf, "DCS. Control and Application Software: Present and Future Trends" Information Technology in Support of Economic Development Conf., Khartoum, Sudan, Dec. 1990.
3. U. Al-Saggaf, "Approximation of Discrete Linear Systems Based on a Dual Criterion," Proc. 11th National Computer Conference, pp. 459-470, Dhahran, Saudi Arabia 1989.
2. U.M. Al-Saggaf and G.F. Franklin, "Reduced Order Controller Design for Discrete Time Systems," Proc. IFAC World Congress, Munich, August 1987.



1. U. M. Al-Saggaf and G. F. Franklin, "On Model Reduction," Proc. 25th IEEE Conf. on Decision and Control, pp. 1060-1069, Athens, Dec. 1986.  
DOI: [10.1109/CDC.1986.267542](https://doi.org/10.1109/CDC.1986.267542)

## Patents:

### Granted Patents

#### 2023

32. Ibrahim Mustafa Mehedi, Bawadi Abdullah, Ubaid M. Al-Saggaf, Ahmed Ubaid Al-Saggaf, "Method of Dry Reforming of Methane," US Patent [US 11,724,937 B2](#), 2023.
31. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Mohammed Jamal Abdulaal, Abdulrahman U. Alsaggaf, "System and method for computationally efficient artificial intelligence based point-of-care ultrasound imaging healthcare support", US Patent [US 11,657,504 B1](#), 2023.
30. Ubaid M. Al-Saggaf, Mohammed U Alsaggaf, Muhammad Moinuddin, Syed Saad Azhar Ali, Sulhi Ali Alfakeh, Yasir Hafeez, "System and method for unsupervised adaptive threshold neurofeedback treatment", US Patent [US 11,642,067 B1](#), 2023.
29. Ubaid M. Al-Saggaf, Muhammad Moinuddin, Syed Saad Azhar Ali, Syed Faraz Naqvi, Sulhi Ali Alfakeh, "GRU BASED REAL-TIME MENTAL STRESS ASSESSMENT," US Patent [US 11,559,232 B1](#), 2023.

#### 2022

28. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Jawwad Ahmad, Asmaa Ubaid Al-Saggaf, Muhammad S. Alhazmi, "BLIND METHOD OF EQUALIZING SIGNALS IN FILTER BANK MULTI-CARRIER COMMUNICATIONS," US Patent [US 11,483,183 B1](#), 2022.
27. Ubaid M. Al-Saggaf, Muhammad Moinuddin, Asmaa Ubaid Alsaggaf, Maamar Bettayeb, and Said Djennoun, "SECURE ENCRYPTION AND DECRYPTION METHOD AND SYSTEM," US Patent [US 11,424,906 B1](#), 2022.
26. Ibrahim Mustafa Mehedi, Shahrul Bin Ismail, Mohamed Shahrir Mohamed Azhari, Ubaid M. Al-Saggaf, Md Mottahir Alam, Ahmed Ubaid Al-Saggaf, "REMOVAL OF AMMONICAL NITROGEN FROM LANDFILL LEACHATES," US Patent [US 11,370,675 B1](#), 2022.
25. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, Shujaat Khan, Syed Sajjad Hussain Rizvi, "CONVOLUTIONAL NEURAL NETWORKS BASED COMPUTATIONALLY EFFICIENT METHOD FOR EQUALIZATION IN FBMC-OQAM SYSTEM," US Patent [US 11,368,349 B1](#), 2022.
24. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Ahmad Kamal Hassan, "METHOD OF OPTIMIZING MULTI-CELL ASSOCIATION IN DOWNLINK MULTI-USER, MULTIPLE-INPUT, MULTIPLE-OUTPUT (MU-MIMO) SYSTEMS VIA STATISTICAL BEAMFORMING," US Patent [US 11,356,155 B1](#), 2022.
23. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Maaz Mahadi, Tarig Ballal Ahmed, Tareq Y. Al-Naffouri, "Robust linearly constrained minimum power (LCMP) beamformer with limited snapshots," US Patent [US 11,349,206 B1](#), 2022.

22. Ubaid M. Al-Saggaf, Syed Saad Azhar Ali, Muhammad Moinuddin, Syed Faraz Naqvi, and Mohammed U. Alsaggaf, "SYSTEM FOR MENTAL STRESS ASSESSMENT," US Patent [US 11,337,639 B1](#), 2022.
21. Ubaid M. Al-Saggaf, Syed Saad Azhar Ali, Muhammad Moinuddin, Syed Faraz Naqvi, and Mohammed U. Alsaggaf, "WEARABLE STRESS ASSESSMENT SYSTEM WITH EEG SENSORS," US Patent [US 11,344,248 B1](#), 2022.
20. Abdulrahman U. Alsaggaf, Ubaid M. Al-Saggaf, Muhammad Moinuddin, Asmaa Ubaid Alsaggaf, Batoul Ahmad Alattas, Arunava Banerjee, Mashuq-Un Nabi, and Rajasree Sarkar, "METHOD FOR ROBUST LIQUID LEVEL CONTROL BASED ON ARTIFICIAL TIME DELAY CONTROL USING IMC FEEDBACK," US Patent [US 11,347,190 B1](#), 2022.
19. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Shaid Munir Shah, Rizwan Ahmed Khan, Zahraa Ubaid Al-Saggaf, "DIALECT BASED SPEAKER IDENTIFICATION," US Patent [US 11,348,591 B1](#), 2022.
18. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Maaz Mahadi, Tarig Ballal Ahmed, Tareq Y. Al-Naffouri, "LOW-COMPLEXITY ROBUST BEAMFORMING FOR A MOVING SOURCE," US Patent [US 11,329,705 B1](#), 2022.
17. Ubaid M. Al-Saggaf, Syed Saad Azhar Ali, Muhammad Moinuddin, Rumaisa Abu Hasan, and Mohammed U. Alsaggaf, "DEEP LEARNING MODEL-BASED IDENTIFICATION OF STRESS RESILIENCE USING ELECTROENCEPHALOGRAPH (EEG)," US Patent [US 11,311,220 B1](#), 2022.
16. Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, Muhammad Moinuddin, Maamar Bettayeb, and Rachid Mansouri, "METHODS OF LINEAR ACTIVE DISTURBANCE REJECTION CONTROL WITH A FRACTIONAL ORDER INTEGRAL ACTION," US Patent [US 11,307,540 B1](#), 2022.
15. Abdulah Aljohani, Ubaid M. Al-Saggaf, Muhammad Moinuddin, and Waleed Aldosari, "METHOD AND APPARATUS FOR ESTIMATING A PATH OF AN AERIAL VEHICLE," US Patent [US 11,307,291 B1](#), 2022.
14. Ibrahim Mustafa Mehedi, Ubaid M. Al-Saggaf, Md. Sarowar Alam, Mohd Heidir bin Mohd Shah, Md. Masud Rana, "FRACTIONAL ORDER DYNAMIC INVERSION CONTROLLER FOR NON-LINEAR SYSTEMS," US Patent [US 11,308,180 B1](#), 2022.
13. Abdulrahman U. Alsaggaf, Ubaid M. Al-Saggaf, Muhammad Moinuddin, Muhammad Arif, Imran Naseem, "METHOD TO MODIFY ADAPTIVE FILTER WEIGHTS IN A DECENTRALIZED WIRELESS SENSOR NETWORK," US Patent [US 11,308,349 B1](#), 2022.
12. Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, Muhammad Moinuddin, Maamar Bettayeb, and Rachid Mansouri, "Method of Extended State Observer Based Fractional Order Controller Design for Integer High Order Systems," US Patent [US 11,307,539 B1](#), 2022.
11. Mohammed U. Alsaggaf, Irraivan Elamvazuthi, Ubaid M. Al-Saggaf, and Muhammad Moinuddin, "METHOD FOR 3D ULTRASOUND RECONSTRUCTION OF SUPRASPINATUS (SSP) TENDON," US Patent [US 11,308,627 B1](#), 2022.

10. Ubaid M. Al-Saggaf, Muhammad Moinuddin, Yazeed Abdulaziz Alhaqbani, Abdulah Aljohani, and Ahmad Kamal Hassan, "METHOD FOR SECURE COMMUNICATION IN MU-MASSIVE MIMO SYSTEM VIA BLIND DISTRIBUTED BEAMFORMING," US Patent [US 11,271,620 B1](#), 2022.
9. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Ahmad Kamal Hassan, "Processing blind beamforming for multi-user multiple-input multiple-output (MU-MIMO) systems," US Patent [US 11,252,045 B1](#), 2022.
8. Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, Muhammad Moinuddin, Maamar Bettayeb, Rachid Mansouri, "METHOD OF LINEAR ACTIVE DISTURBANCE REJECTION CONTROL FOR FRACTIONAL ORDER SYSTEMS," US Patent [US 11,215,977 B1](#), 2022.
7. Muhammed Moinuddin, Ubaid M. Al-Saggaf, Mohammed A. Alrefaei, Jawwad Ahmad, "Communications device with antenna-based spectrum sensing without gaussian assumption," US Patent [US 11,218,885 B2](#), 2022.

## 2021

6. Ubaid M. Al-Saggaf, Abdulrahman U. Alsaggaf, Asmaa Ubaid Al-Saggaf, Ahmed Ubaid Al-Saggaf, Zahraa Ubaid Al-Saggaf, "CENTER OF GRAVITY BASED CONTROL APPARATUS FOR RESEARCH AND EDUCATION," US Patent [US 11,210,969 B1](#), 2021.
5. Ubaid M. Al-Saggaf, Mohammed U. Alsaggaf, Muhammad Moinuddin, Syed Saad Azhar Ali, Syed Faraz Naqvi, "REAL-TIME INTELLIGENT MENTAL STRESS ASSESSMENT SYSTEM AND METHOD USING LSTM FOR WEARABLE DEVICES," US Patent [US 11,179,089 B1](#), 2021.
4. Moinuddin; Muhammed, Al-Saggaf; Ubaid M., Alrefaei; Mohammed A., Ahmad; Jawwad, "Communication device for a secondary user in a cognitive radio network," US Patent [US 11,146,970 B1](#), 2021.
3. Moinuddin; Muhammed, Al-Saggaf; Ubaid M., Alrefaei; Mohammed A., Ahmad; Jawwad, "Multiple antenna based spectrum sensing solution for cognitive radio," US Patent [US 11,076,299 B1](#), 2021.
2. Al-Saggaf; Ubaid M., Moinuddin; Muhammed, Alshoubaki; Mohamed K., Hassan; Ahmad Kamal, "Method of processing waveforms at a multiple-input-multiple-output (MIMO) radar for an unknown target," US Patent [US 10,895,635 B1](#), 2021.

## 2020

1. Moinuddin; Muhammed, Al-Saggaf; Ubaid M., Alrefaei; Mohammed A., Ahmad; Jawwad, "Method for spectrum sensing unoccupied frequency," US Patent [US 10,880,752 B1](#), 2020.

## Filed Patents

1. Syed Saad Azhar Ali, Syed Faraz Naqvi, Muhammad Moinuddin, Syed Hasan Adil, and Ubaid Muhsen Al-Saggaf, "A METHOD FOR REAL-TIME MENTAL STRESS ASSESSMENT," Application has been filed with the MyIPO.

## Reports

7. Classified reports for the Ministry of Defense.
6. U. M. Al-Saggaf, "Model Reduction for Discrete Unstable Systems Based on Generalized Normal Representations," Industrial Control Unit, University of Strathclyde, Glasgow, U.K., Report I.C.U./300, July 1990.
5. U. M. Al-Saggaf, "Weak Coupling and Near Optimal Regulators for Discrete Balanced Systems," Industrial Control Unit, University of Strathclyde, Glasgow, U.K., Report I.C.U./298, July 1990.
4. "Development of Advanced Computer Control for Petrochemical Industries" with M. Bettayeb and T. Bakri. Proposal for the Research Institute and ARAMCO, 1989.
3. "Evaluation of Distribution Control Systems" with M. Bettayeb and H. Shabaeik. Prepared for Yanbu Petromin Refinery, December 1989.
2. "Fuzzy Control," Instrumentation & Control Systems Dept., Chiyoda Corp., Yokohama, Japan, 1988
1. "On Model Reduction and Control of Discrete Time Systems," Information Systems Laboratory, Stanford University, 1986 (NASA grant NAG2-223)

## Industrial Projects

- Project Technical Leader: "Evaluation of Distribution Control Systems" Project requested and funded by Yanbu Refinery, 1989.

## Book Chapters

8. Ahmad Kamal Hassan, Muhammad Moinuddin, Abdulrahman U. Alsaggaf, Ubaid M. Al-Saggaf, "Beamforming in Massive MIMO Communications for 5G Technology", 5G Wireless Communication System in Healthcare Informatics, CRC Press, 2023. <https://doi.org/10.1201/9781003368311-3>
7. Mohammed Ali Ahmed Alrefaei, Ubaid M. Al-Saggaf, Muhammad Moinuddin, Asmaa U. Al-Saggaf, "Optimized Cognitive Radio Networks for 5G Technology", 5G Wireless Communication System in Healthcare Informatics, CRC Press, 2023. <https://doi.org/10.1201/9781003368311-8>
6. Ubaid M. Al-Saggaf, Muhammad Moinuddin, Syed Saad Azhar Ali, Syed Sajjad Hussain Rizvi, Muhammad Faisal, "Machine Learning Aided Channel Equalization in Filter Bank Multi-Carrier Communications for 5G," In book: Wearable and Neuronic Antennas for Medical and Wireless Applications, May 2022, John Wiley & Sons Inc., <https://doi.org/10.1002/9781119792581.ch1>
5. Muhammad Moinuddin, Ubaid M. Al-Saggaf, Jawwad Ahmed, "Waveform Optimization in Multi-Carrier Communications for 5G Technology," In book: Wearable and Neuronic Antennas for Medical and Wireless Applications, May 2022, John Wiley & Sons Inc., <https://doi.org/10.1002/9781119792581.ch11>
4. Waleed Aldosari, Muhammad Moinuddin, Abdullah Jeza Aljohani, Ubaid M. Al-Saggaf, "Received Power Based Jammer Localization using Unscented Kalman Filtering," In book:

Wearable and Neuronic Antennas for Medical and Wireless Applications, May 2022, John Wiley & Sons Inc., <https://doi.org/10.1002/9781119792581.ch13>

3. Abdullah Al-Gafri, Muhammed Moinuddin, Ubaid M Al-Saggaf, "Combining Diffusion Processes for Semi-supervised Learning on Graph Structured Data," In book: Intelligent Systems and Applications, January 2020, DOI: 10.1007/978-3-030-29513-4\_40
2. Maamar Bettayeb, Rachid Mansouri, Chahira Boussalem, Ubaid M. Al-Saggaf, Linear integer order system control by fractional PI-state Feedback, Chapter 4 in "Fractional Calculus: Applications," Nova Science Publishers, Inc., Mathematics Research Developments Series, 2014, ISBN: 978-1-63463-221-8.
1. U. M. Al-Saggaf and M. Bettayeb, Techniques in Optimized Model Reduction for High Dimensional Systems, Invited chapter in International Academic Press Series, "Advances in Control and Dynamic Systems," Vol.55, part 1, pp 51-109, 1993.

## Peer Reviewer

Reviewed articles for IEEE Systems Journal, IEEE Access, IEEE Transactions on Systems Man Cybernetics-Systems, IEEE Transaction on Circuit and Systems, IEEE Transaction on Automatic Control, IEEE Transaction on Acoustics, Speech and Signal Processing, IMA Journal of Mathematical Control and Information, The Arabian Journal for Science and Engineering, etc.

## Ph.D. AND M.Sc. THESIS

Supervised/Co-supervised more than 21 Ph.D. and M.Sc. Theses.

## TEACHING

### At King Abdulaziz University:

EE 366	Microprocessors and Microcontrollers.
EE 390	Summer Training
EE 400	Coop Training
EE 432	Digital Control Systems
EE 651	Digital control systems
EE 671	Special Topics in Control.
EE 695	MSc Seminar
EE 702	Advanced Linear Systems
EE766	Advanced Artificial Intelligence
EE 768	Advanced Neural Networks
EE 795	Ph.D. seminar

### At King Fahd University of Petroleum and Minerals:

EE 200	Digital logic circuit design
EE 202	Network Theory
EE 204	Fundamentals of electrical circuits
EE 370	Communication Engineering
EE 380	Control Engineering I
EE 390	Digital system engineering

EE 406	Digital signal processing
EE 432	Digital control systems
EE 550	Linear control systems
EE 552	Optimal control theory and Applications

### **LABORATORY DEVELOPMENT**

#### **At King Abdulaziz University**

- Set up the laboratory of the new EE 366 course, which includes equipment selection and procurement, design of experiments, etc.
- Set up the laboratory for graduate and undergraduate Control Courses in the Electrical and Computer Engineering Department.

#### **At King Fahd University of Petroleum and Minerals**

- Set up of new EE 200 laboratory (Design of experiments, equipment selection ...).
- Updating and modernizing the laboratories for control engineering by selecting all the new equipment and software for those laboratories.

### **COURSE DEVELOPMENT**

#### **At King Abdulaziz University**

- Developed the EE 366 course.
- Developed the EE 671 Course
- Developed the EE 651 Course
- Developed the EE 702 Course

#### **At King Fahd University of Petroleum and Minerals**

- Developed the EE 200 course.

### **TEACHING SHORT COURSES**

#### **At King Abdulaziz University**

- Actuators in Robotics Applications
- Microcontrollers Part 2

#### **At King Fahd University of Petroleum and Minerals**

- Digital Communications and Signal Processing.
- Distributed Industrial Computer Control Systems. (Syst. Eng. Dept.)
- Electrical Engineering for Non-Electrical Engineers.

### **SELECTED COMMITTEES**

#### **International Committees**

Member, the Technical Program Committee,  
ISMA'2015 International Symposium on Mechatronics and its Applications  
Sharjah, United Arab Emirates

## **At King Abdulaziz University**

### **University Committees**

Follow-up and support committee for the development of engineering and Computer science colleges.  
Higher Committee for the centers of excellence

### **College Committees**

Engineering Education Development Committee  
Railway Engineering Graduate Program Development Committee

### **Departmental Committees**

ABET committee  
Faculty recruitment committee  
Faculty evaluation ad-hoc committee  
Ph.D. comprehensive exam committee

## **At King Fahd University of Petroleum and Minerals**

### **University Committees**

Research Committee  
Entrance exam committee  
Technical colleges program development committee  
A special investigation committee  
Part-time Ph.D. program committee  
Book authoring committee  
Digital Control Labs committee

### **College Committees**

Review and evaluation of Math 101 & 102  
Best Researcher Award committee  
Best Teacher Award committee  
Promotion committee

### **Departmental Committees**

Curriculum Committee  
Graduate program committee  
Laboratory development committee  
Planning and continuing education committee  
Computer utilization committee  
Senior project guidelines formulation committee

### **National Committees**

Organization Committee of the 11th National Computer Conference & Exhibition  
Organization Committee of the 12th National Computer Conference & Exhibition

### **Other Committees**

Registration Committee of the 11th National Computer Conference & Exhibition  
Publications Committee of the 11th National Computer Conference & Exhibition  
Program and Registration Committee of the 12th National Computer Conference and Exhibition