Samer Alabed

Associate Professor at German Jordanian University, Jordan
IEEE Senior Member

Phone: +962 64294444 Ext: 4408
Mobile: +962 796961771
Address: Amman, Jordan
Emails: samer.alabed@gju.edu.jo
salabed@nt.tu-darmstadt.de

PERSONAL INFORMATION

Address	Amman, Jordan
Telephone	+962 796961771 or +962 64294444 Ext: 4408
Nationality	German and Jordanian.
Birthday	18.08.1981

EDUCATION

2008 – 201 Ph.D. degree (Dr.Ing) in Electrical Engineering and Information Technology / Digital Signal Processing with great honor "magna cum laude - GPA: Sehr Gut – 1.0", Darmstadt University of Technology, Darmstadt- City of Science, Germany.

2003 – 2005 M.Sc degree in Electrical Engineering / Digital Signal Processing with highest honors (GPA: 3.88/4), University of Jordan, Jordan.

1999 - 2003 B.Sc degree in Electrical and Computer Engineering with (GPA: 3.50/4), Hashemite University, Jordan.

ACADEMIC APPOINTMENTS

2023-present **Director of Accreditation and Quality Assurance Center**
Director of E-Learning and Academic Performance Improvement Center
At the German Jordanian University (GJU), I have directly involved in:

- ISO 9001 and ISO 21001.
- Local and international accreditations such as National Qualification Framework (NQF) and German Accreditation.
- World university ranking such as QS, THE, SCImago, Green Metric, and Times Impact.
- University action and strategic plan, risk management, and quality of the programs.
- Ensuring alignment of faculties, departments, and administrative units with the university's vision, mission, and objectives.
- Promoting and reinforcing a quality culture among all employees (academic and administrative) at the university.
- Reviewing quality control standards for higher education institutions at national, regional, and global levels.
- Continuous improvement of academic programs to stay current with changes in education.
- Commitment to support continuous e-learning and fostering intellectual growth and sustainable development.

- Monitoring and increasing the capacity of university academic programs in line with strategic plans.
- Conducting self-evaluations of faculties, providing reports on strengths and weaknesses.
- Organizing training courses for academic and staff throughout the academic year.
- Developing plans for improvement and ongoing processes for growth.
- Occupying advanced places in the local and international rankings.
- Providing support for academic and administrative units to obtain local and international accreditations.
- Establishing a database for necessary information for accreditations and classifications.
- Achieving accreditation and classification criteria at local and international levels in collaboration with colleges and academic departments.
- Ensuring compliance with the National Qualifications Framework and preparing its necessary documents and plans to be used by all GJU programs.
- Focusing on self-assessment and continuous development to meet local standards of quality assurance.
- Preparing standards and procedures for quality assessment programs.
- Developing a comprehensive system for quality assurance management at the university.
- Offering advice and assistance on quality assurance issues.
- Managing the flow of information related to quality assurance standards and procedures at all university levels.
- Ensuring the implementation of recommendations from planning and evaluation studies.
- Modifying all study plans to align with national and international accreditations.
- Serving as a member of tens of committees at the university level.
- Serving as a head of the integrity committee on the university level.

2022-2023

Associate Professor, Department Chair of Biomedical Engineering at the Germany Jordanian University, Jordan.

Associate Professor, Exchange Coordinator of Biomedical Engineering at the Germany Jordanian University, Jordan.

At the German Jordanian University, I have directly involved in the following:

- Preparing a new study plan. During 2022-2023, the study plan of biomedical engineering is totally modified where the prepared study plan is approved by the department council, study-plan committee, school council, and deans' council.
- Establishing two tracks in biomedical engineering for the first time. The first track in the field of biomedical electronics and signal processing and the second one in the field of

bionic and biomechanical engineering. The established tracks are approved by the department council, study-plan committee, school council, and deans' council.

- Establishing a dual study program in biomedical engineering for the first time. The established program is approved by the department council, study-plan committee, school council, and deans' council.
- Preparing a nursing study plan for the first time after cooperation with tens of professors from local and international universities. The study plan of nursing is prepared and approved by the study-plan committee, deans' council, and the Jordan higher education accreditation commission.
- Establishing a nursing department and nursing school at the GJU for the first time which is approved by the Jordan higher education accreditation commission.
- Signing several MoUs with national and international organizations and universities for research, employment and teaching purposes.
- Serving as quality assurance liaison officer for the school of applied sciences.
- faculty recruitment and development, faculty evaluation, program development, program review, student advisement, departmental budgeting and budget control, class schedule planning, and general supervision of the teaching, research, and service and related scholarly activities of the department.
- Teaching, preparing, and modifying courses as well as supervise graduation projects
- Serving as a head for several committees at the college level such as curriculum development committee, quality assurance committee, and GP committee.
- Serving as a head for several committees at the department level such as study-plan committee, research committee and curriculum development committee.
- Serving as a member for several committees at the university level such as curriculum and program development committee and quality assurance committee.
- Serving as a member for school council.
- Serving as a member for several school and department committee.
- Serving as exchange coordinator for all biomedical engineering students studying the last year in Germany.

2019 – 2022 **Associate Professor of Electrical Engineering / Signal Processing Track, American University of the Middle East, Kuwait.**

2015 – 2019 **Assistant Professor of Electrical Engineering / Signal Processing Track, American University of the Middle East, Kuwait.**

At the American University of the Middle East (from 2015-2022), I have directly involved in:

- Teaching /preparing/proposing graduate and undergraduate courses in electrical engineering / Signal processing track.
- Supervising undergraduate projects in all fields of electrical engineering (EE) / (biomedical) signal processing
- Serving as an ABET coordinator for EE department.
- Serving as a coordinator of the research committee.
- Serving as a coordinator for curriculum development committee.
- Serving as a coordinator for lab committee.
- Serving as a coordinator for many EE courses
- Serving as a coordinator for graduation project committee.
- Serving as a member in the exam committee.
- Serving as a coordinator for academic activities.
- Serving as a member in many clubs such as robotic, nanotechnology, space... etc.

2008 – 2015

Junior Professor, Postdoctoral Researcher, Teaching Assistant, Research Assistant, Darmstadt University of Technology (TU-Darmstadt), Darmstadt, Germany.

At the Darmstadt University of Technology (from 2008-2015), I have directly involved in:

- Lecturer and project supervisor of graduate courses in several fields related to digital signal processing such as speech, audio, and image processing, smart antennas, smart IOT health care systems using wireless sensor networks and other related fields.
- Teaching and supervising PhD, MSc, and BSc students in the fields of signal processing and other related fields.
- Developing & proposing advanced and novel digital signal processing algorithms under projects supported by the ***LOEWE Priority Program, Cocoon, the European Research Council (ERC), German Research Foundation (DFG), the German Academic Exchange Service (DAAD), Alexander von Humboldt Foundation, Konrad Adenauer Foundation*** and many other companies and institutes.
- Developing advanced digital and statistical signal processing codes, prototypes, and algorithms to be used in several systems and application. The work was with the company called mimoOn GmbH, Duisburg (http://www.mimoon.de) and for commercial purposes.
- Developing advanced signal processing algorithms to be used in the medical hearing aids under a project supported by TU-Darmstadt and a company called Siemens in Erlangen, and for commercial purposes. In this work, several speech processing techniques are proposed to either enhance the speech/audio signals or to remove/reduce the effect of the (background) noise signals.
- Developing advanced signal processing algorithms under a project supported by TU-Darmstadt and Fraunhofer Institute.
- Many researches with graduate students and research assistants in areas related to signal processing including speech, audio, & image processing, smart antennas, smart IOT health care systems using wireless sensor networks, and other related fields.
- Supervising several PhD students, tens of master theses, and hundreds of Bachelor projects.

2003-2008 **Teaching Assistant, Research Assistant, Lecturer, University of Jordan, Amman, Jordan.**

- Teaching and supervising electrical and computer engineering labs and courses.
- Developing & proposing advanced and new algorithms in the fields of biomedical signal processing.

2006-2008 **Lecturer, Wadi Al-Sir international college (UNRWA, United Nations), Amman, Jordan.**

- Lecturer and project supervisor of undergraduate courses in the fields of electrical and computer engineering.

TEACHING EXPERIENCE

My objective as a teacher is to motivate my students to develop their own learning interests and critical thinking, establishing a learner- centered environment in the classroom. In particular, teaching a wide range of courses for bachelor and master students - from first year to advanced courses in almost all fields related to signal processing, wireless communications as well as electrical engineering and information technology- during my graduate career at several universities has made me aware of the needs and interests of a culturally diverse student body. In the last 20 years, I have designed and taught the following courses, Labs, and tutorials for both undergraduate and graduate levels in signal processing, wireless communications as well as electrical engineering and information technology:

Signals and systems with its Lab	Medical signal processing
Medical Telemetry	Digital Bioelectronics
Digital signal processing with its Lab	Communication System I and 2 with their Labs
Biomedical electronics	Wireless Communication Systems
Antenna signal processing	Speech and Image Processing
Electrical Circuit 1 with its lab	Electrical Circuit 2 with its lab
Electronics 1 with its lab	Electronics 2 with its lab
Probability and Statistics	Digital systems and its Lab
Differential Equations	Applied Mathematics for Engineers
Filter Design	Numerical Methods for Engineers
MIMO systems	Microprocessor and Embedded Systems with its Lab
Optics	Modern Control systems
Electromagnetics 1-2	Biomedical Sensors and Transducers
Digital Control systems	Data Security for Health Information Systems
Linear Algebra	Graduation Project 1 and 2
Digital Electronics	Bioinformatics
Machine Learning for Signal Processing	Microcontrollers
Cryptography	Electrical Machines
Engineering Economy	Advanced DSP Algorithms for Smart Antenna Systems
Instrumentations 1 and 2	Optical communications
Radar systems	Assembly Language (Theory and Lab)
Project Seminar in smart IOT systems	C Language (Theory and Lab)
C++ Language (Theory and Lab)	Quick and Turbo Basic (Theory and Lab)
MATLAB	Introduction to security
Smart Health care systems	MATLAB and Simulink for Signal Processing

INDUSTRIAL EXPERIENCE

Regarding Industrial expertise, I have worked and cooperated with several industrial companies such as Siemens, MIMOON, Fraunhofer – Institutes, Intel, and several universities and organizations during my Ph.D and postdoctoral studies as follows:

- Developing advanced digital and statistical signal processing codes, prototypes, and algorithms to be used in wireless communication systems and application. The work was with the company called MimoOn GmbH, Duisburg (http://www.mimoon.de) and for commercial purposes.
- Developing advanced signal processing algorithms to be used in the medical hearing aids under a project supported by TU-Darmstadt and several companies for commercial purposes.
- Several researches with graduate students and research assistants in areas related to signal processing including speech, audio, & image processing, smart antennas, smart IOT health care systems using wireless sensor networks, and other related fields.

RESEARCH HIGLIGHTS

- I was classified during the years from 2019 to 2021 among the top 2% of the influential scientists in the field of digital signal processing and communications engineering in the world in the study (classification), which contained 100,000 researchers from around the world, and this study is conducted by scientists from the prestigious Stanford University and is known in the academic community as the "***Stanford classification***". The report is based on several factors, the most important of which are the strength of international scientific publishing, the number of scientific citations for research, and participation in reviewing and editing scientific research in reputable journals. The third report was published in October 19, 2021 as shown in the following link: https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/2

- I was classified among the best researchers according to the AD Scientific Index since it was established in 2021 by Prof. Dr. Murat ALPER as shown in the following link: https://www.adscientificindex.com/scientist/samer-alabed/453930.

- I am an IEEE senior member and served as the head of the research committee as well as the head of one research group, i.e., the Signal Processing group. I have obtained several awards and funds from IEE, IEEE, DAAD, DFG, ERC such as the best paper award from IEEE WSA. My researches have been supported by several grants and funds from EU and German companies and research organization such as ***LOEWE Priority Program Cocoon, the European Research Council (ERC), German Research Foundation (DFG), the German Academic Exchange Service (DAAD), Alexander von Humboldt Foundation, Konrad Adenauer Foundation, State of Hesse, TU-Darmstadt, and European Union (EU).*** Moreover, I organized and was invited to many conferences and workshops. Now I reached to 50 papers published in prestigious International Q1/Q2 Scopus-indexed Journals & conference.

Research interests:

- Wireless sensors and relay networks
- Design smart antennas
- Signal processing including signals/speech/audio/image signal processing
- Signal Processing for wireless communication systems.
- Multi-antenna signal processing
- Smart IOT systems
- Mathematics, optimization methods, and software development.

ESTABLISHMENT OF LABS:

During the period from 2015 to 2022, I have served as a head of the lab committee to

- Establish, improve & maintain EE Labs
- Prepare and modify lab manuals and lab forms
- Follow up the problems, issues, modifications and suggestions available in the improvement forms
- Follow up required software, items and components available in the inventory forms
- Prepare and follow up requisition forms

Therefore, at the American university of the middle east, I established the following labs:

Micro Electrical Circuits lab	Micro Electronics Design Lab
Mixed Signal & Data Processing Lab	Optics lab
Electronics Lab	Digital Signal Processing Lab
Communication Systems Lab	IOT Lab
Electric Power and Machines Lab	

CURRICULUM DEVELOPMENT

I have established the following colleges, Departments, and tracks during the last 10 years:

B.Sc. in Biomedical Engineering / Instrumentation Engineering Track	B.Sc. in Biomedical Engineering / Bionic and biomechanical Engineering Track
B.Sc. in Biomedical Engineering / Smart healthcare systems Track	B.Sc. in Biomedical Engineering / Dual study program
B.Sc. in Electrical Engineering / Signal Processing Track	B.Sc. in Electrical Engineering / Biomedical Engineering Track
B.Sc. in Electrical Engineering / Telecommunication Track	M.Sc. in Electrical Engineering and Information Technology
B.Sc. in Nursing	College of Nursing

ACCREDITATION ACHIEVEMENT

I have served as head of the accreditation and quality assurance department. I participated in preparing and reviewing the whole material required for the accreditation and quality assurance and leading the effort to pursue and maintain Local and international accreditation including

- The development of assessment plans, conducting robust and innovative research, departmental structuring, plan implementations
- Coordinating the logistics of accreditations
- Supervising all assessment committees and focus group committees
- Preparing student outcome assessment matrix, assessment instruments and performance indicators course syllabi, evaluation and continuous improvements, course mapping, and instructor grading sheets
- Leading the GJU team to get the National Qualification Framework for biomedical engineering.

Note that I have received ***Appreciation Certificate*** from the American University of the Middle East due to my hard work and dedication efforts for my contributions. After coordinating the ABET accreditation for the department of electrical engineering and information technology, we achieved a 6-year full accreditation for the department. I am currently working as a head of accreditation and quality assurance center at the German Jordanian University leading the effort to pursue and maintain Local and international accreditations.

I have also received ***Appreciation Certificate*** in 2023 from the president of the German Jordanian University (GJU) due to my hard work and dedication efforts in establishing the school of nursing at GJU.

ACADEMIC ADMINISTRATIVE APPOINTMENTS

Director of Accreditation and Quality assurance Center, German Jordanian University, Jordan

- See the responsibilities in page 1.

Director of E-Learning and Academic Performance Improvement Center, German Jordanian University, Jordan

- See the responsibilities in page 1.

Head of Biomedical Engineering Department, German Jordanian University, Jordan

- See the responsibilities in page 2.

Exchange Coordinator for the German year, German Jordanian University, Jordan

- See the responsibilities in page 2.

ABET Coordinator for EE department, American University of the Middle East, Kuwait.

Main responsibilities and achievements:

- Oversaw the ABET accreditation for the department of electrical engineering.
- Achieved a 6-year full accreditation for the department.
- I am currently working with the college for the re-accreditation of electrical engineering from ABET.

Note that I have received ***Appreciation Certificate*** from AUM due to my hard work and dedication efforts for my contribution at AUM.

Coordinator of the Curriculum Development Committee

Since I am the head of the signal processing track at the EE department, I was responsible for curriculum development committee in electrical engineering department where I participated in preparing, proposing, improving, and reviewing the EE curriculum, EE tracks (especially the signal processing tracks), syllabi, guidance plans, course folders, course projects, course material, as well as proposing new EE tracks such as Biomedical signal processing, machine learning, and IOT. Moreover, I have prepared all courses in the signal processing track from scratch.

Coordinator of the Lab Committee

I was responsible for all labs in electrical engineering department where I participated in establishing EE labs from scratch as well as continuously improving, and reviewing their curriculum, equipment, lab manuals and materials, software, syllabi, guidance plans, course folders, course projects, … etc.

Coordinator for Signal Processing Track (SPT)

From 2015 to 2022, I am the coordinator of the signal-processing track. I have served as a coordinator for all course related to SPT including signals and systems, digital signal processing with its applications, communication system I & 2 with their Labs, control & feedback systems, electrical circuit 1 with its lab, electrical circuit 2 with its lab, electronics 1 & 2, digital electronics, electromagnetics 1 & 2, probability and statistics and many others.

Coordinator of the research committee

I served as a coordinator for the research committee in order to improve the research output of the EE department and improve the overall rank of the university.

Coordinator of the graduation project committee

I served as a coordinator for the graduation project (GP) committee where I participated in proposing graduation projects, preparing GP folders, GP abstracts, GP activities, … etc.

Coordinator for academic activities

I served as a coordinator for academic activities where I participated in proposing and running academic activities during the academic semesters.

Coordinator for several focus groups
I served as a coordinator for several focus groups such as the signal processing focus group and electronics and circuits focus group in order to

- Check the issues, concerns, and problems in EE courses and labs and solve them.
- Improve the EE tracks
- Continuously improve the course scheduling, course folders, course material, and course projects
- Prepare and improve graduate and undergraduate curriculums
- Continuously improve the learning process.

Head of the quality assurance (QA) committee

I served a head of the quality assurance committee in order continuously improve the whole learning process as well as improve the rank of the whole university.

Serviced as a member in many clubs such as robotic club, nanotechnology club, space club ... etc.
Supervision:
Supervising several PhD students, more than 40 Master Theses and hundreds of Bachelor projects.

AFFILIATIONS

Senior Member, IEEE (Institute of Electrical and Electronics Engineers)
Member, IEEE Signal Processing Society
Member, JEA (Jordan Engineers Association)
DAAD alumni
Member in REACH for Health organization to increase access to reliable heath information for all young people - https://reach-health.com/about

LANGUAGES

Arabic	Native language
English	Fluent (speaking, reading, and writing)
German	(B2) from Goethe Institute/Mannheim

TECHNICAL PROFICIENCY

Programming Languages and Software	Matlab/ Simulink, C-language, Basic language, C++ language, Assembly Language, Mathmatica, Maple, MathCAD, Workbench, Multi-SIM, Python, Arduino, and Labview.
Microcontrollers and FPGAs	Arduino, Raspberry Pi, PIC microcontroller, SDR, RTL-SDR, Hack RF, USRP (NI product).
Platforms	Windows Operating Systems (DOS, Windows 9X, 2000, Millennium, XP, Vista, 7, 8, 10), and Linux.
Office	Microsoft Office, Open Office, LaTex.
Drawing	Xfig, Dia, Inkscape, Matlab, and AutoCAD.
Web Design	HTML, Front Page and ASP.net.

PROFESSIONAL CERTIFICATES

- Certified online and blended learning educator from GJU
- Certified innovation ambassador for GJU from the Global Innovation Management Institute (GIMI)

- Certification in ISO 31000: Risk Management in Quality Systems from Royal Scientific Society
- CCNA Academy Certificate for Instructors
- Certificate in Interconnecting Cisco Networking Devices (CCNA)
- Certificate in Global System for Mobile (GSM)
- Certificate in Orientation for Cisco Academy
- Certificate in the Fundamentals of Wireless LANs
- Certificate in the Fundamentals of web development (HTML, FrontPage, ASP.net)
- Advanced ICDL certificates in (Microsoft Word, Microsoft Excel, and Microsoft PowerPoint).

AWARDS

- Appreciation Certificate in 2023 from the president of the German Jordanian University (GJU) due to my hard work and dedication efforts in establishing the school of nursing at GJU.
- Appreciation certificate from AUM due to my hard work and dedication efforts for my contributions in teaching /services / researches at AUM.
- Appreciation certificate from AUM due to my hard work and dedication efforts for my contributions in teaching /services / researches at AUM.
- Achievement certificate from supervising the best graduation project in biomedical signal processing AUM.
- Best paper award for our paper published in the 19th International IEEE/ITG Workshop on Smart Antennas (WSA 2015), Ilmenau, Germany, March 2015.
- Full doctoral research scholarship starting from 2008, DAAD (German Academic Exchange Service), Darmstadt, Germany.
- Full doctoral scholarship from several universities in Jordan.
- University of Jordan graduate assistantship from 2003 to 2005, Amman, Jordan.
- The best student award in my BSc and MSc study.
- The second place in IEEE competition in 2003 and granted an award due to the graduation project entitled as "***Sinusoidal Speech Source Coding***".
- The third place in IEEE/IEE competition in 2004 and granted an award due to the project entitled as "***Techniques in Speech Source Coding***".

RESEARCH GRANTS

- I received the following grants and scholarships during the last 14 years
  - Seed Grant with an amount of 42000$ from GJU in 2023.
  - Grand
  - Full doctoral research scholarship, from 2008 to 2019, ***DAAD (German Academic Exchange Service)***, Darmstadt, Germany.
  - Scholarship from the Darmstadt university of technology to continue my PhD studies in the electrical engineering and information technology program under a grant from ***German Research Foundation (DFG)*** during the period from 2009 to 2010.
  - Fund from ***European Research Council (ERC)*** to continue my Ph.D. studies in the electrical engineering and information technology program during the period from 2010 to 2011.
  - Fund from the ***State of Hesse*** to continue my Ph.D. studies in electrical engineering and information technology program during the period from 2011 to 2012 under research support program.
  - Post-doctoral scholarship in Darmstadt University of Technology, Germany, during the period from 2012 to 2013 under grant from ***European Research Council (ERC).***

- Post-doctoral scholarship in the Darmstadt University of Technology, Germany, during the period from 2012 to 2013 under grant called Cognitive Radio Oriented Wireless Networks (CROWN) from ***European Union (EU).***
- Post-doctoral scholarship in the Darmstadt University of Technology, Germany, during the period from 2013 to 2015.
- University of Jordan Graduate Assistantship from 2003 to 2005, Amman, Jordan.
- Doctoral Scholarship form several universities in Jordan (not used).
- My PhD and research studies were supported by several grands such as
    - The Priority Program which was established officially on 1 January 2011 and is funded with an amount of 4.5 million euro for 3 years by the ***State of Hesse***. The grant was secured within the frame of the third round of the research support program ***LOEWE***- "Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz".
    - The ***European Research Council (ERC)*** under Advanced Investigator Grant program
    - ***German Research Foundation (DFG)*** under Grant GE 1881/4-1.
    - Full scholarship from ***German Academic Exchange Service (DAAD)***
    - ***European Union (EU) Project*** under Grant called Cognitive Radio Oriented Wireless Networks (***CROWN***).

(SELECTED) SUPERVISED MASTER THESES AND GPS

- Smart Health Care System
- Medical Emergency notification system
- Smart IOT health care systems
- Detection of Diseases Based On Sound Signals
- Design and Implementation of Smart Wheelchair using Internet of Things
- Secure Medical Emergency Notification System
- Advanced Wearable Health Monitoring System
- Wireless sensor platform to measure heart rate and temperature
- Smart Computer Controlled Electric Wheelchair for Biomedical Applications
- Zigbee based Wearable Remote Healthcare Monitoring System for Elderly People
- Secure Medical Emergency Communication System
- LORA based Wearable Remote Healthcare Monitoring System for Elderly People
- Kids' Lives Matter: Monitoring Kids Temperature
- Accident Warning System
- Secure Medical Satellite Communication System
- Smart Wireless Safety System for Oil Refinery Facilities
- IOT health monitoring system
- An Internet of Things Healthcare Device
- ROBOAIDQ8 - Robot Aid

INSTITUTIONAL SERVICE ACTIVITIES

- Served as a Director of Accreditation and Quality assurance Center
- Served as a Director of E-Learning and Academic Performance Improvement Center
- Served as a Head of Biomedical Engineering Department at GJU, Jordan.
- Served as an exchange coordinator for the German year at GJU.
- Served as an organized for several international conferences such as CAMUS workshop which is conducted four times in four universities (TU-Munich (2011), TU-Darmstadt (2012), TU-Illmenau, and TU-Berlin) during four years [2011-2014].

- Served as an organizer for IEEE SAM 2008 which is conducted in TU-Datmstadt.
- All CoCoon Conferences from 2011 to 2015, Darmstadt, Germany.
- IEEE/ISWCS, August, 2013, Ilmenau, Germany
- IEEE/ITG Workshop, 2013, Darmstadt, Germany.
- EUSIPCO, 2013, Morocco.
- Several IEEE conferences such as ICASSP, ISWCS, CAMSAP, SAM ... etc.

(SELECTED) TECHNICAL REVIEWER

IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Signal Processing Letters, IEEE wireless communication Letters, EURASIP Journal on Wireless Communications and Networking, EURASIP Journal on Advances in Signal Processing, International IEEE/ITG Workshop on Smart Antennas (WSA), International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), IEEE Sensor Array and Multi-channel Signal Processing Workshop (SAM), Asilomar Conference on Signals, Systems, and Computers, European Signal Processing Conference (EUSIPCO).

(SELECTED) Community SERVICE ACTIVITIES

- Writing a part of the comprehensive exam for University Middle-Degree Diploma on the kingdom level
- Served as a member in REACH for Health organization to increase access to reliable heath information for all young people - https://reach-health.com/about
- Participating in signing MOUs with German Universities (HS-Folda, FH-Bielefeld), German organizations (GIZ), and German Hospitals (Bielefeld Hospitals) to establish nursing school
- Establishing nursing school to provide the community with professional nurses.

JOURNAL PAPERS

- **S. Alabed**, M. Al-Rabayah, N. Mostafa, Z. AlArnaout, E. Hamad, I. Maaz, and Y. Kotb Differential Beamforming Using Rotman Lens for Wireless Sensor Networks, Elsevier ICT express, pp. 974-982, vol. 9, no. 5, 2023. [Q1, IF: 4.8, CiteScore: 10.3, SNIP: 2.246].

- **S. Alabed**, A. Alsaraira, N. Mostafa, M. Al-Rabayah, A. Shdefat, C. Zaki, O. Saraereh, and Z. Al-Arnaout, Two-Way Differential Strategy for Wireless Sensor Networks, Bulletin of Electrical Engineering and Informatics, pp. 3499-3508, vol. 12, no. 6, 2023.

- ***S. Alabed***, I. Maaz, and M. Al-Rabayah, Improved Bi-directional Three-phase Single-Relay Selection Technique for Cooperative Wireless Communications, Computer, Material, & Continua, pp. 999-1015, vol. 70, no.1, 2022. IF: 3.9, CiteScore: 4.9 - Q1.

- Z. AlArnaout, N. Mostafa, ***S. Alabed***, W. Aly, and A. Shdefat, RAPT: A Robust Attack Path Tracing Algorithm to Mitigate SYN-Flood DDoS Cyberattacks, Sensors, pp. 1-20, vol. 23, no. 1, **2023**, https://doi.org/10.3390/s23010102. IF: 4.05, CiteScore: 5.8 - Q1.

- ***S. Alabed***, A. Alsaraira, N. Mostafa, M. Al-Rabayah, Y. Kotb and O. Saraereh, "Implementing and Developing Secure Low-Cost Long-Range System Using Speech Signal Processing", Indonesian Journal of Electrical Engineering and Computer Science, pp. 1408–1419, vol. 31, no 3, ***Oct. 2023***. JCR: 2.407, CiteScore: 2.9.

- A. Alsaraira, **S. Alabed**, E. Hamad and O. Saraereh, "An optimal framework for alzheimer's disease diagnosis," Intelligent Automation & Soft Computing, vol. 37, no.1, pp. 165–177, **2023**. IF: 3.4, CiteScore: 2.4 – Q2.

- A. Zreikat, and **S. Alabed**, "Performance Modeling and Analysis of LTE/Wi-Fi Coexistence", Electronics, pp. 1-19, vol. 11, no. 7, **May. 2022.** https://doi.org/10.3390/electronics11071035 IF: 2.69, CiteScore: 4.7 – Q2.

- ***S. Alabed***, N. Mostafa, W. Aly and M. Al-Rabayah, A low complexity distributed differential scheme based on orthogonal space time block coding for decode-and-forward wireless relay networks, International Journal of Electrical and Computer Engineering, pp. 1180-1188, vol. 13, no. 1, Feb. 2023, ***Feb. 2023***. DOI: http://doi.org/10.11591/ijece.v13i1.pp1180-1188. JCR: 2.407, CiteScore: 3.2; Q2.

- N. Mostafa, Y. Kotb, Z. AlArnaout, **S. Alabed**, and A. Shdefat, "*Replicating File Segments between Multi-Cloud Nodes in a Smart City: a Machine Learning Approach*", Sensors, pp. 1-30, vol. 23, no. 10, **May 2023**. IF: 4.05, CiteScore: 5.8 - Q1. https://www.mdpi.com/1424-8220/23/10/4639

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➢ **Prof. Dr. Ing. Abdelhak M. Zoubir**
Position: Head of the (Biomedical) Signal Processing Group, TU-Darmstadt
Email: zoubir@nt.tu-darmstadt.de
Homepage: http://www.spg.tu-darmstadt.de/spg/staff_1/currentstaffmembers/zoubir.en.jsp

➢ **Prof. Dr. Ing. Marius Pesavento**
Position: Head of the Signal Processing and Communication Systems Group, TU-Darmstadt
Email: pesavento@nt.tu-darmstadt.de
Homepage: http://www.nts.tu-darmstadt.de/home_nts/staff_nts/mitarbeiterdetails_12801.en.jsp

➢ **Prof. Dr. Ing. Anja Klein**
Position: Head of the Communications Engineering Group, TU-Darmstadt
Email: a.klein@nt.tu-darmstadt.de
Homepage:
https://www.kt.tu-darmstadt.de/fachgebiet_kt/mitarbeiter_kt/mitarbeiter_kt_details_20800.de.jsp

➢ **Prof. Wael G. Al-Kouz, Ph.D., P. Eng., CEM, CEA, ASHRAE Member**
Position: full professor, GJU, Jordan
Email: waeldsmc@gmail.com

➢ **Assoc. Prof. Bahaa Al-Sheikh**
Position: Head of the Biomedical Systems and Medical Informatics Engineering Department, Hijjawi Faculty for Engineering Technology, Yarmouk University, Irbid 21163, Jordan.
Email: alsheikh@yu.edu.jo
Homepage: https://faculty.yu.edu.jo/bahaa/SitePages/Contact%20Me.aspx

➢ **Assoc. Prof. Mohammad Ahmad Al-Abed, PhD, PMP**
Position: Professor, Department of Information Technology, Mutah University, Jordan.
E-mail: mohammad@hu.edu.jo, alabedma@gmail.com
Homepage: https://eis.hu.edu.jo/cv/10956.pdf

➢ **Prof. Aymen I. Zreikat, PhD, PMP**
Position: Associate Professor, Biomedical Engineering Dept., Hashemite University, Zarqa, Jordan.
Telephone: +965-6617-2628
E-mail: aymen.zreikat@aum.edu.kw

Research Statement

Research is one of the utmost enriching endeavors of any faculty working in higher education. Research activities help faculty stay abreast in their fields and offer a chance to contribute to the development of knowledge, as well as the opportunity to promote students' engagement in research. In my modest opinion, research is, in essence, a multidisciplinary enterprise. For this reason, my research generally encompasses various academic disciplines and multiple local and international contributors. Since joining TU-Darmstadt in 2008, I have strived hard to be an effective teacher, a high-quality researcher, and a service man to the department, university, and engineering community. In what follows, I provide a summary of my research interests:

- Biomedical signal processing including biomedical speech/audio/image signal processing
- (Biomedical) signal Processing for (high frequency) wireless communication systems.
- (Biomedical) sensor signal Processing
- Smart IOT health care systems using biomedical sensors and wireless communication networks
- Design smart antennas for biomedical applications
- Mathematics, optimization methods, and software development.

Some of the research achievements:

- I served as the head of research committee at AUM.
- During the last 3 years, I have published more than 15 (Q1/Q2 Scopus-indexed) journal papers in the above fields.
- During the last year, I have submitted more than 12 journal papers in the above fields.
- All my researches have been funded by the ***European Research Council (ERC), the German Research Foundation (DFG), LOEWE Priority Program, Cocoon, the German Academic Exchange Service (DAAD), Alexander von Humboldt Foundation, Konrad Adenauer Foundation, MIMOON, Intel, Fraunhofer Institutes, Siemens, AUM, TU-Darmstadt, and State of Hesse.***
- I have participated in supervising several Ph.D students, tens of M.SC students, and hundreds undergraduate students.

Some of the ongoing researches:

- Implementing smart health care system using biomedical sensors, wireless network, and phone applications to be used by the smart hospitals.
- Studying the effect of high frequency signals on human bodies and propose solutions to this problem such as using lens antennas.
- Using some signals such as speech, audio, image signals in biomedical applications
- Using the data of certain sensors in biomedical applications
- Improve the performance of some biomedical sensors such as medical hearing aids.
- Using smart antennas in biomedical applications.
- Propose solutions to reduce the effect of high frequency signals on human bodies by designing smart devices, e.g., smart antennas like Rotman lens, for biomedical applications that can be used to either reducing the maximum SAR or by absorbing the unwanted signals.
- I have participated in a very big project related to biomedical signal processing and smart wireless sensors during 2011 to 2015 where research in the field of health care systems using smart wireless biomedical sensors will enable us to make an essential contribution to the improvement of our daily life. Biomedical sensors that we consider in our research include heart-rate sensors, temperature sensor, Electrocardiography (ECG) Sensor, fingerprint sensor, navigation equipment, or pulse rate measurement devices. New diverse applications, which can be integrated into the context of a smart city, will arise. This concept requires an intelligent environment in which daily life supporting services are ubiquitous. In this field of research, I organized and was invited to participate and speak at all

international cooperative sensor communication (Cocoon) conferences which were held in his home city (Darmstadt) from 2011 to 2015. Cocoon is funded by the LOEWE Research Priority Program. The priority program was established officially on 1 January 2011 and is funded with an amount of 4.5 million euro for 3 years by the State of Hesse in Germany. The grant was secured within the frame of the third round of the research support program LOEWE- "Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz".

Some of the Invitations to organize and speak at international conferences or seminars

I have participated in organizing several international conferences as well as was invited to speak in these academic conferences as follows:

1. Cocoon Workshop, October 25th, 2011
2. Cocoon Workshop, November 8th, 2012
3. Cocoon Workshop, June 16th, 2013, i.e., IEEE SPAWC 2013:
4. The 14th IEEE International Workshop on Signal Processing Advances for Wireless Communications (SPAWC) was held in Darmstadt, Germany. As in previous years, this workshop featured poster presentations and invited plenaries on recent advances in signal processing
5. Cocoon Workshop, November 2014

I was invited to participate and speak at many other conferences and workshops, such as

1. Statistics, Optimization, and Signal Processing (STATOS 2013) was held at TU Darmstadt, Darmstadt, Germany. Featuring a program packed with cutting-edge in-depth tutorials in statistics, optimization, signal Processing and applications.
2. The 19th International IEEE/ITG Workshop on Smart Antennas (IEEE WSA) which was held at the campus of TU Ilmenau, Ilmenau, Germany from 3rd to 5th March 2015. The workshop provided a forum for presentation of the most recent research on smart antennas. The objective was to continue, accelerate, and broaden the momentum already gained through a series of ITG workshops since 1996.
3. The 5th IEEE Sensor Array and Multichannel Signal Processing Workshop (IEEE SAM 2008) which was held at the campus of TU Darmstadt, Darmstadt, Germany from 21st to 23th July 2008. The SAM Workshop was the principal IEEE conference devoted to sensor array and multi-channel signal processing. The organizing committee invited the international community to present and discuss state-of-the-art developments in the field.
4. The 40th IEEE International Conference on Acoustics, Speech, and Signal Processing (IEEE ICASSP 2015). ICASSP is the world's largest and most comprehensive technical conference focused on signal processing and its applications. The 2015 conference featured world-class presentations by internationally renowned speakers, cutting-edge session topics and provided a fantastic opportunity to network with like-minded professionals from around the world.
5. The 16th International IEEE Workshop on Smart Antennas (IEEE WSA 2012) which was held at the campus of TU Dresden, Germany in Mar. 2012. The workshop provided a forum for presentation of the most recent research on smart antennas. The objective was to continue, accelerate, and broaden the momentum already gained through a series of ITG workshops since 1996.
6. The 7th IEEE Sensor Array and Multichannel Signal Processing Workshop (IEEE SAM 2012) which was held at campus of Stevens Institute of Technology Hoboken, NJ, USA from 17 Jun to 20 Jun 2012. The SAM Workshop is the principal IEEE conference devoted to sensor array and multi-channel signal processing. The organizing committee invited the international community to present and discuss state-of-the-art developments in the field.
7. The 21th European Signal Processing Conference (EUSIPCO 2013). EUSIPCO is the flagship conference of the European Signal Processing (EURASIP) Society. EUSIPCO is now recognized as one of the premier signal processing conferences, attracting delegates and papers from all over the world.
8. CAMUS Workshop which was held at the campus of TU Darmstadt, Germany in 2012.
9. CAMUS Workshop which was held at the campus of TU Munich, Germany in 2011.

Teaching Statement

After a great experience of teaching different classes at the undergraduate and graduate levels in the electrical engineering and information technology / signal processing discipline, I have come to realize that the first principle in educationally effective teaching is to motivate and respect students and to earn their respect. Treating students as equal and mature, capable individuals; listening to them; giving them consistent feedback; and helping them feel that they are valued members of a learning community have always resulted in positive interactions and a satisfactory teaching experience. Students need to feel they are an essential part of the learning process by having the opportunity to provide feedback on the lecture style. As such, rather than waiting for the end-of-the-semester students' evaluations, I constantly inquire about the students' perspective on issues that can be altered, added, or removed for a better lecture environment.

Since an active learner is a more successful learner, I also encourage students to be active participants in classroom discussions. As a teacher, I believe in fostering an intellectual environment in the classroom while offering well-defined and open-ended questions to challenge students to think and respond creatively without fear of being judged. My experience indicates that classroom discussion is not only effective in making lectures more interesting, it also provides a chance to teach the difference between turning out numbers and thinking.

Specific to teaching engineering courses my philosophy lies in enabling students to cast a physical phenomenon in mathematical terms and use it as a tool to understand and control the phenomenon. This requires extensive preparation on how to breakdown lecture materials into subtopics, identifying the main ideas in each subtopic, planning the sequence in which to present them, and developing appropriate examples to illustrate how these ideas come together to give a unified understanding of the subtopic.

In engineering, it is also critical to foster the student's ability to relate theoretical concepts to actual physical phenomena. Therefore, I always try to involve undergraduate and graduate students in hands-on experimental research projects. At the undergraduate level, I have been actively involved in the advising process for undergraduate students at Darmstadt university of technology and American University of the Middle East. These students were working on their major qualifying project that will lead to their B.Sc. degree in electrical engineering, information technology or signal processing.

Since engineering education is not complete without the use of computers, I believe that students should become familiar with scientific computer software in the first or second years of college, and get a chance to be involved in running serious computer simulation in the following years. They should know that simulations make it possible to explore new domains, make predictions, and interpret results. To further develop and solidify theses aspects of engineering education, I emphasize the use of computer software such as MATLAB, Arduino, Python, Mathematica, C, C++, and Maple and microcontrollers such as Arduino, Raspberry pi as well as sensors. I constantly assign homework problems and projects that require extensive usage of computer programs and microcontrollers with sensors to simulate physical phenomena.

To evaluate the students' ability to comprehend the concepts learned in class, my exams emphasize the basic principles while testing the students understanding of the results rather than following or mimicking a certain procedure. To achieve this goal, I always compliment my tests with analytical questions that examine a deep understanding of the course material. In a dynamic environment, I always strive to enhance the teaching experience of undergraduate and graduate students. I, therefore, have participated in several teaching effectiveness lectures and programs. The experience allowed me to interact with students on a personal level and exposed me to several new elements of teaching implemented other schools and universities.

As teaching techniques continues to evolve and new technologies become available, I will always continue to adapt and gain the knowledge necessary to make me a better teacher conveying the state-of-the-art knowledge in science and engineering to students. For this, in my belief, is the most rewarding experience and everlasting contribution in our career.

My administrative work, including course and program development, as well as accreditation efforts, have primarily been devoted to promoting students' achievement in their chosen field of professional expertise. I believe students benefit from an academic environment in which teaching and administrative endeavors share similar goals. To my knowledge, most of my students have acquired their desired professional positions after graduation.