Amjed A Al-Mousa, Ph.D.

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A Computer Engineering Associate Professor, who combines 12 years of Silicon Valley industry experience with almost 11 years of academic experience. While I do have a solid track record of management experience in both industry and academia, I am proud of being a hands-on engineer who is always eager to work in state-of-the-art technologies. I also do have extensive expertise in Software development, Data Analytics, and Machine Learning.

Education

Ph.D. in Electrical Engineering, **Santa Clara University**, 2010.
Concentrations: Fuzzy Logic, Design for Test algorithms.
Dissertation: A New Systematic and Quantitative Approach to Characterization of Surface Nanostructures using Fuzzy Logic.

M.Sc. in Electrical Engineering, **Virginia Tech,** 2000
Concentration: Fuzzy Logic.
Thesis: Control of Rotary Cranes Using Fuzzy Logic and Time-Delayed Position Feedback Control.

B.Sc. in Electrical Engineering, **University of Jordan,** 1999.
Ranked **2nd** amongst Spring 1999 class.

Research Interests

Intelligent Systems, Machine learning, UAV optimization algorithms, Fuzzy logic applications, Smart grids, Cloud Computing.

Research Experience

- **Princess Sumaya University for Technology PSUT, Assistant Professor**   Amman, Jordan
    - Machine Learning Applications in the medical fields.
    - Robotics Maneuvering using Reinforcement Learning.
    - UAV and Robotics Optimization Algorithm.
    - Intelligent and Dynamic Power pricing schemes.
    - Cloud Computing Service brokering.
    - Use of Fuzzy logic for Quadrotor UAVs.
    - Resident aware Green Homes.
- **University of Tampere, Visiting Professor**   Tampere, Finland
    - Worked on detection of defected stem cells using fuzzy logic
- **Santa Clara University, Ph.D. Student**   Santa Clara, CA
    Nanostructures Characterization using Fuzzy Logic
    - Researched nanostructures characterization techniques of AFM data for thin films.
    - Research multiple image processing techniques in an attempt to use them for the characterization.
    - Developed a fuzzy logic based characterization technique that does not require human calibration.
    - Implemented the above technique using MATLAB and applied it to real data collected provided by NASA Ames research labs.

<u>Design for Test for Asynchronous VLSI circuits</u>
- Performed extensive research in reviewing the Design-for-Test algorithms available for Asynchronous VLSI circuits.
- Developed an algorithm to detect delay faults in self-reset wave pipeline circuits.
- **Virginia Tech,** *Research Assistant (Aug 1999 – Dec 2000)*   Blacksburg, VA
  - Worked on a project funded by the Office of Naval Research (MURI) aimed at stabilizing cargo transfer on high seas.
  - Developed a fuzzy logic-based algorithm to stabilize rotary cranes movement.
  - Developed MATLAB Simulations to demonstrate the effectiveness of the fuzzy logic controller under different operating conditions.
  - Worked with Lab colleagues to build a model of the rotary crane, and proved the accuracy of the simulated results.

Academic Experience

- **University of Tampere, Visiting Professor** (Aug 2016 – Sep 2016)   Tampere, Finland
  - Worked on detection of defected stem cells using fuzzy logic
- **Queen Rania Foundation - Edraak.org (**Mar 2014 – Aug 2014)   Amman, Jordan
  - Collaborate with MIT on delivering "Intro to Computer Science & Programming" MooC class via edraak.org
- **Princess Sumaya University for Technology,** (Jan2012- **Present**)   Amman, Jordan
  Computer Engineering Department
  Associate Professor (1/2020 – Present)
  Assistant Professor (1/2012 – 1/2020)
  Head of Computer Engineering Dept (9/2015 – 9/2016, 6/2017- 9/2018)
  - Lead the change in the computer Arch Classes from MIPS to RISC-V.
  - Establish a Data Science M.Sc. program
  - Develop an Intelligent Systems M.Sc. Program
  - Lead the ABET accreditation for the computer Eng. 2018/2019 cycle.
  - Developing new courses:
    - AI and ML
    - Machine Learning
    - Big Data & Cloud Computing.
    - Cloud Computing.
  - Teaching the following classes:
    - Logic Design.
    - Computer Arch I & II, Computer Arch for IT
    - Electrical Circuits I.
  - Work with EMC academy to launch Cloud Computing Classes @ PSUT.
  - Revamp the Logic design Lab. to include Verilog as a major component of the lab.
  - Establish the "Intelligent and Embedded Systems Group"; the first research group at the college of engineering.
  - Supervision of many graduation projects:
    - Fall 2021: Design and Implementation of an Autonomous Parking System using
    - Reinforcement Learning Techniques
    - Fall 2020: Design & Implementation of Reinforcement Learning-based Car driving Model
    - Fall 2020: Design & Implementation of a Secure Delivery Optimization Platform
    - Spring 2019: Auto-target detection shooting car
    - Fall 2018: Real-time Security System using machine learning
    - Fall 2016: Industrial Parts Sorting
    - Fall 2014: Machine Learning for Robotic Obstacle avoidance.

- Fall 2014: Car Collision Avoidance System
- Spring 2014: Child Safety System
- Spring 2013: Target Tracking & Prediction
- Fall 2013: Resident Aware Green Homes- Phase 1.
- Fall 2013: Smart Homes Automation via Android platform.
- Served in multiple Masters Defense Committees.
- Work on establishing Enterprise Systems Engineering M.Sc. program in collaboration with EU.

Professional Experience

- **SEVEN Networks,** (Oct2009- Jun2015, Mar2016-Aug2016)   Redwood City, CA
  Consultant - Analytics Engineering
  Senior Manager - Analytics Engineering
  Manager - Analytics Engineering
  - Experience in moving the company systems to cloud-based systems.
  - Conducting statistical Big Data analysis & modeling user behavior.
  - Build & maintain metrics & analysis infrastructure.
  - Analyze metrics to detect problems and enhance user retention.
  - Responsible for analyzing company-wide statistics and presenting data to executive staff.

- **PDF Solutions,** (Mar2005 – Oct2009)   San Jose, CA
  Software Engineering Manager
  Senior Software Engineer
  - Define product architecture and develop HPC algorithms.
  - Manage two teams (Development & QA) consisting of 9 engineers.
  - Extensive experience with working with remote sites.
  - Hands-on development & architecture of statistical analysis software tools & algorithms (including multivariate analysis, correlation... etc).
  - Experience working with Oracle & Informix databases.
  - Supervise (source control, release & build mechanism) of the product.

- **Intel Corporation,** (Jan 2001 – Mar2005)   Santa Clara, CA
  Software Engineer
  - Graphics drivers test development & automation.
  - Build a complete automated system to submit Gfx driver for nightly testing and send results to stockholders the next day.
  - Test development for Miniport, Power Management & OpenGL.
  - Web design and web-based software applications development.
  - Database Management and programming.

- **Cyprus Telecommunications Authority,** (Jun 1998 – Aug 1998)   Cyprus
  Intern
  - Performing tests on the equipment in the earth station and on the communication links.
  - Attending the installation of a hub station.
  - Monitoring earth station equipment.
  - Frequency Regulations and Safety (Frequency Management Dept.)

Research Skills

Machine Learning	Optimization Techniques	Software Engineering
Statistical Analysis	Fuzzy Logic	Image Processing

Funding & Grants
- 2016: Erasmus Phoenix grant for exchange with University of Tampere, Finland.
- 2014: 10 Galileo Boards from Intel Corp.
- 2014-2016: Funding from EMC Academy for Cloud certification for my Cloud Computing Class.
- 2015: 1600 USD from Amazon.com.
- 2014: 3500 USD from Amazon.com.
- 2013: 2000 USD from Amazon.com.

Awards & Honors
- PSUT Academic Award 2021/2022.
- PSUT Academic Award 2019/2020.
- Best Instructor Award for the year 2015 at PSUT.
- Holding 6 recognitions awards from Intel Corporation for performing above expectation.
- Patent submission award at Intel Corp. for discovering a way to automate miniport testing via System BIOS.
- United Nations (UNRWA) undergraduate Scholarship for 5 consecutive years. The scholarship was enough to cover full tuition, books & supplies.
- Dean's List at the University of Jordan 1997.
- Several Awards for: Academic Achievements, Educational Activities, Reading Competitions and Writing in English.

Publications
Journals (All are ISI (SCIE)-indexed, except #2 &#3 which are Scopus-indexed)
1. *Belal Sababha,* **Amjed Al-mousa**, *Remah Baniyounisse, Jawad Bdour "Sampling-Based UAV Air Traffic Integration, Path Planning and Collision Avoidance", The International Journal of Advanced Robotic Systems, Feb - 2022.*
2. **Amjed Al-Mousa** *and Haneen Saleh "An intelligent IoT-Based Architecture Towards Efficient Healthcare Facilities", International Journal of Computing and Digital Systems, accepted Sep 2021.* [With my Student]
3. *Mutaz Al-Tarawneh and* **Amjed Al-Mousa** *"Adaptive User-Oriented Fuzzy-Based Service Broker for Cloud Services", Journal of King Saud University - Computer and Information Sciences, Accepted - Nov. 2019.*
4. *A. Faza and* **A. Al-Mousa**, *"PSO-Based Optimization toward Intelligent Dynamic Pricing Schemes Parameterization", Sustainable Cities and Society, 51, November 2019.*
5. **A. Al-Mousa**, *B. Sababha, N. Al-Madi, A. Barghouthi and R. Younisse. "UTSim: A framework and simulator for unmanned aerial vehicle air traffic integration, control, and communication", The International Journal of Advanced Robotic Systems, 16(5), September 2019.*
6. *W. Gharbieh and* **A. Al-Mousa**, *"Robotic Obstacle Avoidance in a Partially Observable Environment Using Feature Ranking", International Journal of Robotics and Automation, 34(5), September 2019.* [With my Student]
7. **A. Al-Mousa**, *"Cloud computing: Bridging the link between industry and the classroom". The International Journal of Electrical Engineering & Education, Published online Jun-2019.*
8. **A. Al-Mousa** *and A. Faza, "A fuzzy-based customer response prediction model for a day-ahead dynamic pricing system". Sustainable Cities and Society, 44, January 2019, pages: 265-274.*
9. **A. Al-Mousa**, *D. L. Niemann, D. J. Niemann,N. G. Gunther, M. Rahman. "Analysis of Atomic Force Microscopy Data for Surface Characterization Using Fuzzy Logic" Journal of Material Characterization, Vol. 62, No. 7, July 2011, Pages 706–715,* DOI: 10.1016/j.matchar.2011.04.001.
10. **A. Al-Mousa**, D. L. Niemann, N. G. Gunther, M. Rahman. *"Systematic Quantitative Characterization of Surface Nanostructures by Scanning Probe Microscopy of Thin-Films"* Journal of Experimental NanoScience, Vol. 6, No. 5, 2011, pages 451-463, DOI: 10.1080/17458080903531039.
11. **Al-Mousa**, A. H. Nayfeh, and P. Kachroo, *"Control of Rotary Cranes Using Fuzzy Logic,"* Shock and Vibration, Vol. 10, No. 2, 2003, pp. 81-95.
12. Z. N. Masoud, A. H. Nayfeh, and **A. Al-Mousa**, *"Delayed Position-Feedback Controller for the Reduction of Payload Pendulations of Rotary Cranes,"* Journal of Vibration and Control, Vol. 9, 2003, pp. 257-277.

Conferences

1. Mahmoud Atari and **A. Al-Mousa** "A Machine-Learning Based Approach for Detecting Phishing URLs", IDSTA 2022, San Antonio, Texas, USA. *[With my Student]*
2. Ayman Faza and **A. Al-Mousa,** "An Analysis of Profits and Savings in Generation Cost for Different Dynamic Pricing Schemes", JEEIT 2021, Jordan. 10.1109/JEEIT53412.2021.9634138.
3. Abdulrahman Atwah and **A. Al-Mousa**, "Car Accident Severity Classification Using Machine Learning", 3ICT'2021, Bahrain, 29-30 Sep, 2021. (Remote) *[With my Student]*
4. Nour Abdelhadi and **A. Al-Mousa**, "Diabetes Detection Using Machine Learning Classification Methods", ICIT'2021, Amman, Jordan, 14-15 July, 2021. (Remote) *[With my Student]*
5. Sewar Khalifeh and **A. Al-Mousa**, "A Book Recommender System Using Collaborative Filtering Method", Data'2021, Petra, Jordan, 5-7 April, 2021. (Virtual) https://doi.org/10.1145/3460620.3460744 *[With my Student]*
6. Lina Ahmad and **A. Al-Mousa**, "Identification of Donald Trump's Tweets Using Machine Learning", SSD-CPS'2021, Monastir, Tunisia, 22-25 March, 2021. (Virtual) *[With my Student]*
7. Zain Bitar, **Amjed Al-Mousa**, "Prediction of Graduate Admission using Multiple Supervised Machine Learning Models" IEEE SouthEastCon 2020, Raleigh, NC, USA, March 2020. (Virtual) *[With my Student]*
8. Rahma Atallah and **A. Al-Mousa**, "Heart Disease Detection Using Machine Learning Majority Voting Ensemble Method", ICTCS 2019, Amman, Jordan, Oct 2019. *[With my Student]*
9. **A. Al-Mousa** and O. Al-Dweik, "A Machine Vision Fuzzy-Based Technique for Detection of Defected Pores in AFM Images", The IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT). Amman, Jordan April 2019.
10. **A. Al-Mousa** and A. Alzoubi, "Intelligent Offloading of Reports Processing in Aging Mobile Devices", The 3rd IEEE conference on Cloud & Big Data Computing. San Francisco, USA Aug 2017.
11. **Al-mousa,** "Cloud Vs Mobile Device based Reporting Optimization", First International Engineering Conference, Amman 2014.
12. A. Elkilani, B. Elsheikh Ali, R. Abu Romman, **A. Al-mousa**, B. Sababha *"Resident-Aware Green Home",* ICASICA 2014. *[With my Students & Colleague]*
13. K. Abughalieh, W. Qadi, K. Melkon, B. Fakes, B. Sababha, A. Al-mousa *"A Compact Portable Object Tracking System"*, ICICS 2014. *[With Students & Colleague]*
14. **Al-mousa**, D. L. Niemann, D. J. Niemann, N. G. Gunther, M. Rahman *"Surface-Independent Structure Characterization using Fuzzy Logic"*, ISDRS 2009.
15. **Al-Mousa**, D.L. Niemann, N. G. Gunther, M. Rahman. *"Systematic Quantitative Characterization of Surface Nanostructures",* NSTI 2009.
16. *Al-Mousa*, D.L. Niemann, N. G. Gunther, M. Rahman*. "A Comprehensive Approach for Quantitative Characterization of Nanosturctures by Scanning Probe Microscopy".* MRS Spring 2009*.*
17. **Al-Mousa**, D.L. Niemann, N. G. Gunther, M. Rahman. *"A Crystal Recognition Methodology for Systematic Quantitative Characterization of Nano-Scale Crystals".* Proc. Mat. Res. Soc., V8.17, March 24–28, 2008.
18. **A. Almousa**, S. Mourad, *"Delay Faults in Dual-Rail, Self-Reset Wave-Pipelined Circuits",* MWSCAC 2007.
19. **A. A. Al-Mousa**, A. H. Nayfeh, and P. Kachroo, *"Control of Rotary Cranes Using Fuzzy Logic,"* 18th Biennial ASME Conference on Mechanical Vibration and Noise, DETC2001/VIB-21598 Pittsburgh, PA, September 9-12, 2001.

Presentations (Other than conferences)

- IEEE Metro workshop – Big Data & Cloud Computing, Amman, Jordan, March 2016.
- "Hot Research topics in Computer Engineering", Phi Science Conf, Amman, Jordan 2015.
- *"A Comprehensive Approach for Quantitative Characterization of Nanosturctures by Scanning Probe Microscopy",* SIGMA XI 2009.
- "Control of Rotary Cranes Using Fuzzy Logic", 8th Conf. on Nonlinear Vibrations, stability And Dynamics of structures. Blacksburg, VA 2000.

Conference & Workshop Attendance
- IDSTA 2022, USA
- DATA 2021, Jordan.
- SSD 2021 Tunisia
- IEEE SouthEastCon, Raleigh, NCA, USA
- ICTCS, 2019, Amman, Jordan.
- JEEIT, 2019, Amman, Jordan.
- CBDCOM 2017, San Francisco, USA.
- Phi Science Conference 2015, Amman, Jordan.
- FIEC 2014, Amman, Jordan.
- ICASICA 2014, New York City, NY, USA
- Greylock Data Summit, Linked in Headquarters, Mountain View, CA, USA.
- Strata 2011, Santa Clara, CA, USA.
- ISDRS 2009, College Park, MD, USA
- MRS 2009, San Francisco, CA, USA.
- NSTI 2009 Houston, TX, USA.
- MRS 2008, San Francisco, CA, USA.
- MWSCAS 2007, Montreal Canada.
- ASYNCH 2006, Berkeley, CA, USA.
- 8th Conf. on Nonlinear Vibrations, stability And Dynamics of structures. Blacksburg, VA 2000.

Professional Memberships & Activities
- Sigma Xi.
- IEEE Member since 1997, IEEE senior member in 2013.
- IEEE Computer Society.
- IEEE Systems, Man, and Cybernetics Society.
- IEEE Communications Society
- IEEE Computational Intelligence Society.
- MRS Member since 2008
- Volley ball

Interpersonal Skills
- Problem solving capabilities.
- Excellent communications skills
- Results-oriented.
- Fast learning capabilities.
- Self-motivated.

Technical Skills
- **Programming Languages:**
    - Python, C, Java, Visual Basic, VBS,C#, R, ASP, HTML, Hyper-Script, Lisp, Fortran, Perl, Assembly, Windows Applications Programming and SQL database programming (Informix & Oracle).
    - Verilog, Micro-controllers programming.
- **Operating Systems:** UNIX and Microsoft Windows.
- **Database Systems:** Oracle, Informix, Hadoop.
- **Applications/Tools:** MATLAB, Pentaho, Mentor Graphics, Synopsis, SyniCAD, AutoCAD, ORCAD, DADS, EWB and MS Office.

Certificates
- Project Management.
- Higher Communication Skills.
- Presenting in Technical Environment.
- Pentaho Training.

Reviewer & Referee

- Arabian Journal of Science & Engineering (ISI-Journal)
- International Journal of Advanced Robotic Systems (ISI- Journal)
- International Journal of Electrical Engineering Education (ISI- Journal)
- Journal of Fuzzy System Applications
- SSD 2021
- JJCIT
- ICTCS 2019 & 2017
- NTP 2014
- Maejo International Journal of Science & Technology 2013
- MILCOM 2007
- VTS 2007

References

- *Available upon request.*