

ESAM ATALLAH YOUSEF ALQARALLEH

PERSONAL INFORMATION



*Electrical Engineering/ Computer Engineering,
Princess Sumaya University for Technology*

☎ (+962) 775 62 46 36

✉ qaralleh@psut.edu.jo

🌐 <https://scholar.google.com/citations?hl=ar&user=n00VcFgAAAAJ>

Sex Male | Date of birth 3/9/1972 | Nationality Jordanian

WORK EXPERIENCE

- 2016 till now Associate professor at the computer-engineering department, Princess Sumaya University for Technology (PSUT).
- 2006 - 2016 Assistance professor at the computer-engineering department, Princess Sumaya University for Technology (PSUT).
- 1996 - 2000 Network Technical Support & Computer Maintenance, Royal Scientific Society (RSS)
- 1995 - 1996 Computer Maintenance Engineer, Gulf-Euro Electronics, Ltd.

EDUCATION

- 2000 - 2006 Ph.D, Computer Engineering, National Chiao Tung University. Taiwan
Dissertation Title
“Design of Motion Estimation for MPEG-4 and H.264 Video Coding”
- 1990 - 1995 Bs.c. Electrical Engineering, University of Jordan. Jordan

PERSONAL SKILLS

Computer skills

- C/C++
- +86 Assembly Language
- Verilog HDL
- LabView
- Latex Tools
- MATLAB
- good command of Microsoft Office tools and Windows

Under-Graduate Level:

Courses:

- ✓ Computer Architecture
- ✓ Parallel processing
- ✓ Microprocessors
- ✓ X86 Assembly Language
- ✓ Computer Organization
- ✓ Digital Logic Design
- ✓ Embedded Systems.
- ✓ Electric Circuit 1
- ✓ Electronics 1
- ✓ Mentoring many graduation projects.
 - In 2009 a graduation project won the second prize in a context held by the Jordan Engineers Association.
 - 2010 won the first prize in the national parade held at JUST in graduation projects competition.

Laboratories:

- ✓ Computer Design Lab. *Verilog Based*
- ✓ Digital Logic Lab. *Verilog Based*
- ✓ Assembly Language Lab. *8086 Assembly Language*
- ✓ Microprocessors Design Lab. *Hardware Interface and Assembly Language*
- ✓ Digital Electronics Lab.
- ✓ Power Electronics Lab
- ✓ Machines Lab

Graduate Level:

- ✓ Advanced Computer Architecture.
- ✓ Special Topics “Advanced Computer Arithmetic”
- ✓ Seminar & Research Methodology

Courses Development

Workshop Lab

This important introductory course developed to introduce “Design Thinking” teaching module to freshmen students. The lab gradually builds up critical skills beyond the common mathematical and analytical skills. Such skills are becoming mandatory by the fourth industrial revolution and jobs of future skillset. It gradually and solidly introduces design thinking concepts through a number of experiments where students are fully exposed to the stages of design thinking: empathize, define, ideate, prototype and test.

Work placement

Developing work-placement syllabus describing the course objectives, weekly plans and assessment plans. Weekly log-books introduced to students to properly document progress and training plan. Assessment rubrics introduced to properly assist students progress. Finally, a final report and presentation by the students evaluated based on predesigned rubric. All this work well organized on MOODLE eLearning platform.

Self-Learning Courses:

LinkedIn Premium ([Esam Al-Qaralleh | LinkedIn](#))
IoT Foundations: Operating Systems Fundamentals
Internet of Things with Python and Raspberry Pi
IoT Foundations: Low-Power Wireless Networking
Artificial Intelligence Foundations: Machine Learning
Artificial Intelligence Foundations: Thinking Machines
Deep Learning: Face Recognition
Symmetric Cryptography Essential Training
Cybersecurity with Cloud Computing (2015)

Activates

Academic Activities:

- ✓ Teaching undergraduate and graduate courses in Computer Engineering - PSUT.
- ✓ Teaching undergraduate courses (part time) at the University of Jordan (2006 – 2008).
- ✓ Ph.D Co-advising with Prof R A Abd-Alhameed, Professor of Electromagnetics and Radio Frequency Engineering, School of Engineering, Design and Technology, Bradford University for a Ph.D student, Mr. Hassan Megdadi on design and implementation of digital wavelet filters in CDMA communication systems.

Administrative activities:

- ✓ Dean of Engineering School 2021 – Now
- ✓ Vice Dean of Engineering School 2019 – Now
- ✓ Chairman of the computer engineering department 2016-2017.
- ✓ Chairman of the computer engineering department 2009-2011.
- ✓ Mentor for the PSUT Electronics and Robotics Club (PERC) since 2010 - 2017.
- ✓ ABET Accreditation Committee member, 2010, 2019
- ✓ Member of Engineering Dean Council, 2008, 2010,2011, and 2013, 2019
- ✓ Member of many committees that serves PSUT as requested.
- ✓ Member of the National Committee for writing exam questions to the Civil Service Bureau.

Scientific Activities:

- ✓ Conference Organization: Steering committee chair for IETSEC 2021 ([IETSEC.org](http://www.ietsec.org))
- ✓ IEEE RAS Chair elected starting 1/1/2016 – 31/12/2018
- ✓ Member of the organizing committee for the first IEEE Amman Metro Area Workshop 2016. (http://www.ieee.org/membership_services/mga_maw.html)
- ✓ Conference Organization: Steering committee for AEECT2011 (Vice-Chair), AEECT2013 (Treasurer), and AEECT2015 (Secretary). (<http://ewh.ieee.org/conf/aeect/>)
- ✓ IEEE Professional Activities Officer - Jordan section starting 1/6/2014
- ✓ Steering Committee of Universities Robotics Competition (URC 2013) (<http://urc.ju.edu.jo>)

Workshops and visiting scholar:

- ✓ Huawei academy HCIA- AI (Artificial Intelligence Technology and Application TTT) workshop. 19 – 23 Jun 2021.
- ✓ Online Workshop entitled "FTIR Spectrometers Data Analysis I" at RCSSTEWA, August 10-13, 2020
- ✓ workshop on "Training of Assessors of the Accreditation Centers" within MEDACCR EU funded project on 12-14 November 2019. Visiting Scholar, Minho University, Portugal, Department of Industrial Electronics. Summer, 2014.
- ✓ Research Proposal Workshop, 2009.
- ✓ Visiting Scholar, TU Berlin: Technische Universität Berlin, computer engineering. Winter 2008.

Research
interest

Research interest focuses on Video Coding, H.265, Motion Estimation, Robotics, Intelligent systems, Deep Learning & Applications, Arabic Handwritten Recognition. IoT.

Memberships

- Jordan Engineers Association
- IEEE Member, Golden member.
- Robotic and Automation Society (RAS)

Research

Book Chapter(s)

J. Pereira, D. Oliveira, P. Matos, R. Machado, S. Pinto, T. Gomes, V. Silva, E. Qaralleh, N. Cardoso, P. Cardoso "Hardware- assisted Real-Time Operating System Deployed on FPGA" in A. Bukowiec, G. Borowik, M. Doligalski (Eds.)"New Trends in Digital Systems Design" vol. 836 of Fortschritt-Berichte - Informatik/Kommunikationstechnik, VDI Verlag, Düsseldorf, 2014, pp.81-93.

Journals

Alqudah, Y., Sababha, B., **Qaralleh, E.** & Yousseff, T. (2021). *Machine Learning to Classify Driving Events Using Mobile Phone Sensors Data*. International Association of Online Engineering

Sababha, B.H., Abualbasal, A., **Al-Qaralleh, E.**, & Al-Daher, N. (2020). Entrepreneurial mindset in engineering education. Journal of Entrepreneurship Education. Journal of Entrepreneurship Education, 23(S1)

Belal Sbabha, Yazan Alqudah, Abelraheem Abulbasal, **Esam AlQaralleh**, "Project-Based Learning to Enhance Teaching Embedded Systems" Eurasia Journal of Mathematics, Science and Technology Education. 12.9 (2016): 2311-2321

Osama MF Abu-Sharkh , AlQaralleh, EsamA and Omar Hassan, "Adaptive Device-to-device Communication Using Wi-Fi Direct in Smart Cities" Wireless Networks. (2016): 1-17

Osama MF Abu-Sharkh , and **AlQaralleh, EsamA.**, "A HARDWARE-EFFICIENT BLOCK MATCHING UNIT FOR H.265/HEVC MOTION ESTIMATION ENGINE USING BIT-SHRINKING" Jordanian Journal of Computers and Information Technology, Vol 2, No. 2

AlQaralleh, EsamA., and Osama MF Abu-Sharkh. "Low-complexity motion estimation design using modified XOR function." Multimedia Tools and Applications (2015): 1-26.

Qaralleh, E. A. and Darabkh, K. A. (2014), "A new method for teaching microprocessors course using emulation." Comput Appl Eng Educ. doi:10.1002/cae.21616

Qaralleh, Esam, Gheith Abandah, and Fuad Jamour. "Tuning recurrent neural networks for recognizing handwritten Arabic words." Journal of Software Engineering and Applications 6.10 (2013): 533.

Abandah, Gheith A., Fuad T. Jamour, and **Esam A. Qaralleh**. "Recognizing handwritten Arabic words using grapheme segmentation and recurrent neural networks." International Journal on Document Analysis and Recognition (IJ DAR) (2014): 1-17.

Alqudah, Yazan A., **Esam Qaralleh**, and Michelle D. Mace. "Enhancing the Teaching of Digital Signal Processing through Project-Based Learning." International Journal of Online Engineering 9.2 (2013).

Al Qaralleh, Esam A., and Tian-Sheuan Chang. "Fast variable block size motion estimation by adaptive early termination." IEEE transactions on circuits and systems for video technology 16.8 (2006): 1021-1026.

AlQaralleh, E.A.; Tian-Sheuan Chang; Kun-Bin Lee, "An Efficient Binary Motion Estimation Algorithm and its Architecture for MPEG-4 Shape Encoding." Circuits and Systems for Video Technology, IEEE Transactions on , vol.16, no.7, pp.859,868, July 2006

Conferences

Sababha, Belal H., **Esam A. AlQaralleh**, and Yazan A. Alqudah. "On the Development of a Model-Based Embedded Systems Design Laboratory Course." 2021 Innovation and New Trends in Engineering, Science and Technology Education Conference (IETSEC). IEEE, 2021.

Al-Qaralleh, Esam, Belal H. Sababha, and Khaldoun Abugharbieh. "Integrating Design Thinking in Freshmen-Level Engineering Curriculum." 2021 Innovation and New Trends in Engineering, Science and Technology Education Conference (IETSEC). IEEE, 2021.

Sababha, Belal H., **Esam Al-Qaralleh**, and Neda Al-Daher. "A New Student Learning Outcome to Strengthen Entrepreneurship and Business Skills and Mindset in Engineering Curricula." 2021 Innovation and New Trends in Engineering, Science and Technology Education Conference (IETSEC). IEEE, 2021.

AlQaralleh, Esam A., Yazan A. Alqudah, and Belal H. Sababha. "Reconfigurable Hardware-Friendly Early Termination Mechanism in Motion Estimation for HEVC." *Procedia Computer Science* 141 (2018): 40-47.

AlQaralleh, Esam A., Osama MF Abu-Sharkh, and Bassam AY Alqaralleh. "MATLAB/Simulink based verification environment for motion estimation in H. 264/AVC." *Digital Information and Communication Technology and its Applications (DICTAP)*, 2015 Fifth International Conference on. IEEE, 2015.

AlQaralleh, Esam A., Yazan A. Alqudah, and Belal H. Sababha. "Hardware efficient early termination mechanism in motion estimation for H. 264 AVC." *Digital Information and Communication Technology and its Applications (DICTAP)*, 2015 Fifth International Conference on. IEEE, 2015.

Qaralleh, E., Lima, D., Gomes, T., Tavares, A., & Pinto, S. (2015, September). HcM-FreeRTOS: Hardware-centric FreeRTOS for ARM multicore. In *Emerging Technologies & Factory Automation (ETFA)*, 2015 IEEE

Pinto, S.; Pereira, J.; Oliveira, D.; Alves, F.; **Qaralleh, E.**; Ekpanyapong, M.; Cabral, J.; Tavares, A., "Porting SLOTH system to FreeRTOS running on ARM Cortex-M3," *Industrial Electronics (ISIE)*, 2014 IEEE 23rd International Symposium on , vol., no., pp.1888,1893, 1-4 June 2014.

Darabkh, K.A.; Khalifeh, A.F.; Naser, M.; **Al-Qaralleh, E.A.**, "New arriving process for convolutional codes with adaptive behavior," *Systems, Signals and Devices (SSD)*, 2012 9th International Multi-Conference on , vol., no., pp.1,6, 20-23 March 2012.

Alqudah, Y.A.; **Al-Qaralleh, E.**, "Project based learning to enhance teaching digital signal processing," *Interactive Mobile and Computer Aided Learning (IMCL)*, 2012 International Conference on , vol., no., pp.32,35, 6-8 Nov. 2012.

Alqudah, Y.A.; **AlQaralleh, E.A.**, "A cloud based web analysis and reporting of vital signs," *Digital Information Processing and Communications (ICDIPC)*, 2012 Second International Conference on , vol., no., pp.185,189, 10-12 July 2012

Al Qaralleh, E.A.; Tian-Sheuan Chang "Fast Motion Estimation by Adaptive Early Termination", *Signal Processing Systems Design and Implementation*, 2005, IEEE Workshop