

Mustafa Shawaqfeh

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Contact Info.

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Research interests

Wireless Communications and Networks, Signal Processing, Machine Learning, Bioinformatics, Computational and System Biology.

Education

Ph.D., Electrical Engineering **Jan 2013 – May 2017**
University: Texas A& M University (TAMU) College Station, Texas
Thesis: Signal Processing and Machine Learning
Techniques for Analyzing Metagenomic Data
Advisor: Professor Erchin Serpedin
GPA: 4.0

M.Sc., Electrical Engineering **Sep 2007 – Sep 2010**
University: Jordan University of Science and Technology Irbid, Jordan
Thesis: Collision Avoidance Slot Allocation Algorithm
for Multi-cluster Wireless Sensor Networks
Advisor: Professor Ahmad I. Abu-El-Haijja
GPA: 87.4%

B.Sc., Communication Engineering **Sep 2002–Jun 2007**
University: Yarmouk University Irbid, Jordan
GP I: Software Simulation of Private Branch Exchange (PBX)
GP II: Speech Recognition Application In Remote Controlling Using Mobile
Advisor: Dr. Ali A. Aeyadeh
GPA: 83.6%

Academic Experience

Associate Professor **Sep 2021 – Present**
German Jordanian University, Amman, Jordan

- ECE 317: Linear Algebra
- ECE 313: Electromagnetic I
- ECE 342: Electronics II
- ECE 315: Random Variables and Stochastic Processes
- CE 718: Optimization Methods
- CS 116: Computing Fundamentals (Programming using C language)
- CS 115: Computing Fundamentals (Information Technology)

Assistant Professor **Sep 2017 – Present**

Visiting Researcher **June, 2018 – Sep, 2018**

Texas A&M University, Doha, Qatar
Researcher with Professor Erchin Serpedin

Post Doctorate Researcher **June, 2017 – Sep, 2017**

Texas A&M University, Doha, Qatar
Researcher with Professor Erchin Serpedin

Research Assistant **Jan, 2017 – May, 2017**

Texas A&M University, College Station, Texas
Research Assistant with Professor Erchin Serpedin

Teaching and Research Assistant **Sep, 2011 – Jan, 2013**

German Jordanian University, Amman, Jordan

- CE 331: Signal and Systems.
- CME 331: Electromagnetic I.
- CME 241: Electronics I.
- ENER 211: Electrical Circuits I.
- ENER 212: Electrical Circuits II.

Teaching Assistant **Feb, 2008 – Jan, 2009**

Jordan University of Science and Technology, Irbid, Jordan

- EE 412: Control System.
- EE 210: Electric Circuits.
- EE 220: Electronics Circuits.
- EE 303: Principle of Electrical Engineering (MATLAB and PSpice).
- EE 213: Electrical Circuit Lab.
- EE 324: Instrumentation and Measurements Lab.

Matlab Tutor **Oct, 2010 – May, 2011**

Al-Balqa' Applied University, Al-Hussun, Jordan

Teaching MATLAB sessions for undergrad engineering students.

Managerial Work
and Membership in
Committees in
Universities

- Head of the Electrical Engineering department, GJU **Sep 2018 – Present**
- Member of the School Council, School of Electrical Engineering and Information Technology, GJU **Sep 2018 – Present**
- Member of the Scientific Research Council, School of Electrical Engineering and Information Technology, GJU **Sep 2018 – Present**
- Member of the University Council, GJU **Sep 2018 – Sep 2020**

Honors and Scholarships

- Certificate of appreciation for the academic excellence, Yarmouk University
- Dean's honor list, for four semesters during Bachelor study
- Four years B.Sc. scholarship from the Ministry of Higher Education, Jordan.
- Two years M.Sc. scholarship from the Ministry of Higher Education, Jordan.
- Four Years Ph.D. scholarship from the German-Jordanian University, Jordan.
- Departmental scholarship for academic excellence from the Electrical and Computer Engineering Department-Texas A&M University, for 2014, 2015 and 2016 academic years.

Research Projects

Development of Bioinformatics Tools for Analyzing Metagenomic Data

- Role: Lead PI
- Funding Agency: Seed Grant-German Jordanian University
- Duration: Jan 2020 – Jan 2022
- Amount: 21200 JOD

Introducing Data Literacy at GJU (IDL@GJU)

- Role: Co-PI
- Funding Agency: DAAD
- Duration: Jan 2021 – Jan 2023
- Amount: 250000 Euro

Reviewer Service

Reviewed numerous journal papers for several journals such as:

- IEEE Transactions Communications
- IEEE Transactions on Vehicular Technology
- IEEE Communication Letters
- Physical Communication
- Oxford Bioinformatics

Conferences Technical Committee

- IEEE International Conference on Electrical and Electronics Engineering, 2021

Computer Skills

Matlab, C/C++, PSPICE, Circuit maker, Electronic work bench.

Languages

Arabic: mother tongue, English: excellent

- [1] **Shawaqfeh, Mustafa**, A. Gharaibeh, and R. Mesleh, "Optimal low complexity detector for signed-quadrature spatial modulation mimo system," *Accepted IEEE Journal on Selected Areas in Communications*, 2022.
- [2] O. S. Badarneh, **Alshawaqfeh, Mustafa K**, F. S. Almeahmadi, and H. S. Silva, "Selection combining over the extended η - μ fading channels," *IEEE Wireless Communications Letters*, 2022.
- [3] **Shawaqfeh, Mustafa K** and O. S. Badarneh, "Performance of mobile networks under composite \mathcal{F} fading channels," *Digital Communications and Networks*, vol. 8, no. 1, pp. 25–32, 2022.
- [4] **Alshawaqfeh, Mustafa K**, O. S. Badarneh, and F. S. Almeahmadi, "Performance analysis of digital transmission in interference-limited networks," *Telecommunication Systems*, pp. 1–15, 2021.
- [5] B. Wajid, F. Anwar, I. Wajid, H. Nisar, S. Meraj, A. Zafar, **Al-Shawaqfeh, Mustafa Kamal**, A. R. Ekti, A. Khattoon, and J. S. Suchodolski, "Music of metagenomics—a review of its applications, analysis pipeline, and associated tools," *Functional & Integrative Genomics*, pp. 1–24, 2021.
- [6] R. Pilla, F. P. Gaschen, J. W. Barr, E. Olson, J. Honneffer, B. C. Guard, A. B. Blake, D. Villanueva, M. R. Khattab, **Alshawaqfeh, Mustafa**, *et al.*, "Effects of metronidazole on the fecal microbiome and metabolome in healthy dogs," *Journal of Veterinary Internal Medicine*, vol. 34, no. 5, pp. 1853–1866, 2020.
- [7] **Alshawaqfeh, Mustafa** and R. Mesleh, "A novel low complexity–sparse recovery detector for differential space shift keying mimo system," *IEEE Communications Letters*, vol. 24, no. 7, pp. 1514–1518, 2020.
- [8] **Alshawaqfeh, Mustafa** and R. Mesleh, "Reduced complexity sparse recovery detectors for differential space shift keying mimo system," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 4, pp. 4558–4562, 2020.
- [9] **Alshawaqfeh, Mustafa**, A. Al Kawam, E. Serpedin, and A. Datta, "Robust recurrent cnv detection in the presence of inter-subject variability," *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, vol. 17, no. 3, pp. 1056–1067, 2018.
- [10] A. Gharaibeh, I. Hababeh, and **Alshawaqfeh, Mustafa**, "An efficient online cache replacement algorithm for 5g networks," *IEEE Access*, vol. 6, pp. 41179–41187, 2018.
- [11] A. Al Kawam, **Alshawaqfeh, Mustafa**, J. J. Cai, E. Serpedin, and A. Datta, "Simulating variance heterogeneity in quantitative genome wide association studies," *BMC Bioinformatics*, vol. 19, no. 3, pp. 35–44, 2018.
- [12] **Alshawaqfeh, Mustafa**, A. Bashaireh, E. Serpedin, and J. Suchodolski, "Reliable biomarker discovery from metagenomic data via reglrsd algorithm," *BMC Bioinformatics*, vol. 18, no. 1, pp. 1–17, 2017.
- [13] **Alshawaqfeh, Mustafa**, A. Bashaireh, E. Serpedin, and J. Suchodolski, "Consistent metagenomic biomarker detection via robust pca," *Biology Direct*, vol. 12, no. 1, pp. 1–16, 2017.

- [14] B. **Alshawaqfeh**, **MK** and Wajid, Y. Minamoto, M. Markel, J. Lidbury, J. Steiner, E. Serpedin, and J. Suchodolski, "A dysbiosis index to assess microbial changes in fecal samples of dogs with chronic inflammatory enteropathy," *FEMS Microbiology Ecology*, vol. 93, no. 11, p. fix136, 2017.
- [15] **Alshawaqfeh**, **Mustafa**, E. Serpedin, and A. B. Younes, "Inferring microbial interaction networks from metagenomic data using sglv-ekf algorithm," *BMC Genomics*, vol. 18, no. 3, pp. 1–12, 2017.
- [16] **Alshawaqfeh**, **Mustafa**, B. Wajid, M. Guard, Y. Minamoto, J. Lidbury, J. Steiner, E. Serpedin, and J. Suchodolski, "A dysbiosis index to assess microbial changes in fecal samples of dogs with chronic enteropathy.," *Journal of Veterinary Internal Medicine*, vol. 30, no. 4, 2016.
- [17] J. Suchodolski, E. Olson, J. Honneffer, B. Guard, A. Blake, **Mustafa**, **Alshawaqfeh**, J. Steiner, J. Barr, and F. Gaschen, "Effects of a hydrolyzed protein diet and metronidazole on the fecal microbiome and metabolome in healthy dogs.: Gi07," *Journal of Veterinary Internal Medicine*, vol. 30, no. 4, 2016.
- [18] X. Wang, **Alshawaqfeh**, **Mustafa**, X. Dang, B. Wajid, A. Noor, M. Qaraqe, and E. Serpedin, "An overview of nca-based algorithms for transcriptional regulatory network inference," *Microarrays*, vol. 4, no. 4, pp. 596–617, 2015.
- [19] **Alshawaqfeh**, **Mustafa**, A. Abu-El-Haija, and M. J. A. Rahman, "Collision avoidance slot allocation scheme for multi-cluster wireless sensor networks," *Wireless Networks*, vol. 19, no. 6, pp. 1187–1201, 2013.

Conferences

- [1] **Shawaqfeh**, **Mustafa**, B. Maqableh, and R. Mesleh, "Efficient IoT compatible sparse recovery-based detectors for differential space shift keying mimo system," in *2021 8th International Conference on Electrical and Electronics Engineering (ICEEE)*, pp. 299–304, IEEE, 2021.
- [2] O. S. Badarneh, **Shawaqfeh**, **Mustafa K**, and M. Kadoch, "Performance analysis of mobile iot networks over composite fading channels," in *2020 International Wireless Communications and Mobile Computing (IWCMC)*, pp. 1234–1239, IEEE, 2020.
- [3] **Alshawaqfeh**, **Mustafa**, A. Gharaibeh, and B. Wajid, "A hybrid feature selection method for classifying metagenomic data in relation to inflammatory bowel disease," in *Proceedings of the 2019 3rd International Conference on Advances in Artificial Intelligence*, pp. 86–89, 2019.
- [4] **Alshawaqfeh**, **Mustafa** and A. Gharaibeh, "Detecting recurrent copy number variations from acgh data via smoothness-constrained models," in *2019 16th International Multi-Conference on Systems, Signals & Devices (SSD)*, pp. 28–33, IEEE, 2019.
- [5] F. Mazhar, B. Wajid, F. Anwar, N. Mazhar, **Alshawaqfeh**, **Mustafa**, and E. Serpedin, "Prevalence and accuracy measures of diagnostic tests for metabolic syndrome in multi-ethnic groups," in *2019 16th International Multi-Conference on Systems, Signals & Devices (SSD)*, pp. 170–175, IEEE, 2019.

- [6] **Alshawaqfeh, Mustafa**, A. AlKawam, and E. Serpedin, “Robust fused lasso model for recurrent copy number variation detection,” in *2018 24th International Conference on Pattern Recognition (ICPR)*, pp. 3772–3777, IEEE, 2018.
- [7] **Alshawaqfeh, Mustafa**, A. Al Kawam, and E. Serpedin, “Sparse-low rank matrix decomposition framework for identifying potential biomarkers for inflammatory bowel disease,” in *2017 25th European Signal Processing Conference (EUSIPCO)*, pp. 1882–1886, IEEE, 2017.
- [8] **Alshawaqfeh, Mustafa**, X. Wang, A. R. Ekti, M. Z. Shakir, K. Qaraqe, and E. Serpedin, “A survey of machine learning algorithms and their applications in cognitive radio,” in *International Conference on Cognitive Radio Oriented Wireless Networks*, pp. 790–801, Springer, 2015.