Ahlam Jawarneh

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Professional Summary:

Highly accomplished researcher and educator with a Ph.D. in Electrical and Computer Engineering, with expertise in computer network programming, advanced computing systems, and the application of AI as a tool in intelligent communication and embedded systems. Strong academic foundation in telecommunications, electronics, and network engineering, including digital signal processing, LTE/5G networks, few-mode fiber, and the Internet of Things. Skilled in integrating machine learning and mathematical modeling to address energy efficiency and resource optimization in modern networked systems. Proven track record of peer-reviewed publications and active participation in academic conferences. Dedicated to high-quality teaching and student mentoring, with experience delivering undergraduate and graduate-level courses in computer engineering and related disciplines.

Technical Skills:

- Utilize advanced mathematical techniques to address energy and data efficiency challenges in mobile networks and the Internet of Things (IoT).
- Apply deep learning and machine learning as tools for modeling, analysis, and optimization of complex engineering problems.
- Conduct network-level simulations using MATLAB, C++, Python, and deep learning frameworks such as TensorFlow and PyTorch.
- Strong expertise in telecommunications and network engineering with a focus on system-level design and performance.
- In-depth knowledge of communication theory, signal and stochastic processing, digital signal processing, electronics, and microprocessor systems.
- Proficient in 3GPP LTE/5G mobile networks, mobile fading channels, few-mode fiber, and digital radio over fiber technologies.
- Research experience in resource allocation, cognitive radio networks, massive MIMO systems, machine learning, and IoT integration.

- Skilled in optimization techniques for signal processing and network performance, including AI-enhanced algorithmic solutions.

- Programming expertise in C++, Python, and Assembly language; experienced with tools such as Cisco Packet Tracer for network simulation and teaching.

- Strong communication and teaching skills developed through academic instruction, technical training, and collaborative research.

- Effective at presenting complex technical content clearly and accessibly to both technical and non-technical audiences.

Research and Work Experience:

- **Assistant Professor**, "Jadara University," Irbid, Jordan, July 2024-Augest 2025
  - Microprocessors, Electrical Circuit Lab, Computer Networks II, Digital logic Design,Computer Network Programming.

Skills: Assembly Language, C++, Cisco Packet Tracer, Python.

- **Research Assistant**, "École de technologie supérieure," Montréal QC,
  Jan 2019 – Dec 2022
  - Conducted research on optimizing energy efficiency and data efficiency in 5G systems.
  - Investigated optimization techniques for downlink detection in massive MIMO on 5G systems.

Skills: Signal Processing, Optimization, Python (Programming Language), MATLAB.

- **Research Assistant**, "Concordia University," Montréal QC,
  Jan 2012 – Dec 2017
  - Explored resource allocation and analyzed ultra-dense networks for 5G.
  - Conducted research on radio over fiber solutions for 5G communications, including simulations for MIMO over MDM.
  - Possessed a deep background in the design of wireless RF systems, telecommunications networks, and fiber optic systems and networks.

Skills: Signal Processing, Optimization, MATLAB, Optisystem, ADS, VPI Photonics.

- **Lecturer,** Yarmouk University,
  Sep2009 – Dec2011
  - Taught courses such as Signal and System, Electromagnetic Waves II, Antenna and Propagation Waves, Analog Communications, and Electrical Circuits.
  - Supervised undergraduate senior projects on topics such as Automatic Lighting, Smart Auto Parking System using Wireless Techniques, and Security Systems Applications.

- **Lab Engineer**, Jordan University of Science and Technology,
  Sep2006 – July2009
  - Conducted experiments and provided guidance in Circuits Lab, Digital Communication Lab, Instrumentations Lab, Microwave Lab, Control system lab, Introduction to Electrical Engineering Lab (MATLAB and PSpice software), and Fiber Optics Lab.
  - Attending some training courses on Linux, and ORACL.

Skills: Pspice, MATLAB, Linux, Oracl.

- **Lab Engineer**, Yarmouk University,
  Feb 2006 – June 2006
  - Conducted experiments and provided guidance in the DSP Lab.

- **Graduate Assistant (M.S.),** Jordan University of Science and Technology,
  Sep 2004 – Jan2006
  - Conducted teaching labs in Circuits Lab, Digital Electronics Lab, and Electronics Lab.
  - Conducted research on modeling fading channels in LTE systems.
  - Possessed strong knowledge in Data Communication, Statistical Signal Processing, Applied Mathematics for Engineering, Linear Systems, Random Processes, Signal Detection and Estimation, Advanced Electronic Circuits, Microprocessor Systems, and Magnetic Resonance Imaging.

Education:

- **Ph.D. in Electrical and Computer Engineering**: École de technologie supérieure, 2023
  - Thesis Title: "Hybrid Massive MIMO Architecture with SWIPT in NOMA Systems"
  - Rating: 4.15/4.3

- **M.S. in Electrical Engineering** – Communications and Electronics Engineering: Jordan University of Science and Technology (JUST), 2008
  - Thesis Title: "Efficient Modulation Schemes over Generalized Mobile Weibull Fading Channels"
  - Rating: Excellent

- **B.S. in Electrical Engineering** – Communications and Electronics Engineering: Jordan University of Science and Technology (JUST), September 1998 – June 2003
  - Rating: Very Good

Published Works:

- "Data detection method for uplink massive MIMO systems based on the long recurrence enlarged conjugate gradient." International Journal of Electrical and Computer Engineering, 12.4 (2022): 3911-3921 (Jawarneh, Albataineh & Kadoch, 2022)
- "Decoupling energy efficient approach for hybrid precoding-based mmWave massive MIMO NOMA with SWIPT." IEEE Access, 10 (2022): 28868-28884 (Jawarneh, Kadoch & Albataineh, 2022)
- "Iterative signal detection based on LRE-CG method for uplink massive MIMO systems." International Wireless Communications and Mobile Computing (IWCMC). IEEE, 2021 (Jawarneh & Kadoch, 2021)