Ahlam Jawarneh

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Professional Summary:

Highly accomplished researcher with a Ph.D. in Electrical and Computer Engineering and a solid background in telecommunications, electronic engineering, and network engineering. Possesses extensive knowledge in communications theory, signal and stochastic processing, digital signal processing, electronics, microprocessors, 3GPP LTE/5G mobile networks, mobile fading channels, few-mode fiber, digital radio over fiber, resource allocation, cognitive radio networks, massive MIMO, machine learning, and the Internet of Things. Demonstrates exceptional expertise in modeling and analysis using advanced mathematical techniques to address energy and data efficiency challenges in mobile networks and IoT. Strong track record of published research papers in esteemed journals and conferences. Exceptional communication, presentation, and teaching skills.

Technical Skills:

- Modeling and analysis of complex problems to tackle energy and data efficiency in mobile networks and IoT using advanced mathematical techniques.
- Implementation of simulations at the network level using MATLAB, C++, and Python.
- Telecommunications and network engineering expertise.
- In-depth knowledge of communications theory, signal and stochastic processing, digital signal processing, electronics, and microprocessors.
- Proficiency in 3GPP LTE/5G mobile networks, mobile fading channels, few-mode fiber, and digital radio over fiber.
- Research expertise in resource allocation, cognitive radio networks, massive MIMO, machine learning, and the Internet of Things.
- Optimization techniques for signal processing and network performance.
- Strong communication skills acquired through teaching, training, and research experience.
- Professional presentation skills with the ability to explain complex ideas in simple terms.

Research and Work Experience:

- **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.

- **Instructor,** 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)