Mohammad Ahmad A. Al-Ja'afreh

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EDUCATION AND QUALIFICATIONS

University of Brdaford, UK

PhD in Electrical Engineering	Achieved: Awarded	**Oct 2018 – Oct 2023**

Dissertation: *Planning and Operation of Distribution Networks with High Penetration of RES and Integration of Smart Grid Technologies*

Principle Supervisor: *Dr. Geev Mokryani*

University of Portsmouth, UK

MSc in Energy and Power System Management	Achieved: Distinction	**Jan 2017 – Jul 2018**

Dissertation: *Optimal Sizing for Standalone Microgrid Based on Different Energy Management Strategies*

Mu'tah University, Jordan

BSc in Electric Engineering , Power and Control	Achieved: (1st) Honours	**Sep 2009 – Jan 2014**

Dissertation: *Power Flow Control Using Unified Power Flow Controller*

RELEVANT WORK EXPERIENCE

Assistance Professor, Mutah university , Jordan   Jan 2022 – Current

Electrical Engineering Department

- Deliver lectures, tutorials, and laboratory sessions for undergraduate courses in Power Systems, Renewable Energy Systems, Electric Circuits, Energy Management, and Smart Grids.
- Develop course materials, syllabi, assessments, and lab experiments aligned with program objectives and ABET accreditation standards .
- Supervise undergraduate student projects (design, research, and capstone), providing technical guidance and evaluation.
- Guide students during field training programs, bridging academic concepts with industry practices.
- Conduct research in electrical power systems, renewable integration, and smart grid technologies.
- Participate in course development, accreditation activities, and departmental committees.

Project Research Assistant , University of Bradford, UK   Mar 2022 – Aug 2022

Project: *SURE– Improve DS reliability with innovative tools: contingency analysis, flexibility services, distribution generation, and battery energy storage for a resilient distribution system (Ds).*

- Developed method integrating tie line-based network reconfiguration, and DER for grid reliability optimization of DS.
- The developed algorithm minimizes DS costs, encompassing energy not supplied and flexibility services paid to DER.
- Researched, reviewed, and shared innovative ideas for collaborative software implementation.
- Authored reports, research publications, and presentations for the team, managers, conferences, and journals.
- Played a vital role in data analysis, idea sharing, and ensuring successful project implementation.

Project Research Officer, University of Bradford, UK   Jul 2020 – Sep 2021

Project: *Pi-CREST – Empowering local communities with renewable mini-grids. Funnded by Innovate UK in collaboration with Nortech ,UK , Bradford University,UK ,and Bayero University Kano, Nigeria, the project developed optimization and AI-based forecasting tools, driving sustainable energy solutions.*

- Dynamic power flow and renewbale grid connection studies.
- Developed a method to optimally sizes and locates DER (PVs, WTs, BESS) for DSO, considering, ANM , and DSM.
- Utilize AI-based long-term forecasting for hourly load demand, solar irradiance, and wind speed variations.
- Writing reports, publications, and presenting research progress in monthly meetings with industrial partners.
- Providing technical support and supervision for postgraduate students' MSc projects, including conducting laboratory sessions, assessments, and assisting with lab projects.

Electrical Engineer, Electric Distribution Company (EDCO), Jordan   Jul 2015 – Jan 2017

- Perform LV network technical studies to assess capacity for new three-phase customers.
- Supervise network reinforcement projects, including distribution transformers, MV and LV network.
- Conduct auditing of network assets for asset management.
- Energy meter testing, with a particular focus on CT meters, for large industrial customers.

Other Work Experience

Lab Demonstrator , University of Bradford, UK   **Oct 2021 – Dec 2021 and Oct 2022 – Dec 2022**

- Assisted students in lab experiments, explaining theories and ensuring safety compliance.

TRAINING

- Certified **Quality Assessor**, Higher Education Accreditation & Quality Assurance Autherity, Jordan   **July 2025**
- Health and safety ,University of Bradford , UK   **Oct 2020**
- General data protection regulation (GDPR), University of Bradford , UK   **Oct 2020**
- Diversity in the workplace, University of Bradford, UK   **Oct 2020**
- Unconscious Bias-ENEI , University of Bradford , UK   **Jul 2020**

Computer Skills

- Engineering software including OpenDss, HOMER, MATLAB and GAMS
- Progarmming languages such as Python.
- Microsoft-Office (Word, Excel, and Power Point)
- Drawing software such as Autocad , Microsoft Visio, Draw.io

Publications

Journal Papers:

1. **M. A. A. Al-Ja'afreh**, G. Mokryani, and B. Amjad, "An enhanced CNN-LSTM based multi-stage framework for PV and load short-term forecasting: DSO scenarios," **Energy Reports**, vol. 10, pp. 1387–1408, 2023.

2. **M. A. A. Al-Ja'Afreh**, B. Amjad, K. Rowe, G. Mokryani, and J. L. A. Marquez, "Optimal planning and forecasting of active distribution networks using a multi-stage deep learning based technique," **Energy Reports**, vol. 10, pp. 686–705, 2023.

3. J. A. Marquez, **M. A. A. Al-Jaafreh**, G. Mokryani, et al., "Optimal planning and operation of distribution systems using network reconfiguration and flexibility services," **Energy Reports**, vol. 9, pp. 3910–3919, 2023.

4. B. Amjad, **M. A. A. Al-Ja'afreh**, and G. Mokryani, "Active Distribution Networks Planning Considering Multi-DG Configurations and Contingency Analysis," **Energies**, 2021.

5. **M. A. A. Al-Ja'afreh** and G. Mokryani, "Planning and Operation of LV Distribution Networks: A Comprehensive Review," **IET Energy Syst. Integration**., vol. 1, no. 3, pp. 133–146, 2019, doi: 10.1049/iet-esi.2019.00

6. **M. A. A. Al-jaafreh**, and G. Mokryani, "Multi-Stage CVR-based optimization for the operation of unbalanced LV distribution network with the adoption of deep learning foresting technique", (Under review : submitted to **energy and AI journal** on July 4, 2023)

Conference Papers:

1. J. A. Marquez, **M. A. A. Al-Ja'afreh**, G. Mokryani, S. Kabir, F. Campean, C. Dao and S. Riaz "Analytical Reliability-based Investment and Operation Model for Post-Failure Network Reconfiguration" in 2022 6th International Conference on System Reliability and Safety (**ICSRS**),2022, pp.405–411.

2. S. Riaz, S. Kabir, F. Campean, G. Mokryani, C. Dao, J. A. Marquez, **M. A. A. Al-Ja'afreh** "Challenges with Providing Reliability Assurance for Self-Adaptive Cyber-Physical Systems" in 2022 6th International Conference on System Reliability and Safety (**ICSRS**),2022, pp. 394–399.

3. **M. A. A. Al-Ja'afreh** and G. Mokryani, "Voltage Unbalance Mitigation in Low Voltage Distribution Networks using Time Series Three-Phase Optimal Power Flow," 2021 56th International Universities Power Engineering Conference (**UPEC**), 2021, pp. 1-6, doi: 10.1109/UPEC50034.2021.9548248.

4. **M. A. A. Al-Ja'afreh**, G. Mokryani, A. Asharaa, O. Anthony, R. Zubo, M. Baseer "Techno-Economic Viability Test of Renewable Energy Supply Options in Developing Countries: Jordan Case Study," 2020, doi: 10.4108/eai.28-6-2020.2298211.

Professional Registration and Organization

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Power and Energy Society (IEEE PES)
- Institusion of engineering and Technology (IET)