Rafat Aljarrah

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EDUCATION

- **PhD, Electrical and Electronic Engineering, The University of Manchester, UK, 2020**

Concentrations: Electrical Power System
Thesis: *Assessment of Fault Level in Power Systems with High Penetration of Non Synchronous Generation*
Thesis Advisor: Prof. Vladimir Terzija

- **MSc, Electrical Power Engineering, Yarmouk University, Jordan, 2015**

Concentrations: Electrical Power System
Dissertation: *Envelope Based Classification of Voltage Variations Using Artificial Neural Network*
Dissertation Advisor: Prof. Eyad A. Feilat

- **BSc, Electrical Power Engineering, Yarmouk University, Jordan, 2012**

EXPERIENCE

- **Assistant Professor, Electrical Engineering**

Institution: Princess Sumaya University for Technology (PSUT), Jordan
Period: July 2020-Present

- **Teaching Assistant, PhD Researcher**

Institution: The University of Manchester, UK
Period: April 2016- July 2020

- **Instructor**

Institution: American University of the Middle East (AUM), Kuwait
Period: Sep. 2015- Feb. 2016

- **Teaching and Research Assistant**

Institution: German Jordanian University (GJU), Jordan
Period: Sep. 2012- July 2015

Intrenship

- Institution: National Electric Power Company (NEPCO), Jordan
- Position: Power System Engineer
- Period: June 2012- December 2015

PROFESSIONAL MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE PES Student Branch Chapter UoM
- Jordan Engineers Association

COURSES and CERTIFICATES

- **PG certificate in the following MSc Modules at The University of Manchester**
- Smart Grids & Sustainable Electricity Systems
- Analysis of Electrical Power and Energy Conversion Systems
- Power System Operation and Economics
- Solar Energy Technologies

- **Course Attendance Certificate in the Field of Electrical Power System, (200) Hours, NEPCO, Jordan. In These Subjects:**

- Transmission lines simulator and voltage laboratory
- AC Motors Control & PLC
- House wiring fundamentals
- Transformer Operation, Testing &Maintenance
- Specification of Transmission & Distribution Networks

RELEVANT SKILLS

- **Programming and Software**

Matlab, DIgSILENT (PowerFactory), PSCAD, FEMM, Power Word , Circuit Maker, C++ , Visual basic,…etc.

- **Languages**

Fluent in English and Arabic (mother tongue)

RESEARCH INTEREST

- **Future Power Systems**
- **Fault Level Monitoring**
- **Renewable Energy**
- **Artificial Intelligence**
- **Power System Protection**
- **High Voltage Engineering**

PUBLICATIONS

Salem, Q., **Aljarrah, R**., Karimi, M. and Al-Quraan, A., 2023. Grid-Forming Inverter Control for Power Sharing in Microgrids Based on P/f and Q/V Droop Characteristics. Sustainability, 15(15), p.11712.

Aljarrah, R., Al-Omary, M., Salem, Q., Abu-Hamad, J., Karimi, M. and Al-Rousan, W., 2023, May. Investigating the Maximum Instantaneous Fault Current in Power Systems with High Penetration of Type-4 Wind. In 2023 IEEE IAS Global Conference on Emerging Technologies (GlobConET) (pp. 1-6). IEEE.

Al-Omary, M., **Aljarrah, R.,** Albatayneh, A., Alshabi, D.A. and Alzaareer, K., 2023. Impact of using a predictive neural network of multi-term zenith angle function on energy management of solar-harvesting sensor nodes. Energy Harvesting and Systems, (0).

Aljarrah, R., Ayaz, M.S., Salem, Q., Al-Omary, M., Abuishmais, I. and Al-Rousan, W., 2023. Application of Passive Harmonic Filters in Power Distribution System with High Share of PV Systems and Non-Linear Loads. International Journal of Renewable Energy Research (IJRER), 13(1), pp.401-411.

Salem, Q., **Aljarrah, R.,** Alzaareer, K., Harasis, S. and Aldaoudeyeh, A.M., 2023. An implementation of an enhanced DG primary control equipped with fault detection scheme. International Journal of Sustainable Energy, 42(1), pp.318-330.

Aljarrah, R., Abu-Hamad, J., Al-Omary, M. and Salem, Q., 2022, November. Research on The Impact of 100% PV Penetration in Power Distribution Systems. In 2022 International Engineering Conference on Electrical, Energy, and Artificial Intelligence (EICEEAI) (pp. 1-5). IEEE.

Aljarrah, R., Marzooghi, H. and Terzija, V., 2023. Mitigating the impact of fault level shortfall in future power systems with high penetration of converter-interfaced renewable energy sources. International Journal of Electrical Power & Energy Systems, 149, p.109058.

Aljarrah, R., Al-Omary, M., Alshabi, D.A., Salem, Q., Alnaser, S., Ćetenović, D. and Karimi, M., 2023. Application of Artificial Neural Network-Based Tool for Short Circuit Currents Estimation in Power Systems With High Penetration of Power Electronics-Based Renewables. IEEE Access, 11, pp.20051-20062.

Al-Omary, M., Albatayneh, A., Jaradat, M. and **Aljarrah, R.,** 2022, December. An Efficient Energy-aware Controller for Small-scale Solar-worked Devices Using Ratioed Pro-Energy Predictor. In 2022 IEEE Electrical Power and Energy Conference (EPEC) (pp. 336-341). IEEE.

Aljarrah, R., Karimi, M., Marzooghi, H., Alnaser, S., Al-Omary, M., Salem, Q. and Harasis, S., 2023. Relationship between Fault Level and System Strength in Future Renewable-Rich Power Grids. Applied Sciences, 13(1), p.142.

Al-Omary, M., **Aljarrah, R.,** Albatayneh, A., Alzaareer, K., Malkawi, A. and Jaradat, H., 2022. Optimal Neural Network for Predicting Solar Energy in Sensor Units Based on a Cascaded Input/Structure Direct Optimization. Journal of Sensors, 2022.

Al-Omary, M., Albatayneh, A., **Aljarrah, R.** and Alzaareer, K., 2022, May. Reliability Evaluation of GSR Prediction Using Neural Networks with Variant Atmospheric Parameters. In 2022 19th International Multi-Conference on Systems, Signals & Devices (SSD) (pp. 1156-1161). IEEE.

Al-Omary, M., **Aljarrah, R.,** Albatayneh, A. and Jaradat, M., 2021, March. A Composite Moving Average Algorithm for Predicting Energy in Solar Powered Wireless Sensor Nodes. In 2021 18th International Multi-Conference on Systems, Signals & Devices (SSD) (pp. 1047-1052). IEEE.

Aljarrah, Rafat, Hesamoddin Marzooghi, James Yu, and Vladimir Terzija. "Monitoring of fault level in future grid scenarios with high penetration of power electronics-based renewable generation." *IET Generation, Transmission & Distribution* (2020).

Aljarrah, Rafat, Hesamoddin Marzooghi, James Yu, and Vladimir Terzija. "Sensitivity analysis of transient short circuit current response to the penetration level of non-synchronous generation." *International Journal of Electrical Power & Energy Systems* 125 (2021): 106556.

R. Aljarrah, H. Marzooghi, J. Yu and V. Terzija, "Issues and Challenges of Steady-State Fault Calculation Methods in Power Systems with a High Penetration of Non-Synchronous Generation," *2019 IEEE Milan PowerTech*, Milan, Italy, 2019, pp. 1-6.

R. Aljarrah, H. Marzooghi, J. Yu and V. Terzija, "Modifying IEC60909 Standard to Consider Fault Contribution from Renewable Energy Resources Utilizing Fully-Rated Converters," *2019 9th International Conference on Power and Energy Systems*, Perth, Australia, 2019, pp. 1-6.

Feilat, E.A., **Aljarrah, R.R.** and Rifai, M.B., 2017. Detection and classification of voltage variations using combined envelope-neural network based approach. *Jordan Journal of Electrical Engineering. All rights reserved-Volume*, *3*(2), p.113.