Anwarul Islam Sifat, Ph.D.

CONTACT INFORMATION

Lamar University
Philip M Drayer Department of Electrical and Computer Engineering
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RESEARCH INTERESTS

Advanced data analytics for power system protection: Power system protection, micro-grid, distributed energy sources, load forecasting, electromagnetic transient simulation, embedded system development, edge computing, game theory, parallel computation, energy systems, sustainability in the built environment, engineering education

CURRENT ACADEMIC APPOINTMENT

Assistant Professor, Lamar University **September 2021 to present**
Phillip M. Drayer Department of Electrical and Computer Engineering (ECE)
Program Director, Power, and Energy Certificate
Founder, GridLab-Lamar University Power System Research Lab

PREVIOUS ACADEMIC APPOINTMENTS

Postdoctoral Scholar, Arizona State University **July 2022 to August 2023**
School of Electrical, Computer and Energy Engineering (ECEE),
Ira A. Fulton Schools of Engineering

- Laboratories:
  - The Phasor Assisted Learning (PAL) Lab (PI: Anamitra Pal)

EDUCATION

Victoria University of Wellington, Wellington, New Zealand **July 2021**

Ph.D., School of Engineering and Computer Science, July 2021

- Thesis Topic: *Applicationof GMR Sensors to Non-contact Current Monitoring, Fault Detection, and Classification in Electricity Distribution Networks*
- Adviser: Dr. Fiona Stevens McFadden and Dr. Ramesh Rayudu
- Area of Study: Power Engineering, Machine and Deep learning algorithms, Signal Processing, Magnetic Sensors

University of Dhaka, Dhaka, Bangladesh **January 2017**

M.S., Institute of Energy

- Area of Study: Renewable Energy Technology

Stamford University Bangladesh, Dhaka, Bangladesh **May 2013**

B.Sc., Department of Electrical and Electronic Engineering

- Area of Study: Power Systems, Electronics

REFEREED JOURNAL PUBLICATIONS

[1] Sifat, A. I., McFadden, F. J. S., Bailey, J., Rayudu, R., & Hunze, A. (2020). Characterization of 400 volt high impedance fault with current and magnetic field measurements. IEEE Transactions on Power Delivery, 36(6), 3538-3549. IEEE.

[2] Dalal, D., Bilal, M., Shah, H., Sifat, A. I., Pal, A., & Augustin, P. (2023). Cross-correlated scenario generation for renewable-rich power systems using implicit generative models. Energies, 16(4), 1636. MDPI.

[3] Sarkar, M. N. I., Sifat, A. I., Reza, S. S., & Sadique, M. S. (2017). A review of optimum parameter values of a passive solar still and a design for southern Bangladesh. Renewables: Wind, Water, and Solar, 4(1), 1-13. Springer Singapore.

[4] Sarkar, M. N. I., & Sifat, A. I. (2016). Global solar radiation estimation from commonly available meteorological data for Bangladesh. Renewables: Wind, Water, and Solar, 3(1), 1-14. Springer Singapore.

Refereed Conference Publications

[5] Moshtagh, S., Sifat, A. I., Azimian, B., & Pal, A. (2023). Time-synchronized state estimation using graph neural networks in presence of topology changes. In 2023 North American Power Symposium (NAPS) (pp. 1-6). IEEE.

[6] Sahoo, S., Sifat, A. I., & Pal, A. (2023). Data-driven flow and injection estimation in PMU-unobservable transmission systems. In 2023 IEEE Power & Energy Society General Meeting (PESGM) (pp. 1-5). IEEE.

[7] Sifat, A. I., Bailey, J., Hamilton, K., McFadden, F. J. S., Rayudu, R., & Hunze, A. (2019). A facility for physical simulation of high impedance faults in low voltage networks. In 2019 IEEE Power & Energy Society General Meeting (PESGM) (pp. 1-5). IEEE.

[8] Sifat, A. I., McFadden, F. J. S., & Rayudu, R., Bailey, J. (2020). Classification of stages of a high impedance fault using sequential learning algorithms. In 2020 IEEE Kansas Power and Energy Conference (KPEC) (pp. 1-6). IEEE.

[9] Sifat, A. I., McFadden, F. S., Ahmed, A., Rayudu, R., & Hunzel, A. (2017). Feasibility of magnetic signature-based detection of low and high impedance faults in low-voltage distribution networks. In 2017 IEEE Innovative Smart Grid Technologies-Asia (ISGT-Asia) (pp. 1-6). IEEE.

[10] Sarkar, N. I., Sifat, A. I., Rahim, N., & Reza, S. S. (2015). Replacing diesel irrigation pumps with solar photovoltaic pumps for sustainable irrigation in Bangladesh: A feasibility study with HOMER. In 2015 2nd International Conference on Electrical Information and Communication Technologies (EICT) (pp. 498-503). IEEE.

[11] Sarkar, M. N. I., Sifat, A. I., Paul, S., Hossain, M. S., & Rahman, M. (2016). Solar radiation estimation using temperature data for Dhaka, Bangladesh. In 2016 5th International Conference on Informatics, Electronics and Vision (ICIEV) (pp. 204-208). IEEE.

[12] Sifat, A. I., Sarkar, M. N. I., Uddin, M. M., Biswas, P., & Aadit, N. A. (2016). Microcontroller based 3-phase sequence indicator. In 2016 5th International Conference on Informatics, Electronics and Vision (ICIEV) (pp. 78-82). IEEE.

[13] Sifat, A. I., Uddin, M. M., & Islam, K. M. A. (2017). Feasibility study of ICS as a source of thermoelectric generator. In 2017 4th International Conference on Advances in Electrical Engineering (ICAEE) (pp. 409-414). IEEE.

[14] Sifat, A. I., Uddin, M. M. (2015). Water distillation method using solar power. In Proceedings of the International Conference on Mechanical Engineering and Renewable Energy.

Grants

Awarded

- Principal Investigator: "Real-time current loading condition monitoring of overhead lines using non-contact sensors", Quanta Services, 2024
- Co-Principal Investigator: "Intelligent EV Charging Coordination During Natural Disasters for Grid", Texas A&M Engineering Experiment Station , 2024

Awaiting Decision

- Co-Principal Investigator: REU Site: Multidisciplinary Research Experience for Undergraduates in Engineering and Computer Science, National Science Foundation, 2024

- Principal Investigator: "Probabilistic Net Load Forecasting under Extreme Weather Events to Improve Grid Resiliency: Development and Validation using a Physical Test Setup", Center for Resiliency, Lamar University, 2024

Advising and Mentoring

Graduate Students

- **Md Mahfuzur Rahman Chy**, PhD Student, Electrical and Computer Engineering Engineering, 2024–Current
- **Md Imran**, MS Student, Electrical and Computer Engineering, 2023–Current
- **Tasmina Imam**, MS Student, Electrical and Computer Engineering, 2024–Current

Teaching Experience

Lamar University, Beaumont, TX

Instructor **Fall 2023 to present**

- ELEN 3441 Fundamentals of Power Engineering
- ELEN 4309 Fundamentals of Power System Protection
- ELEN 5355 Electric Machines and Power Electronic Drives
- ELEN 5356 Power System Stability and Control
- ELEN 5357 Power System Monitoring and Protection
- ENGR 5306 Engineering Internship
- ELEN 6301 Advanced Power System Protection

Professional Service

Referee Service

- Transactions on Power Systems, IEEE
- Transactions on Power Delivery, IEEE
- Power & Energy Society General Meeting. IEEE
- Energies, MDPI
- Electronics, MDPI
- Electrical Engineering, Springer
- International Journal of Electrical Power & Energy Systems, Elsevier
- Sensors, MDPI
- Sustainability, MDPI

Professional Experience

Arizona State University, Tempe, AZ, USA

Postdoctoral Researcher **July 2022 to August 2023**

- Sensor-enabled wildfire awareness & risk management for electric power infrastructure: Assessment of power systems transient stability during the wildfire. The prospective outcome is to reduce power outages during wildfires using advanced sensing systems and data-driven decision-support algorithms.

Robinson Research Institute, Gracefield, Lower Hutt, New Zealand

Research Engineer **October 2020 to May 2022**

- Developed a non-contact magnetic sensor-based power system monitoring and fault detection scheme for electricity distribution networks.
- Assembled a solar-powered standalone data acquisition system prototype at Wellington Electricity Network for data analysis and modeling - perspective output leading to refining and tuning the anomaly detection algorithm.

Victoria University of Wellington, Kelburn, Wellington, New Zealand

Research Assistant and Outreach Assistant **November 2018 to December 2019**

- Investigated a method to optimize the power consumption of a battery powered embedded system. Achievement resulted in reducing the power consumption of the system by 70% to ensure extended battery life.
- Programing language instructor. Mentored with effective verbal and written communication in an intermediate school through classroom instruction and responding to student questions.

Dhaka Power Distribution Company Ltd, Dhaka, Bangladesh

Industry intern **December 2016 to March 2017**

- Evaluated technical data to analyse the power dispatch from multiple substations.
- Prepared a technical report about commercial activities within the company.

PROFESSIONAL MEMBERSHIPS

Institute for Electrical and Electronics Engineers (IEEE), Member,

- IEEE Power Energy Society
- IEEE Industrial Application Society

SERVICE

Governor's Summer Merit Program (GSMP), Lamar University, 2024

- Instructor, Snap circuit training program

Cardinal View, Lamar University, 2023, 2024

- ECE department representative. Open house event to inform the local community about academic majors, financial aid, student organizations, and campus resources.

Arizona State University Open Door, 2023

- ECEE department representative. An open-door event invites the local community, adults, and children of all ages to experience and discover ASU through hundreds of interactive, hands-on activities.

APPLICATION AREAS

Data Analysis & Visualization, Algorithm Development, Electrical System Modelling and Simulation, Electrical Design Hardware Prototyping, Power System Stability and Control, Power System Protection, Technical Writer

HARDWARE AND SOFTWARE SKILLS

MATLAB, PSCAD, PSSE, ETAP, DIgSILENT, National Instrument LabView, PIC Microcontroller, Python Script Language, PLC Ladder Logic, LaTeX, AutoCAD, Keras- Tensorflow, Pytorch, SolidWorks, C Script Language, Linux OS

AWARDS

- Texas A&M Engineering Experiment Station research collaboration award (2024), TX, USA
- KiwiNet Emerging Innovator (2021), Wellington, New Zealand
- IEEE best paper award at Kansas Power and Energy Conference (2020), Kansas, USA.
- Victoria University of Wellington Doctoral Scholarship (2017), Wellington, New Zealand

REFERENCES AVAILABLE TO CONTACT

Dr. Abdelnasser Eldek (e-mail: aeldek@lamar.edu; phone: +1-409-880-8747)

- Don M. Lyle Distinguished Professor and Chair, Phillip M. Drayer Department of Electrical and Computer Engineering, Lamar University
  - ◇ Beaumont, Texas, USA

Dr. Fiona Stevens McFadden (e-mail: fiona.stevensmcfadden@vuw.ac.nz; phone: +64-4-463-0087)

- Deputy Director, Robinson Research Institute, Victoria University of Wellington
  - ◇ Gracefield, Lower Hutt, New Zealand

Dr. Anamitra Pal (e-mail: anamitra.pal@asu.edu; phone: +1-480-965-2882)
- Associate Professor, School of Electrical, Computer and Energy Engineering, Arizona State University
  - ◇ Tempe, Arizona, USA

Dr. Ramesh Rayudu (e-mail: ramesh.rayudu@vuw.ac.nz; phone: +64-4-886-5332)
- Deputy Head, School Engineering and Computer Science, Victoria University of Wellington
  - ◇ Kelburn, Wellington, New Zealand

MORE INFORMATION

More information can be found at
https://www.lamar.edu/engineering/electrical/faculty-and-staff/sifat/index.html.