ROUNAK MEYUR

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WORK EXPERIENCE

Post Doctorate RA
Pacific Northwest National Laboratory

📅 Jan 2023 – Present   📍 Richland, WA, USA

- Optimal budget allocation to enhance cybersecurity of power grids.
- Model adaptive adversary behavior to identify potential cyber attacks.
- Integrate distributed optimal power flow algorithms in the OEDI-SI platform.

EDUCATION

Ph.D. in Electrical & Computer Engineering
University of Virginia, Charlottesville, VA, USA

📅 Aug 2020 – Dec 2022   ☑ GPA: 3.93/4.00

M.Sc. in Electrical Engineering (Power Systems)
Virginia Tech, Blacksburg, VA, USA

📅 Aug 2016 – Feb 2019   ☑ GPA: 3.95/4.00

B.Tech. in Electrical and Electronics Engineering
NIT Trichy, Tamilnadu, India

📅 Jul 2012 – May 2016   ☑ GPA: 9.77/10.00

INTERNSHIP EXPERIENCE

PhD Intern
Pacific Northwest National Lab

📅 Summers 2019, 2020, 2022   📍 Richland, WA, USA

- Propose data driven algorithms to find coherent generators during transient event in power grid.
- Propose consensus control algorithms to address frequency and voltage stability in distribution systems.
- Use topological data analysis methods to compare networks embedded on a metric space.

Research Intern
PJM Interconnection

📅 Summer 2018   📍 Audobon, PA, USA

- Assess black start resources of PJM.
- Adaptive restoration path for a blacked out power grid.

SKILLS

Research Interests: power system reliability, power grid stability, convex optimization, network science, stochastic modeling
Languages: Python, C++, R, Powershell scripting
Softwares: MATLAB, PSS/E, OpenDSS, Gridlab-D
Platforms: Docker, OEDI-SI, MITRE ATT&CK
Solvers: Gurobi, YALMIP, CPLEX, GLPK

PROJECTS

Promoting Net-zero Carbon Technologies
NSSAC, UVA Biocomplexity Institute

📅 June 2021 – Nov 2022

- Develop a distributed framework to promote high levels of residential EV charging while ensuring grid reliability.
- Optimal placement of EV charging stations on the footprint of USA ensuring power grid reliability and addressing equity aspects.

Synthetic Power Distribution Networks
NSSAC, UVA Biocomplexity Institute

📅 Aug 2019 – May 2021

- Develop a framework which creates digital duplicates of power distribution networks using Open Street Maps and population data.
- Propose comparison metrics to validate synthetic networks with actual networks.

μ-PMU Enabled CHP Converter
Power and Energy Center, Virginia Tech

📅 Jan 2019 – May 2019

- Add μ-PMU functionality to a power electronic converter for CHP system.
- Design algorithms for fast and accurate computation of phasors for transient sinusoidal voltage and current signals.
- Implement μ-PMU on a microcontroller with time synchronization from GPS receiver.

Cascading Events in Power Grid
Power and Energy Center, Virginia Tech

📅 May 2017 – Dec 2018

- Develop stochastic models for hidden failures in protection systems.
- Identify critical assets in power grid to avoid large scale cascaded outages.
- Identify critical SCADA cyber-security architecture used in power grid.

PMU Testing Platform
Power and Energy Center, Virginia Tech

📅 Aug 2016 – Apr 2016

- Implement a LabVIEW based PMU testing and calibration system.
- Implement steady-state, dynamic and latency tests as mandated by the latest IEEE C37.118.1a standard.

PUBLICATIONS

👥 Conference Proceedings

- **Meyur**, R., Purohit, S., & Webb, B. K. (2024). Fortify Your Defenses: Strategic Budget Allocation to Enhance Power Grid Cybersecurity. In *The AAAI-24 Workshop on Artificial Intelligence for Cyber Security (AICS)*. (submitted and under review), Vancouver, Canada.

- Donald, S., Purohit, S., & **Meyur**, R. (2023). Hybrid Attack Graph Generation with Graph Convolutional Deep-Q Learning. In *Ieee big data conference: The 7th Workshop on Graph Techniques for Adversarial Activity Analytics (GTA^{3}2023)*, Sorrento, Italy.

- Islam, K. A., **Meyur**, R., Kishore, A., Thorve, S., Chen, D. Q., & Marathe, M. (2023). OptICS-EV: A data-driven model for optimal installation of charging stations for electric vehicles. In *Computational science – ICCS 2023* (pp. 70–85). Cham: Springer Nature Switzerland.

- **Meyur**, R., Lyman, K., Krishnamoorthy, B., & Halappanavar, M. (2023). Structural validation of synthetic power distribution networks using the multiscale flat norm. In *Computational science – ICCS 2023* (pp. 55–69). Cham: Springer Nature Switzerland.

- **Meyur**, R., Thorve, S., Marathe, M., Vullikanti, A., Swarup, S., & Mortveit, H. (2022). A reliability-aware distributed framework to schedule residential charging of electric vehicles. In L. D. Raedt (Ed.), *Proceedings of the thirty-first international joint conference on artificial intelligence, IJCAI-22* (pp. 5115–5121). AI for Good. doi:10.24963/ijcai.2022/710

- Biswas, S., **Meyur**, R., & Centeno, V. A. (2020). DeVLearn: A Deep Visual Learning Framework for Determining the Location of Temporary Faults in Power Systems. In *2020 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)* (pp. 1–6).

- **Meyur**, R. (2020). A Bayesian Attack Tree Based Approach to Assess Cyber-Physical Security of Power System. In *2020 IEEE Texas Power and Energy Conference (TPEC)* (pp. 1–6).

- **Meyur**, R., Marathe, M., Vullikanti, A., Mortveit, H., Swarup, S., Centeno, V., & Phadke, A. (2020). Creating realistic power distribution networks using interdependent road infrastructure. In *IEEE International Conference on Big Data* (pp. 1226–1235).

- **Meyur**, R., Vullikanti, A., Marathe, M., Pal, A., Youssef, M., & Centeno, V. (2019). Cascading Effects of Targeted Attacks on the Power Grid. In *Complex Networks and Their Applications VII* (pp. 155–167).

- **Meyur**, R., Stenbakken, G. N., & Centeno, V. (2017). A LabVIEW based Test System to Characterize Phasor Measurement Units. In *2017 North American Power Symposium (NAPS)* (pp. 1–6).

- Mallikarjuna, B., **Meyur**, R., Pal, D., Reddy, M. J. B., & Mohanta, D. (2016). An Adaptive Secure-dependable Wide-area Backup Protection Scheme for Transmission Lines using Multi-Phasor Measurement Units. In *2016 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)* (pp. 1–6).

- **Meyur**, R., Pal, D., Sundaravaradan, N., Rajaraman, P., Srinivas, K., Reddy, M. J. B., & Mohanta, D. (2016). A Wavelet Adaptive Network based Fuzzy Inference System for Location of Faults in Parallel Transmission Lines. In *2016 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)* (pp. 1–6).

📄 Journal Articles

- **Meyur**, R., Vullikanti, A., Swarup, S., Mortveit, H., Centeno, V., Phadke, A., Poor, H. V., & Marathe, M. (2022). Ensembles of realistic power distribution networks. *Proceedings of the National Academy of Sciences*, *119*(42).

- Pal, D., **Meyur**, R., Menon, S., Bharata Reddy, M. J., & Mohanta, D. K. (2018). Real-time Condition Monitoring of Substation Equipment using Thermal Cameras. *IET Generation, Transmission & Distribution*, *12*(4), 895–902.

- Bharata Reddy, M. J., **Meyur**, R., Pal, D., Krantikumar, C., & Mohanta, D. K. (2017). An Online Geographical Information System based Condition Monitoring System for 11-kv Distribution Line Insulator. *IEEE Electrical Insulation Magazine*, *33*(3), 26–32.

- Sundaravaradan, N. A., Padmanabhan, R., **Meyur**, R., Mallikarjuna, B., Bharata Reddy, M. J., & Mohanta, D. K. (2016). Real-time Fault Analysis of Transmission Lines using Wavelet Multi-resolution Analysis Based Frequency-domain Approach. *IET Science, Measurement & Technology*, *10*(7), 693–703.