

NIRUPAMA PUDUKKARAI SRINIVAS

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SUMMARY

Electrical Engineering Ph.D. student specializing in energy and ancillary service markets, power system operations and planning, and renewable integration. Seeking a Summer 2026 internship to apply optimization, machine learning, probabilistic modeling, and reinforcement learning to challenges in energy market design, load intelligence, and grid modernization.

EDUCATION

Doctor of Philosophy, Electrical Engineering Jul 2024 – Present
Arizona State University, Tempe, Arizona / Advisor: Mojdeh Khorsand GPA: 3.80/4.00
Research – Intelligent energy systems focusing on load monitoring, appliance forecasting, and distribution network analytics.

Master of Science, Electrical Engineering Aug 2022 – Jun 2024
Arizona State University, Tempe, Arizona / Advisor: Mojdeh Khorsand GPA: 3.71/4.00
Thesis – A Day-Ahead Bidding Strategy Algorithm for Distributed Energy Resource Aggregators
Relevant Coursework: Electricity Energy Markets, Power Engineering Operations and Planning, Applied Deterministic Operations Research, Computer Solutions of Power Systems, Mathematical Foundations of Machine Learning.

Bachelor of Technology, Electrical and Electronics Engineering Aug 2018 – May 2022
People's Education Society (PES) University, Bengaluru, India

TECHNICAL SKILLS

- **Programming & Optimization:** Python, JuMP, AMPL, SQL, C++
- **Analytical Methods:** Mathematical Modeling, Optimization, Machine Learning, Markov Models, Power System Modeling
- **Design & Modeling Tools:** MATLAB/Simulink, ETAP, NEPLAN, CYMCAP, SAM

RESEARCH EXPERIENCE

Non-Intrusive Load Monitoring and Appliance Forecasting July 2024 – Present

- Developing a residential appliance-wise load forecasting model using ML and Markov models as part of an NSF funded project.
- Contributing to behavior-aware aggregation strategies to help utilities analyze demand response potential and grid flexibility.
- Collaborating on research aimed at distribution network intelligence through load monitoring and appliance-level analytics.

Aggregator Side Bidding Generation Tool Nov 2022 – Oct 2024

- Developed a FERC Order 2222-compliant bidding tool for aggregators in energy and ancillary DA and RT markets.
- Implemented an optimization framework addressing forecast and market uncertainties while respecting unit constraints.
- Validated against NYISO rules, showing enhanced DER market participation and revenue potential.

ACADEMIC PROJECTS

- **Computer Solutions of Power Systems:** Projects on SCUC, DCOPF, SCED, and Benders' Decomposition for N-1 unit commitment; optimized generation schedules and assessed system reliability.
- **Electricity Energy Markets:** Analyzed Payment Cost Minimization vs. Operational Cost Minimization.
- **Power Systems Operation & Planning:** Transmission expansion planning to determine optimal investment strategies.

PROFESSIONAL EXPERIENCE

Electrical Engineering Intern May 2023 – Aug 2023
Black & Veatch, Kansas City, KS

- Conducted solar system analysis (V_{oc} & I_{sc} calculations, DC/AC cable sizing, solar takeoffs) for utility-scale projects.

RELEVANT PUBLICATIONS

[1] **Nirupama Pudukkarai Srinivas**, Sara Ostovar, Mojdeh Khorsand, A Data Mining Approach for Load Composition Analysis in Residential Units, *Proceedings of North American Power Symposium (NAPS) 2025*.

[2] Sara Ostovar, **Nirupama Pudukkarai Srinivas**, Mojdeh Khorsand, An Appliance-Agnostic Mode Identification Framework via Dynamic Programming Least Squares and Piecewise Regression for Non-Intrusive Load Monitoring, *Proceedings of the 59th Hawaii International Conference on System Sciences (HICSS)*.

[3] **Nirupama Pudukkarai Srinivas**, Sara Ostovar, Mojdeh Khorsand, Abrez Mondal, Nikita Singhal, Ibrahim Krad, Ahmed Saad. A Day-Ahead Bidding Framework for Renewable-Fed Distributed Energy Resource Aggregators, *2026 IEEE PES Transmission & Distribution Conference*.

[4] Sara Ostovar, **Nirupama Pudukkarai Srinivas**, Mojdeh Khorsand, Abrez Mondal, Nikita Singhal, Ibrahim Krad, Ahmed Saad. A Bidding Strategy Algorithm for Distributed Energy Resource (DER) Aggregators: Participation in Day-Ahead and Real-Time Energy and Ancillary Service Markets. *Under Review*.

OTHER EXPERIENCE

- Chair, IEEE PES ASU Student Branch Chapter | Sept 2023 – Present
- Teaching Assistant, Energy Systems & Power Electronics (EEE360), Arizona State University | Jan 2023 – May 2024