Nima Taghipourbazargani

ntaghip1@asu.edu Nima T.Bazargani

PROFESSIONAL PROFILE

As an electrical engineer specializing in power systems, I am dedicated to harnessing machine learning (ML) and data science to solve complex challenges in energy infrastructure. With over 10 years of experience in research and industry, my expertise includes applying ML and data science for power system monitoring, stability, and reliability, including real-time event identification using phasor measurement unit (PMU) data; electricity markets analysis, encompassing trading strategies, financial transmission rights auctions, and hedging against congestion risks; and resiliency-oriented planning and operation amid disruptions.

TECHNICAL SKILLS

- **Power System Software:** PSS®E, DAYZER, TARA, DSATools, PSLF, DIgSILENT
- **Programming Languages:** Python (Scikit-learn, PyTorch, Keras, TensorFlow), SQL, MATLAB, GAMS, C++
- **Data Science & Cloud Tools:** Time series forecasting and classification, deep learning, data analytics, GitHub, Amazon Web Services (AWS), Google Cloud

INDUSTRIAL WORKING EXPERIENCE

Personal Time **Pasadena, California**

- *July. 2025 – Present*

- Focused on personal development and exploring long-term goals after several years in high-intensity research and engineering roles.

Electric Power Group **Pasadena, California**

Power System Engineer *Sep. 2024 – July. 2025*

- Developed a real-time inertia and system strength forecasting tool integrated into one of the company's C++-based synchrophasor analytics platform products
- Worked independently to design and implement EPG's first Python-based machine learning framework, enabling seamless integration with the existing C++ platform.
- Leveraged real-time PMU data and a Model-Agnostic Meta-Learning (MAML) incremental learning approach, capturing short-term fluctuations (e.g., abrupt grid changes) and long-term trends while retaining historical knowledge and minimizing catastrophic forgetting.

CWP Energy **Montreal, Canada (remote)**

Network Model Analyst *Sep. 2023 – June. 2024*

- Conducted large-scale security-constrained unit commitment (SCUC) and economic dispatch simulations for major U.S. electricity markets (MISO, SPP, PJM, ERCOT), incorporating daily automated diverse scenarios to provide actionable insights for day-ahead market trading strategies, financial planning, and decision-making.
- Optimized the DAYZER Python API simulation pipeline by integrating third-party data sources (e.g., weather forecasts, fuel prices, outage schedules) and Google Cloud resources, enabling scalable, accurate long-term analyses for financial transmission rights auctions and congestion risk hedging.

Drive Powerline (FKA gigElev) **San Francisco, California**

Data Scientist Intern *May. 2022 – Aug. 2022*

- Developed APIs to collect, process, and manage data from CAISO and other relevant electricity market sources.
- Built and deployed real-time machine learning models for forecasting key grid parameters, enhancing situational awareness and operational decision-making.

Niroo Research Institute (NRI) **Tehran, Iran**

Project advisor *Aug. 2017 – Jun 2018*

- Provided advisory expertise on the definition, evaluation, and analysis of power system infrastructure resiliency.

ACADEMIC WORKING EXPERIENCE

Arizona State University **Tempe, AZ**

Graduate Research Associate *Aug. 2019 – Sep. 2023*

- **Project 1:** High-Dimensional Spatio-Temporal Data Science for a Resilient Power Grid: Towards Real-Time Integration of Synchrophasor Data
  - Supported by the National Science Foundation (Grant No. OAC-1934766).
  - Developed methods for real-time event identification in power systems using high-dimensional spatio-temporal PMU data through modal analysis and machine learning-based classification.
- **Project 2:** Machine Learning Approaches for Real-Time Integration of Synchrophasor Data
  - Supported by the Power System Engineering Research Center (PSERC) under project S-87.
  - Contributed to developing machine learning frameworks for synchrophasor data analytics. Final report available here.
- **Project 3:** A Semi-Supervised Approach for Power System Event Identification
  - Conducted under the U.S.-Israel energy center for Cybersecurity in energy, managed by the Israel–U.S. Binational Industrial Research and Development (BIRD) foundation. More details can be found here.
  - Developed and publicly released an all-in-one Event Identification package , including: (i) an event generation module based on the PSS®E Python API, (ii) a modal analysis–based feature extraction module, and (iii) a semi-supervised classification module for systematic benchmarking. The package is available here.

Technical University of Darmstadt **Darmstadt, Germany**

Research Assistant *Aug. 2018 - May 2019*

- Collaborative Research Center 1053 MAKI – Multi-Mechanisms Adaptation for the Future Internet. More details can be found here.
- Project description: Formulation of reliable virtual network embedding in stochastic contexts as a central mixed-integer linear programming problem and its application in communication networks for energy automation.

EDUCATION

Arizona State University **Tempe, AZ**

Ph.D. in Electrical Engineering (GPA: 3.86/4) *Aug. 2019 - Sep. 2023*

- **Dissertation:** "Real time identification of power system events using phasor measurement units (PMUs) data ", **Advisors:** Professor Oliver Kosut, Professor Lalitha Sankar

K.N.Toosi University of Technology **Tehran, Iran**

M.Sc. in Electrical Engineering - Power System (GPA: 18.69/20) *Sep 2015 - Jul 2018*

- **Thesis Title:** "Optimal sizing and allocation of battery energy storage systems in order to enhance micro-grid resiliency", **Advisor:** Professor S.M.T Bathaee

Shahid Beheshti University **Tehran, Iran**

B.Sc. in Electrical Engineering - Transmission and Distribution Network *Sep 2008 - Sep 2014*

Thesis Title: "Design and construction of a static frequency converter for induced voltage test of transformers"

RELEVANT COURSEWORK

Power System Dynamic, Power System Stability, Wide Area Monitoring Systems (WAMS) Application in Power Systems, Power System Reliability, Power System Advanced Protection, Power System Transients, Smart Grids, Foundation of Statistical Machine Learning, Machine Learning in Smart Grids, Random Signal Theory, Convex Optimization, Topics in Reinforcement Learning

PUBLICATIONS

- **Nima T. Bazargani**, Lalitha Sankar, and Oliver Kosut, "A Semi-Supervised Approach for Power System Event Identification," *arXiv preprint arXiv:2309.10095*, 2024. [link]
- Rajasekhar Anguluri, **Nima T.Bazargani**, Oliver Kosut, and Lalitha Sankar, "Source Localization in Linear Dynamical Systems using Subspace Model Identification," 2023 *IEEE Conference on Control Technology and Applications (CCTA), Bridgetown, Barbados, 2023, pp. 1016-1021.* [link]

- **Nima T.Bazargani**, Gautam Dasarathy, Oliver Kosut, and Lalitha Sankar, "A Machine Learning Framework for Event Identification via Modal Analysis of PMU Data," *IEEE Transactions on Power Systems, 2022.* [link]
- Rajasekhar Anguluri, **Nima T.Bazargani**, Oliver Kosut, and Lalitha Sankar, "A Complex-LASSO Approach for Localizing Forced Oscillations in Power Systems," presented at the *IEEE Power and Energy Society, General Meeting 2022.* [link]
- **Nima T.Bazargani**, Gautam Dasarathy, Oliver Kosut, and Lalitha Sankar, "Event Identification Framework Based on Modal Analysis of Phasor Measurement Unit Data," poster presented at the *IEEE Power and Energy Society, General Meeting, July 26-29, 2021.*
- **Nima T. Bazargani**, S.M.T Bathaee, "A Novel Approach for Probabilistic Hurricane Resiliency Assessment of a Grid Connected Microgrid Using Point Estimated Method", Submitted to the *IEEE region 8 paper contest.* Presented at the *19th IEEE Mediterranean Electrotechnical Conference, Melecon, Morocco, 2018.* [link]
- Z. Afshar, **Nima T. Bazargani** and S. M. T Bathaee, "Virtual Synchronous Generator for Frequency Response Improving and Power Damping in Microgrids using Adaptive Sliding Mode Control," *International Conference and Exposition on Electrical And Power Engineering (EPE), Iasi, Romania, 2018.* [link]
- **Nima T. Bazargani** and S. M. T. Bathaee, "A General Framework for Resiliency Evaluation of Radial Distribution System Against Extreme Events," *Iranian Conference on Electrical Engineering (ICEE), Mashhad, Iran, 2018.* [link]
- **Nima T. Bazargani**, S.M.T Bathaee, Majid Hosseina, "Optimal Sizing of Battery Energy Storage and penetration degree of wind turbines using NSGA-II", *Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, Jul 2017.* [link]

ADDITIONAL

Membership and Professional Services:

- Vice-president of the Iranian Student Association (ISA) at ASU.
- Social chair of the IEEE Power and Energy Society (PES) student chapter committee at ASU.
- Guest Researcher in the largest DFG-funded interdisciplinary project, Collaborative Research Centre 1053: MAKI "Multi-Mechanisms Adaptation for the Future Internet" at Technical University of Darmstadt.
- Reviewer of the IEEE Transactions on Power Systems, IEEE Power and Energy Society (PES) General Meeting (GM), International Journal of Electrical Power and Energy Systems, International Power System Conference (PSC).
- Former member of power systems studies department at Niroo Research Institute (NRI).

Honours and Awards:

- Ranked 2^{nd} at K.N.Toosi university of technology (M. Sc. degree)
- Ranked 240^{th} in National Universities Entrance Exam for Master (among more than +30,000)
- My paper on hurricane resiliency assemssment has been classified as one of the best five papers in the IEEE region 8 paper contest and presented at the 19th IEEE Mediterranean Electrotechnical Conference, Melecon, Morocco, 2018.