# Nima Taghipour Bazargani

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## 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

- **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, AWS, Google Cloud
- **Power System Software:** PSS®E, DAYZER, TARA, DSATools, PSLF, DIgSILENT

## 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 machine learning-based Python tool for near forecasting inertia and system strength.

**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, including MISO, SPP, PJM, and ERCOT.
- Enhanced Python simulation pipeline and integration with Google Cloud databases to support large-scale, long-term simulations.

**Powerline (FKA gigElev)**                                                                         **San Francisco, California**
*Data Scientist Intern*                                                                             *May. 2022 – Aug. 2022*
- Developed APIs to interact with data sources and databases.
- Built production-level real-time machine learning models for forecasting various aspects of the electricity grid.

**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)
- **Project 3:** The U.S.-Israel Energy Center, managed by the Israel-U.S. Binational Industrial Research and Development (BIRD) Foundation. More details can be found here.

**Technical University of Darmstadt**                                           **Darmstadt, Germany**

*Research Assistant*                                                            *Oct. 2018 - May 2019*

- Collaborative Research Center 1053 MAKI – Multi-Mechanisms Adaptation for the Future Internet (more details 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: Dr. Lalitha Sankar, Dr. Oliver Kosut)

**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: Dr. 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

Foundation of Statistical Machine Learning, Machine Learning in Smart Grids, Random Signal Theory, Convex Optimization, Topics in Reinforcement Learning, 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.

## PUBLICATIONS

- **Nima T. Bazargani**, Lalitha Sankar, and Oliver Kosut, "A Semi-Supervised Approach for Power System Event Identification," *arXiv preprint arXiv:2309.10095*, 2024. [arXiv:2309.10095]
- 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.*
- **Nima T.Bazargani**, Gautam Dasarathy, Oliver Kosut, and Lalitha Sankar, "A Machine Learning Framework for Event Identification via Modal Analysis of PMU Data," in the *IEEE Transactions on Power Systems, 2022*, doi: 10.1109/TPWRS.2022.3212323.
- 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.*
- **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.*
- **N.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.*
- Z. Afshar, **N.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.*
- **N.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.*
- **N.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.*

# 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 Technische Universität 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.