ZHENYU ZHAO

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EDUCATION

Temple University, Philadelphia, PA, USA   Jan 2021 – Dec 2024
Ph.D. in Computer and Information Science (in 2021 Spring)
Ph.D. in Electrical and Computer Engineering

George Washington University, Washington D.C., USA   Aug 2018 – May 2020
Master of Science in Electrical Engineering

Wuhan University of Technology, Wuhan, Hubei, China   Aug 2014 – May 2018
Bachelor of Engineering in Automation

WORK EXPERIENCE

Research Associate   Apr 2025 - Present
Imperial College London   *London, England*

  - Participating in Horizon Europe projects *R3volution* and *CSSBoost*
  - Supervised Master students' thesis projects

Research Associate   Nov 2024 - Mar 2025
University of Birmingham   *Birmingham, England*

  - Contributed to the preparation of research and grant proposal
  - Mentored first-year PhD students

Grid Software Intern   Jun 2024 - Aug 2024
Siemens   *Minnetonka, MN*

  - Participated in upgrading Transmission Network Analysis from Fortran to Python

Intern   Jun 2023 - Apr 2024
PJM Interconnection   *Audubon, PA*

  - Developed a periodic retrieval system to archive transmission-level nodal load data
  - Applied machine learning models for net nodal load disaggregation and prediction

RESEARCH AND TEACHING EXPERIENCE

Graduate Research Assistant   Jan 2021 - Nov 2024
Temple University   *Philadelphia, PA*

  - Designed and implmented deep learning model for nodal load disaggregation based on
    nodal–zonal mapping, in partnership with `PJM Interconnection`
  - Developed an LSTM-based deep learning model for hydrogen fuel cell health monitoring with
    `Plug Power`, enabling predictive diagnostics

Graduate Teaching Assistant   Jan 2021 - Dec 2021
Temple University   *Philadelphia, PA*

  - Lectured and graded for CIS 1051 (Introduction to Python) lab,
    CIS 3319 (Wireless Network and Security) lab, and CIS 3329 (Network Architectures) lab

ACADEMIC SERVICES

  – Reviewer for leading journals and conferences in power and transportation electrification, including: *IET Smart Grid*, *IEEE Transactions on Smart Grid*, *IEEE Transactions on Transportation Electrification*, *IEEE Vehicle Power and Propulsion Conference (VPPC)*, *IEEE Conference on Decision and Control (CDC)*, and *IEEE Energy Conversion Congress and Exposition (ECCE)*

  – Session Chair at the *2025 IEEE Energy Conversion Congress & Exposition (ECCE)*, Philadelphia, PA, October 19–23, 2025

TECHNICAL SKILLS

- **Data Science & Modeling:** Quantitative analysis, time-series modeling, topological data analysis, graph neural networks (GNNs), forecasting, and anomaly detection

- **Machine Learning:** Supervised and semi-supervised learning, deep learning architectures, spatio-temporal modeling, and model interpretability

- **Programming Languages:** Python (NumPy, Pandas, PyTorch, scikit-learn), SQL, FORTRAN

RESEARCH AREAS

- Machine learning applications in life cycle assessment, circular economy evaluation, and risk management

- Transmission-scale renewable energy modeling and optimization

- Power systems monitoring using graph-based deep learning

- Prognostic health monitoring system via deep learning

SELECTED PUBLICATIONS

Journal Articles

- **Z. Zhao**, D. Moscovitz, S. Wang, L. Du, and X. Fan, "Deep Factorization Machine Learning for Disaggregation of Transmission Load Profiles With High Penetration of Behind-the-Meter Solar," *IEEE Transactions on Industry Applications*, doi: 10.1109/TIA.2025.3530864

- D. Moscovitz, **Z. Zhao**, L. Du, and X. Fan, "Semi-Supervised, Non-Intrusive Disaggregation of Nodal Load Profiles with Significant Behind-the-Meter Solar Generation," *IEEE Transactions on Power Systems*, doi: 10.1109/TPWRS.2023.3334995

- S. Ziyabari, **Z. Zhao**, L. Du, and S.K. Biswas, "Multi-Branch ResNet-Transformer for Short-Term Spatio Temporal Solar Irradiance Forecasting," *IEEE Transactions on Industry Applications*, doi: 10.1109/TIA.2023.3285202

Conference Papers

- **Z. Zhao**, D. Skidmore, K. Swider-Lyons, and L. Du, "Data Driven Prognostic Health Monitoring of Key Components in Hydrogen Fuel Cells," *2025 IEEE Transportation Electrification Conference & Expo + Electric Aircraft Technologies Symposium (ITEC+EATS)*, Anaheim, CA, June 18–20, 2025, in press

- M. Chen, **Z. Zhao**, L. Du, and Y. Chen, "Disaggregation of EV Charging Profiles via Spatio-Temporal Graph Convolutional Networks," *2025 IEEE Transportation Electrification Conference & Expo + Electric Aircraft Technologies Symposium (ITEC+EATS)*, Anaheim, CA, June 18–20, 2025, in press

- **Z. Zhao**, M. Chen, L. Du, D. Moscovitz, and X. Fan, "GNN-Based Autoformer For Imputing Missing Data in Transmission Grid Load Profiles Considering Seasonal Patterns," *2025 IEEE Power & Energy Society General Meeting (PESGM)*, Austin, TX, July 27–31, 2025, in press

- M. Chen, **Z. Zhao**, L. Du, Y. Chen, and D. Moscovitz, "Characterization of Transmission Nodal Profiles via Graph-Embedded Topological Data Analysis," *2025 IEEE Power & Energy Society General Meeting (PESGM)*, Austin, TX, July 27–31, 2025, in press

- D. Moscovitz, **Z. Zhao**, L. Du, and X. Fan, "Bilevel Nodal Behind-the-Meter Solar Disaggregation Under Unexpected Extreme Weather Conditions," *2024 IEEE Power & Energy Society General Meeting (PESGM)*, Seattle, WA, July 21–25, 2024, pp. 1–5, doi: 10.1109/PESGM51994.2024.10689080

- **Z. Zhao**, D. Moscovitz, L. Du, and X. Fan, "Factorization Machine Learning for Disaggregation of Transmission Load Profiles with High Penetration of Behind-the-Meter Solar," *2023 IEEE Energy Conversion Congress & Exposition (ECCE)*, Nashville, TN, October 29–November 2, 2023

- **Z. Zhao**, Y. Chen, and L. Du, "Modeling and Classification of EV Charging Profiles Utilizing Topological Data Analysis," *2023 IEEE Transportation Electrification Conference & Expo (ITEC)*, Detroit, MI, June 19–21, 2023

- **Z. Zhao**, D. Moscovitz, S. Wang, X. Fan, and L. Du, "Semi-Supervised Disaggregation of Daily Load Profiles at Transmission Buses with Significant Behind-the-Meter Solar Generations," *2022 IEEE Energy Conversion Congress & Exposition (ECCE)*, Detroit, MI, October 9–13, 2022