

EDUCATION

Georgia Institute of Technology

Ph.D. / M.S. in Computational Science and Engineering

AUG 2019 – DEC 2025

Atlanta, Georgia

Ph.D. Thesis: **Unveiling Hidden Pathology Dynamics: Controlled Bio-Mechanistic Generative Modeling of Disease Progression**

Master's Thesis: **Using WiFi Mobility Data for Modeling Covid-19 on Universities' Campuses.**

Presbyterian College

B.S. in Economics (GPA: 3.95/4.00)

JULY 2016 – MAY 2019

Clinton, South Carolina

TECHNICAL SKILLS

Languages: Python, Matlab, R, C++, JavaScript, SQL

Developer Tools: VS Code, Jupyter, Git, Linux, GitHub, Brazil

Platforms: PyTorch, Tensorflow, Hadoop, Spark, PostgreSQL, RedShift, AWS (Step Functions, S3, Batch), CDK

Optimization: Numerically iterative methods, Linear/integer/convex/online optimization

Generative Models: Variational Bayesian models, Diffusion Models, Time-series forecasting

Others: Resilient Network modeling, Stochastic Optimal Control

EXPERIENCE

Tesla

Senior Machine Learning Engineer, Tesla

FEB 2026 – PRESENT

Palo Alto, CA

- Developing machine learning models to unlock decision making on prognostics and targeted design actions based on predictive life models to drive the future of intelligent Tesla products.

Amazon

Applied Scientist Intern, Amazon Extra Large (AMXL)

MAY 2025 – AUG 2025

Bellevue, WA

- Developed and deployed a neural latent ODE model for station-level delivery forecasts with uncertainty quantification on attainment rates.
- Evaluated the model on all week+1 forecasts datasets, outperforming baseline model by 8 out of 9 parcel types and estimated to save \$7M on operational costs over 6 months for AMXL networks.
- Productionized the pipeline via AWS Step Functions with EC2 Batch, adopted by the Demand Planning Team.
- **Tech:** PyTorch, AWS (Step Functions, S3, Batch), CDK, SQL, Docker, Athena

Tesla

Data Scientist Intern, Charging Data and Modeling

SEP 2023 – DEC 2023

Palo Alto, CA

- Built weekday-matching logic for energy demand shift modeling, improving holiday forecast accuracy by 30%.
- Created a changepoint detection method using Fisher ratio and AUC-based thresholding, improving precision by 10%.
- **Tech:** PySpark, SQL, Pandas, Scikit-learn, Numpy, Scipy

Berkeley Lab

Research Scientist Intern, Building Technology Area

MAY 2023 – AUG 2023

Berkeley, CA

- Researched meta-learning for time series modeling of thermal dynamics using Ecobee smart home data [1].
- Experiments showed lower training cost and strong interpretability of physics-based behaviors.
- **Tech:** PyTorch, Scikit-learn

SELECTED PROJECTS

Bio-Mechanistic Generative Models — PyTorch, Gurobi

MAY 2024 – PRESENT

- Robust reconstruction of noisy epidemics with discrete network diffusion [2].
- Variational inference for evolving connectomes under neurodegeneration [3].
- Score-based generative modeling of pathological progression with stochastic optimal control [4].

Empirical WiFi Networks [5] — NetworkX, PySpark, Mesa

2020 – 2021

- Developed data pipeline for campus WiFi mobility data to simulate COVID-19 spread.
- Built agent-based models for policy simulations with hyperparameter tuning.

REFERENCES

- [1] Xie, Jiajia, Han Li, and Tianzhen Hong: *A lifelong meta-learning approach for learning deep grey-box representative thermal dynamics models for residential buildings*. Energy and Buildings, page 114408, 2024.
- [2] Xie, Jiajia, Chen Lin, Xinyu Guo, and Cassie S Mitchell: *Source robust non-parametric reconstruction of epidemic-like event-based network diffusion processes under online data*. Big Data and Cognitive Computing, 9(10):262, 2025.
- [3] Xie, Jiajia, Raghav Tandon, and Cassie S Mitchell: *Network diffusion-constrained variational generative models for investigating the molecular dynamics of brain connectomes under neurodegeneration*. International Journal of Molecular Sciences, 26(3):1062, 2025.
- [4] Xie, Jiajia, Chen Lin, Xinyu Guo, and Cassie S Mitchell: *Dynamic brain connectome vulnerability in neurodegeneration via score-based network diffusion*. In Review by Brain, 2025.
- [5] Das Swain, Vedant, Jiajia Xie, Maanit Madan, Sonia Sargolzaei, James Cai, Munmun De Choudhury, Gregory D Abowd, Lauren N Steimle, and B Aditya Prakash: *Empirical networks for localized covid-19 interventions using wifi infrastructure at university campuses*. Frontiers in Digital Health, 5:1060828, 2023.
- [6] Xie, Jiajia, Christin J Salley, Neda Mohammadi, and John E Taylor: *Online confirmation-augmented probabilistic topic modeling in cyber-physical social infrastructure systems*. In *Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, pages 390–397, 2023.
- [7] Rodriguez, Alexander, Anika Tabassum, Jiaming Cui, Jiajia Xie, Javen Ho, Pulak Agarwal, Bijaya Adhikari, and B Aditya Prakash: *Deepcovid: An operational deep learning-driven framework for explainable real-time covid-19 forecasting*. In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 35, pages 15393–15400, 2021.
- [8] Cramer, Estee Y, Evan L Ray, Velma K Lopez, Johannes Bracher, Andrea Brennen, Alvaro J Castro Rivadeneira, Aaron Gerding, Tilmann Gneiting, Katie H House, Yuxin Huang, et al.: *Evaluation of individual and ensemble probabilistic forecasts of covid-19 mortality in the united states*. Proceedings of the National Academy of Sciences, 119(15):e2113561119, 2022.
- [9] ElSherief, Mai, Koustuv Saha, Pranshu Gupta, Shrija Mishra, Jordyn Seybolt, Jiajia Xie, Megan O’Toole, Sarah Burd-Sharps, and Munmun De Choudhury: *Impacts of school shooter drills on the psychological well-being of american k-12 school communities: a social media study*. Humanities and Social Sciences Communications, 8(1):1–14, 2021.