Gabriel Thompson

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Education

North Carolina State University, 2022 – 2026
B.S. Physics & Electrical Engineering; 4.0 GPA, 1st in class of ~10,000 students
- Double major in **Physics** and **Electrical Engineering**
- **Caldwell Fellows Scholar** – A prestigious scholarship focused on **servant-leadership**, offered to about 30 students per undergraduate class
- *Relevant coursework*: Neural Networks, Physics Informed Neural Networks, Intro to Machine Learning, Linear Algebra, Calculus I+II+III, Differential Equations, Statistics, Signal Processing, Linear Transformations/Matrix Theory, Intro to Numerical Analysis, Theoretical Foundations of Machine Learning, Random Processes

Publications

Gabriel Thompson, Kai Yue, Chau-Wai Wong, and Huaiyu Dai, "NTK-DFL: Enhancing decentralized federated learning in heterogeneous settings via neural tangent kernel," International Conference on Machine Learning, Vancouver, Canada, 13–19 Jul. 2025. Code: https://github.com/Gabe-Thomp/ntk-dfl . Paper Link: https://arxiv.org/abs/2410.01922 .

Research Experience

MSRP Summer Research Intern, *Massachusetts Institute of Technology* 06/2025 – present
- Currently fine-tuning language models to improve Bayesian reasoning capabilities in the context of preference elicitation
- Working in the Collaborative Learning and Autonomy Research (CLEAR) lab, MIT CSAIL, supervised by Dr. Andreea Bobu

Deep Learning Undergraduate Research, *NC State University* 01/2024 – present
- Working on federated learning supervised by Dr. Chau-Wai Wong
- **First author** of paper on federated learning accepted at ICML 2025. See *publications* section above

Provost's Professional Experience Program, *NC State University* 08/2023 – 05/2024
- Assist in editing papers and books in nanotechnology and risk (such as Pandemic Resilience)
- Contributed to grant-writing for Public Communication of Science and Technology Initiative (PCOST)

Professional Experience

Data Science Intern, *Ingersoll Rand* 06/2023 – 08/2023
- Analyzed promotional data using various Python data science libraries and statistical techniques to assess effectiveness of promotional deals
- Examined historical forecast data and provided recommendations for model improvement in low-volume supply chain
- Conducted lead time alignment between ERP systems to optimize operational efficiency

Food Service Industry, Lifeguard, *2020-2023*

Skills

Programming: Python (ML stack), Git, C, Matlab, Mathematica | **Mathematics:** Calculus, Linear Algebra, Statistics |
ML/Data Science: PyTorch, Scikit-learn, Numpy, Pandas | **Deep Learning:** Language Models, Federated Learning |
Office Skills: Academic Writing (LaTeX typesetting), Word, Powerpoint | **Soft Skills:** Leadership, Communication

Awards

Caldwell Fellows Scholar; Frederik J. Tischer EE Scholarship; Duke Power Scholarship; Dean's List; NCSU Honors College

Projects

Classifiers
Built CNN-based classifier for audio using spectrograms and classifier for accelerometer data. Won 1st place of all students

Paper Replication
Replicated various machine learning papers such as GPT2 and mechanistic interpretability work