Gabriel Thompson

INFORMATION

EMAIL
gabe.t.asher@gmail.com

PHONE
(727) 278-4121

GITHUB
https://github.com/Gabe-Thomp

LINKEDIN

PROJECTS

- Proposed NTK-DFL, a decentralized paradigm for federated learning that makes use of the neural tangent kernel for training neural networks
- Built a CNN-based music genre classifier using spectrogram analysis
- Built a classifier of exercise activity for accelerometer data
- Worked on representation learning for image data, focused on teaching a variational autoencoder equivariant transformations through physics-informed constraints

TECHNICAL SKILLS

- Programming: Python (ML stack), C, Matlab
- ML/Data Science: PyTorch, Scikit-learn, Numpy, Pandas, etc.
- Deep Learning
- Mathematical Computing: Mathematica, SymPy
- Strong Mathematical Background

ACTIVITIES

- Musical Empowerment: **President of organization,** volunteer music teacher for underprivileged students around the area
- Music - piano, guitar, trumpet
- Avid runner - marathon
- Habitat for Humanity - GIS Mapping

INTERESTS

- Artificial Intelligence
- Machine Learning
- Mathematics
- Programming
- Physics
- Movement
- Music
- Service

ABOUT ME

Dedicated undergraduate student with a strong foundation in physics and electrical engineering. Highly motivated and extremely curious, with a proven track record in deep learning research and data science. Eager to contribute to cutting-edge ML and data science projects through further internships and research opportunities.

RESEARCH EXPERIENCE

Summer 2025 (upcoming)
MIT Summer Research Program

January 2024-Present, Summer 2024 ASSIST REU (Full-Time)
Deep Learning Undergraduate Research | North Carolina State University

- Work on federated learning with Dr. Chau-Wai Wong
- **First author** of paper on federated learning in ML (under review)
  - *NTK-DFL: Enhancing Decentralized Federated Learning in Heterogeneous Settings via Neural Tangent Kernel*
  - Paper Link, Repository Link
- Currently working on representation learning of biomolecules

---

August 2023-May 2024
Provost's Professional Experience Program | PCOST @ NCSU

- Assist in editing papers and books in nanotechnology and risk (such as Pandemic Resilience)
- Contributed to grant-writing in interdisciplinary scientific fields

PROFESSIONAL EXPERIENCE

Summer 2023
Data Science Intern | Ingersoll Rand

- Analyzes effectiveness of promotional deals using various Python data science libraries to provide actionable insight on cost-savings
- 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

2020-2022
Food Service Industry | Inizio Pizza & Chick-fil-A | Lifeguard

EDUCATION

2022-2026
North Carolina State University - Physics & Electrical Engineering

- Double major in **Physics** and **Electrical Engineering**: **4.0 GPA**, **1st in class**, Frederik J. Tischer EE Scholarship
- Member of the NCSU Honors College
- **Caldwell Fellows Scholar** – A prestigious scholarship based around involved **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, Statistics, Signal Processing, Linear Transformations/Matrix Theory, Intro to Numerical Analysis

2018-2022
Hough High School

- **GPA**: 4.5, **SAT**: 1590
- Scored **5's across all 12 AP Exams**
- **Extracurriculars/Honors**: National Honors Society, Assist to Achieve, Marching Band, **President** of United Sound

2004-Present
Self Taught

- Python Programming
- Deep Learning
- Machine Learning Fundamentals
- Piano, Guitar
- Symbolic Programming