Tate Rowney

taterowney.com | trowney@andrew.cmu.edu | +1 (415) 265-8437

EDUCATION

Carnegie Mellon University, Pittsburgh, PA — May 2028
- Intended Major: Bachelor of Science in Mathematics

Relevant Coursework: Programming in C, Linear Algebra, Multivariate Calculus, Theoretical Computer Science

The Bay School of San Francisco, San Francisco, CA — June 2024
- Finalist, National Merit Scholarship

EXPERIENCE

AI and Formal Mathematics Researcher (2024-present)
- Developing an ML-based system to automatically optimize formal mathematical proofs in Lean 4
- Assisting faculty and PhD students in CMU's Language Technologies and Hoskinson Center with data scraping, preprocessing, and supervised fine-tuning of AI agents

Computer Vision Researcher (2023-2024)
- Invented and implemented a novel machine learning-based approach using TensorFlow to recognize handwritten mathematical expressions
- collaborated with a Data Science researcher to publish results

IT Support Assistant (Summers, 2021-2023)
- Diagnosed and repaired malfunctioning office technology
- Simplified various tasks through scripting and automation

PROJECTS

Jailbreaking Prevention in LLMs
- Currently leading a small team to explore and test novel strategies to prevent jailbreaking in language models as part of the Carnegie AI Safety Initiative
- Using adversarial learning, supervised fine-tuning, and RL to automatically identify and fix jailbreaking opportunities

Foot Traffic Analysis and Prediction for Pittsburgh Friends of the Riverfront
- Working with a team to assist the Friends of the Riverfront, a nonprofit that maintains Pittsburgh's waterfront trails, in forecasting trail usage for maintenance and expansion
- Creating statistical models, time-series forecasting, and React-based interactive visualizations

NASA University Student Launch Initiative
- Working alongside 10+ other students to develop avionics software for Carnegie Mellon Rocket Command
- Personally implemented Kalman filter-based data smoothing and flight-path prediction on embedded microcontroller, as well as onboarding and guiding new members

SKILLS

- **Programming languages:** Python, Javascript, HTML/CSS, Arduino/C++; some proficiency in Java, Matlab, Lean 4, Standard ML
- **Frameworks and Libraries:** PyTorch, TensorFlow, ReactJS, Numpy, Matplotlib, Flask, SocketIO, Bash
- **Other skills:** Google Suite (including Google Apps Script); LaTeX