Ziming Yuan

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Education

Swarthmore College | Swarthmore, PA — Aug 2020 - May 2024

- Bachelor of Arts with a double major in Computer Science and Mathematics | *GPA*: 4.0/4.0
- **Relevant Coursework**: Data Structures and Algorithms, Object-Oriented Programming, Computer Systems, Artificial Intelligence, Parallel and Distributed Computing, Security and Privacy, Computer Vision, Mobile Robotics, Linear Algebra

Carnegie Mellon University | Pittsburgh, PA — Aug 2024 - Dec 2025

- Incoming Master of Science in Computer Science

Technical Skills

- **Programming Languages**: Java, TypeScript, Python, C/C++, JavaScript, SQL, HTML, CSS, CUDA, Bash, C#
- **Frameworks**: React.js, Next.js, Node.js, Spring Boot, Express.js, Flask, Bootstrap, Pandas, TensorFlow/Keras, Django
- **Tools**: Git, Unix/Linux, Docker, AWS S3, MongoDB, MySQL, PostgreSQL, Figma, Postman, Vercel, Heroku

Professional Experience

Technology Intern — Jun 2023 - Aug 2023

Alignment: Interfaith Contemplative Practices — Bryn Mawr, PA

- Engaged in full stack development and engineered an Advent calendar web app from end to end with **JavaScript**, **React**, and Tailwind CSS, achieving 10K+ views through robust **REST APIs**, NoSQL **MongoDB** database, and Next.js backend.
- Managed the full deployment cycle on Vercel and MongoDB Atlas, ensuring high performance and scalability.
- Designed customizable and intuitive web prototypes in Figma for the calendar management website, refining the responsive web design based on user feedback.

Software Engineer Intern — Jun 2023 - Aug 2023

Seek — San Francisco, CA

- Developed a storytelling module with Qwen and GPT API for interactive narratives. Integrated custom-built decision trees to enable user-driven story progression, resulting in a 20% enhancement in narrative coherence and user engagement.
- Employed **Python** and **TensorFlow** to refine language models, ensuring cultural and linguistic accuracy.
- Integrated real-time, AI-generated story features into Next.js modules with **Typescript**, boosting educational outcomes.

Software Engineer Intern — May 2023 - Jun 2023

Symposium Lab — Mountain View, CA

- Contributed to the agile frontend development and implemented dashboards, researcher profiles, and publication pages, boosting user engagement by 25% and streamlining access to healthcare data analytics and research intelligence.
- Engaged in code review and applied **ReactJS**, Material-UI, and Django REST APIs for seamless UI/UX and data integration.

Research & Projects

Research Assistant — Jan 2024 - present

High-Performance Computing Research — Swarthmore College, PA

- Evaluating CUDA and MPI-CUDA hybrid implementations against **C** and **C++** sequential code in wavefront-style dynamic programming, aiming to achieve algorithmic improvement and speed-up in solving large-scale computational problems.
- Executing performance benchmarks on ACCESS cloud clusters to evaluate parallelization in CPU and GPU environments, optimize architecture usage, and enhance the existing MPI-based model for advanced distributed systems.

Research Assistant — Jan 2023 - present

Differential Privacy Research — Swarthmore College, PA

- Evaluating differential privacy algorithms, including Ngram, DPT, AdaTrace, and DP-loc on sequential data, measuring the accuracy of synthetic trajectories against original datasets across varying privacy budgets using **Java**.
- Conducting error analysis and data visualization using **Python Pandas** and **Seaborn**, revealing critical model constraints.
- Enhancing synthetic trajectory utility and optimizing the trade-off between data integrity and ethical data practices.

Research Assistant — Jul 2023 – Dec 2023

AI Harms and Deepfake Research — Swarthmore College, PA

- Conducted content provenance research to develop interfaces that trace and display sources of online information, targeting the reduction of misinformation and bias.
- Developed a web repository of Deepfake content from media and news APIs for impact analysis using **Flask** and AJAX.
- Applied deepfake detection algorithms for content verification and quantified AI-induced social harms.

Developer — Nov 2022 - Dec 2022

FIFA World Cup Player Image Categorization — Swarthmore College, PA

- Incorporated machine learning techniques using **TensorFlow** to develop a Convolutional Neural Network, classifying 41,600 FIFA World Cup player images by team, achieving a 70% accuracy rate.
- Streamlined comprehensive image dataset pre-processing and implemented Haar Cascade algorithm for facial recognition optimization, boosting model accuracy by 15%.