

Arata Katayama

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EDUCATION

Dual Joint BS/BA – *Columbia University, New York, NY*

Aug 2024 – May 2026 (Expected)

B.A. in Computer Science – *Earlham College, Richmond, IN*

Aug 2021 – May 2024

- Cumulative GPA: 3.95 / 4.00

Relevant Hard Skills: Software Development / Testing, Python (Proficient), C/C++ (Advanced), PyTorch (Intermediate), Git

Relevant Courseworks: Algorithms, Database Systems, Natural language Processing, Parallel Optimization for Robotics

Extracurricular: Columbia Space Initiative, Columbia University Formula Racing, Climbing Club

PROJECTS & EXPERIENCE

Health for International Students (React / Node.js)

Nov 2024 – Present

Columbia University

- Leading full-stack development of a web platform to help international students navigate the U.S. healthcare system

Robotics Research (Python)

Oct 2024 – Dec 2024

School of Engineering and Applied Science, Columbia University

- Developed a parallelized decentralized Nonlinear Model Predictive Control (NMPC) framework for multi-agent trajectory optimization
- Implemented a GPU-accelerated algorithm for obstacle prediction using CUDA and Numba's Just-In-Time (JIT) compiler, optimizing computational efficiency in complex multi-agent environments

NLP Research (PyTorch)

Nov 2024 – Dec 2024

School of Engineering and Applied Science, Columbia University

- Optimized Mistral-7B's hyperparameters for zero-shot summarization, improving formal text handling and addressing truncation and hallucination.
- Benchmarked Mistral against BART on XSum and Reddit datasets, demonstrating superior formal content summarization while identifying informal text limitations.

AI Research Assistant (C/C++)

May 2023 – July 2023

Computer Science Department, Earlham College

- Collaborated with Professor Sofia Lemons to implement a domain-independent planning code base for heuristic algorithm problem domains
- Explored A* and beam search variants by engaging in weekly analyses of research papers with the AI group at the University of New Hampshire
- Reduced the number of expanded nodes by 30% in A* search for specific problem domains

LEADERSHIP & COMMUNITY

Google Developers Student Club, Co-Lead

Aug 2022 – May 2024

Earlham College

- Navigated a cross-functional team of 15 members to architect a web application for study room occupancy management, promoting a more productive study environment
- Led backend development, implementing robust database management and efficient API integrations using Python Flask and SQLite

Teaching Assistant for Computer Science

Aug 2022 – Dec 2022

Computer Science Department, Earlham College

- Cultivated problem-solving skills of 20 students by providing them guidance through python programming and coding logics
- Communicated with students and professors to identify students in need of additional support, extending assistance beyond scheduled TA hours to ensure their academic success

SKILLS AND OTHERS

Field Interests:

- Software Engineering
- AI & ML
- Parallel Computing

Academic Interests:

- Astronomy
- Mathematics
- Physics

Languages:

- Japanese (native)
- English (fluent)

Other Interests:

- Nature / Outdoor
- Climbing
- Traveling