Chengyu "Cathy" Fan

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Education

Colby College, Waterville, ME, USA *Expected May 2026*
Bachelor of Arts
Majors: Computer Science (AI Concentration), Mathematical Sciences
Minor: Statistics

Research Experience

Research Assistant – Pose Estimation *Dec 2024 – Present*
Human, MachiNe, and Environment (HUMANE) Lab, Colby College
Advisor: Dr. Tahiya Chowdhury

- Developing PoseDoc/Pose-idon, an interactive tool that helps users inspect, refine, and customize pose annotations more efficiently.
- Proposing Occlusion Index (OI), a metric that quantifies the extent of occlusion in an image
- Focused on tools and metrics that enhance dataset quality and model robustness in pose estimation

Research Assistant – Multimodal Alignment *May 2024 – Dec 2024*
Department of Computer Science and Psychology, Colby College
Advisors: Dr. Tahiya Chowdhury, Dr. Veronica Romero

- Conducted research on three different multimodal alignment methods to quantify human movement coordination
- Built towards the larger goal of finding a multimodal analysis framework

Research Assistant – LLM Agent Simulation *Jan 2024 – Oct 2024*
Davis Institute of Artificial Intelligence (Davis AI), Colby College
Advisors: Dr. Michael Yankoski, Dr. Trenton Ford

- Contributed to development of a multi-agent simulation platform (Comp-Husim) powered by generative AI models
- Created 60+ agents with personalities, social status, and background stories and have them play games with each other for observing human-like behaviors

Research Assistant – Computer Vision for Sustainability *Feb 2023 – May 2023*
Davis AI, Colby College

- Created and annotated a 1,000-image drone dataset for coastal litter detection in Maine
- Developed a classification model achieving 92% accuracy on litter detection

Teaching Experience

Mathematics Teaching Assistant *Sep 2025 - Present*
Department of Mathematics, Colby College

- Assisted in homework grading and problem-solving:
  - **MA262: Vector Calculus** - TA, Fall 2025

Computer Science Teaching Assistant *Feb 2023 – May 2025*
Department of Computer Science, Colby College

- Assisted in labs, grading, and student support across multiple upper- and lower-level CS courses:
  - **CS343 Neural Networks** – TA, Spring 2025
  - **CS333 Programming Languages** – Quiz Grader, Fall 2024
  - **CS231 Data Structures and Algorithms** – TA, Spring 2023 & Spring 2024
  - **CS154 Natural Language Processing** – Lab TA, Fall 2023

Work Experience

Software Development Intern Dec 2023 – Jan 2024
STE Transmission (Subsidiary of Sany Heavy Industry Co., Ltd), Changshu, China
Developed an online platform to monitor power consumption of high-energy industrial machines. Utilized MySQL to filter and organize data extracted from API calls within the company's internal network.

Machine Learning Intern May 2023 – Aug 2023
Co-hosted by SureStart & Davis AI, Colby College
Supervised by Dr. Amanda Stent. Completed on-site orientation and intensive curriculum in machine learning. Collaborated on the design and evaluation of a text-to-3D generative AI model using Neural Radiance Fields and Diffusion Models.

Peer-Reviewed Publications

* indicates equal contribution.

[p1] **Fan, C.** & Chowdhury, T.(2025). **PoseDoc: An Interactive Tool for Efficient Keypoint Annotation in Human Pose Estimation.** In *Proceedings of the 27th International Conference on Multimodal Interaction (ICMI '25).*(Accepted, to appear.)

[p2] **Fan, C.** & Chowdhury, T.(2025). **When Pose Estimation Fails: Measuring Occlusion for Reliable Multimodal Interaction.** In *Companion Proceedings of the 27th International Conference on Multimodal Interaction (ICMI Companion '25).* (Accepted, to appear.)

[p3] **Fan, C.**, Romero, V., Paxton, A., & Chowdhury, T. (2024). **Towards Multimodality: Comparing Quantifications of Movement Coordination.** In *Companion Proceedings of the International Conference on Multimodal Interaction (ICMI Companion '24)*

[p4] **Fan, C.***, Tariq, Z.*, Bhuiyan, N. S., Yankoski, M. G., & Ford, T. W. (2024). **Comp-HuSim: Persistent Digital Personality Simulation Platform.** In *Adjunct Proceedings of the 32nd ACM Conference on User Modeling, Adaptation and Personalization (UMAP Adjunct '24).*

Presentations & Posters

1. **"Towards Multimodality: Comparing Quantifications of Movement Coordination"** Poster presented at the International Conference on Multimodal Interaction (ICMI), San Jose, Costa Rica, November 2024.

Grants and Awards

- Student Special Project Funding Awards ($500 each), Colby College, 2024 & 2025
- Compagna-Sennett Iterate and Expand Grant ($4,000), Halloran Lab for Entrepreneurship, Colby College – awarded for the startup *InclusiM* with two other co-founders.
- The Fairchild Internship Fund ($3,200), Davis Connects, Colby College, January 2024
- Iteris Hackathon — Award-Winning Team, Colby College, 2024
- Davis AI / Dataiku Datathon — Creativity in Presentation Award, Colby College, 2023

Extracurricular Activities

Colby Robotics (Co-President) Fall 2023 – Present
Organize and lead workshops on soldering, 3D printing, CircuitPython, Git/GitHub, and Micromouse.