Ashley Chen

Education

University of Illinois Urbana-Champaign **Champaign, IL**
Ph.D. in Computer Science | **GPA**: 3.87/4.0 Aug 2024 - Present
- **Advisor:** Dr. Nancy M. Amato
- **Research Interests:** Artificial Intelligence, Biological Neural Networks, NeuroAI

University of Minnesota Twin Cities **Minneapolis, MN**
B.S. in Computer Science | **Minor:** Philosophy | **GPA**: 3.96/4.0 Sept 2021 - May 2024

Publications

- Gressmann F, **Chen A**, Xie L, Amato N, Rauchwerger L. (May 2025) Position: It Is Time We Test Neural Computation In Vitro. 2025 ICML Position Paper
- Gressmann F, **Chen A**, Xie L, Dowden S, Amato N, Rauchwerger L. (Oct 2024) A primer on in vitro biological neural networks. 2024 NeurIPS Workshop: ML with New Compute Paradigms
- **Chen A**, Geng W, Rosenberg E. (March 2024) Calculus in Motion: 3D VR Exploration of Solids of Revolution. 2024 IEEE Conference on Virtual Reality and 3D User Interfaces

Experience

University of Illinois Urbana-Champaign **Champaign, IL**
Research and Teaching Assistant | Parasol Lab | Mind in Vitro Project Aug 2024 - Present
- Developing tokenization methods for spiking neural data to build neuro-foundation models
- Evaluating performance against baselines using state of the art metrics
- Exploring surrogate gradient techniques to optimize non-differentiable neural systems
- Published papers defining previous work in the field, key challenges, and potential research directions for NeurIPS 2024 and ICML 2025
- Working as Teaching Assistant for CS 440 Artificial Intelligence

Undergraduate Researcher | Parasol Lab | Mind in Vitro Project May 2023 - Dec 2023
- Constructed reservoir computing (RC) model using the biophysical neuron simulator Nengo
- Tested different architectures and parameters to compare RC against baselines

University of Minnesota Twin Cities **Minneapolis, MN**
Lead Developer | IEEE VR 2024 3DUI Contest Finalist Nov 2023 - March 2024
- Built VR app with interactive visualizations of multivariable calculus concepts
- Trained computer vision model and developed custom mesh generations for user input
- Presented VR application at the IEEE VR 2024 conference

Undergraduate Researcher | Swarm Robotics Program Sept 2022 - May 2023
- Wrote research proposal for adaptation of the Rolling Dispersion Algorithm for swarm robotics
- Designed custom marker-based pathing algorithm using Webots simulator

Medtronic **Moundsview, MN**
Computer Science Intern | Systems Technology Team | R&D Department May 2022 - Aug 2022
- Implemented signal processing methods in Matlab for accelerometer data from preclinical study
- Contributed to internal grant abstract and presented findings to R&D leadership

Computer Science Intern | Cardiac Diagnostics Team | R&D Department June 2021 - Aug 2021
- Evaluated effectiveness of heart failure detection algorithm from relevant patient data
- Analyzed millions of records for cardiac monitors and presented results in Spotfire

Skills

- **Languages:** Python, Matlab, C/C++, Java, GDScript, Typescript, SQL, JSON, HTML
- **ML/AI:** PyTorch, TensorFlow, Conda, Jupyter Notebook, Gym
- **Biophysical Neuron Simulators:** Nengo, Brian2
- **VR:** Godot 4, HMD
- **Robotics:** Webots
- **Mobile App Development**: Android Studio
- **Data Visualization Tools:** Matplotlib, Seaborn, Spotfire, MS Excel
- **Database Work:** Spark, SQL Server Management Studio, Firebase/Firestore
- **Development Tools:** Git, VSCode, Docker, Jira, HPC/Cluster computing

Leadership & Outreach

Illinois Women in CS | CS Mentor | University Organization **May 2025 - Present**

- Supports young women and non-binary people pursuing careers in CS at UIUC
- Mentoring multiple undergraduates for research and career development

Code the Gap | Head Curriculum Planner | University Organization **May 2022 - May 2024**

- Increases diversity in STEM fields by teaching Python to K-12 students
- Led meetings and coordinated responsibilities for other team members
- Wrote lessons and developed projects in response to student and mentor feedback

Technovation | Mentor and Volunteer | International Organization **Jan 2022 - May 2024**

- Empowers 10-18 year old girls and other gender minorities in computer science through an international app development competition
- Taught workshops about app development programs Thunkable and Android Studio
- Helped facilitate competitions, hackathons, and other events for local MN Technovation branch