

Eva Yi Xie

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Education

Princeton University

PH.D. IN QUANTITATIVE & COMPUTATIONAL NEUROSCIENCE

Princeton, NJ

Sep 2024 - present

- Centennial Fellowship (awarded to the entire duration of graduate study; 1 of 3 neuroscience recipients upon admission).
- Rotation Lab Advisors: Jonathan Pillow (current).

Massachusetts Institute of Technology

B.S. IN MATHEMATICS AND IN ARTIFICIAL INTELLIGENCE & DECISION-MAKING (DOUBLE MAJORS)

Cambridge, MA

Sep 2020 - May 2024

- GPA: 4.94/5.0 (Eta Kappa Nu). Concentration in Economics.

Research Experience

June 2024-present	Visiting Scientist; Intern , Theory & Modeling Group at Allen Institute (PI: Stefan Mihalas)
Sep 2023-present	Research Affiliate; Undergrad researcher , Fiete Lab at MIT McGovern Institute (PI: Ila Fiete)
Jan 2022-June 2024	Research Affiliate; Undergrad researcher , Poggio Lab at MIT CBMM (PI: Tomaso Poggio)
Sep 2022-June 2023	Mason Scholar for SuperUROP , Madry Lab at MIT CSAIL (PI: Aleksander Madry)
Feb 2021-Jan 2022	Undergrad Researcher , Biomechanics Group at MIT Media Lab (PIs: Hugh Herr & Ed Boyden)
June 2019-Nov 2019	Research Intern , Andolfatto Lab at Dept. of Biology, Columbia University (PI: Peter Andolfatto)

Publications

* denotes equal contributions. † denotes presenting author.

WORKSHOP PAPER & PRESENTATIONS

Xie, Y.*, Li, Y*, Ranganmani, A. (2023). Skip Connections Increase the Capacity of Associative Memories in Variable Binding Mechanisms. *NeurIPS Associative Memory & Hopfield Networks* in New Orleans, LA. [\[paper\]](#)[\[code\]](#)

CONFERENCE LONG ABSTRACTS & PRESENTATIONS

Xie, Y.†, Hwang, J., Brody, C., Tank, D., Fiete, I. (2024). A Multi-region Brain Model to Shed Light on the Role of Hippocampus in Spatially Embedded Decision Tasks. Presented as the first author at *Cognitive Computational Neuroscience (CCN) 2024* in Cambridge, MA, **and** at *Annual Neuroscience Conference (SfN) 2024* in Chicago, IL. [\[abstract\]](#)

Xie, Y.†, Rangamani, A., Miller E., Poggio T. (2023). Synaptic Plasticity Explains the Creation and Convergence of Ensembles During Interhemispheric Transfer of Working Memory. Presented as the first author at *Annual Neuroscience Conference (SfN) 2023* in Washington, D.C. [\[abstract\]](#)

Xie, Y.*, Li, Y*, Ranganmani, A.† (2023). Skip Connections Increase the Capacity of Associative Memories in Variable Binding Mechanisms. *Cognitive Computational Neuroscience (CCN) 2023* in Oxford, UK, **and** at *Computational Neuroscience Society Meeting (CNS) 2023* in Leipzig, Germany, **and** at Lake Conferences in Allen Institute, Seattle, MA. [\[paper\]](#)[\[code\]](#)

IN REVIEW

Xie, Y., Hwang, J., Brody, C., Tank, D., Fiete, I. A Multi-region Brain Model to Elucidate the Role of Hippocampus in Spatially Embedded Decision Tasks. **Intermediate results under review at International Conference on Learning Representations (ICLR) 2025.**

Xie, Y., Mihalas, S., Kuśmierz, L. Slow Transition to Chaos and Robust Reservoir Computing in Recurrent Neural Networks with Heavy-tailed Distributed Synaptic Weights. **Under review at Computational and Systems Neuroscience (COSYNE) 2025 and in prep for journal submission.**

IN PREP

Xie, Y., Hwang, J., Brody, C., Tank, D., Fiete, I. A Multi-region Brain Model to Elucidate the Role of Hippocampus in Spatially Embedded Decision Tasks. **Further results with experimental verification in preparation for journal.**

OTHER MEMOS

Xie, Y.*[‡], Engstrom, L.*, Madry, A. (2023). Is Network Dissection Confounded by the Spurious Correlation? Presented to MIT School of Engineering. [\[abstract\]](#)

Xie, Y. and Rangamani, A. (2022). Understanding the Role of Recurrent Connections in Assembly Calculus. *Center for Brains, Minds and Machines (CBMM) Memo 137*. [\[paper\]](#)

Industry R&D Experience _____

Summer 2023	IBM Research, Machine Learning R&D Intern , Cambridge, MA
January 2023	Microsoft, Machine Learning R&D Intern , Microsoft AI Development Acceleration Program, MA
Summer 2022	Meta, Full Stack Software Engineering Intern , Facebook App Monetization ENG, Menlo Park, CA
Summer 2021	Facebook, University Engineering Intern (iOS) , Menlo Park, CA

Selected Awards, Fellowships, & Grants _____

2024-2029	Centennial Fellowship , Princeton University (1 of 3 fellows awarded in Neuroscience)	
	First year tuition & stipend (Centennial Fellowship)	–
	Premium stipend supplement (Centennial Fellowship)	+\$4,000/yr
2024	MIT Dean of Science Fellowship , MIT (1 of 20 fellows in School of Science; declined)	
	Support for first 3 years of PhD study (Dean of Science Fellowship)	–
	Discretionary Fund (Dean of Science Fellowship)	\$10,000
2022	D.E. Shaw Discovery Fellowship , D.E. Shaw & Co. (1 of 37 recipients, 2 at MIT)	\$ 1,500
	Excellence in Teaching & Learning Award in Math , MIT Math Department (1 of 4 awarded)	\$ 1,000
2020	Bloomberg Grace Hopper Conference Scholar (Travel Grant) , Bloomberg & National Center for Women and Information Technology (1 of 20 selected)	–
2020	Minor Planet #17245 YiXie , LINEAR Program of MIT Lincoln Lab & Society for Science (for research excellence demonstrated at young age as a finalist in Science Talent Search)	NA
2020	Top 40 Finalist at Regeneron Science Talent Search , Society for Science (selected among 2,000+ entrants based on original scientific research, and achievement and leadership)	\$ 29,000

Presentations _____

INVITED TALKS

Feb 2024. *A Multi-region Brain Model to Elucidate the Role of Hippocampus in Spatially Embedded Decision Tasks*. Invited talk: BRAIN CoGS at Princeton Neuroscience Institute.

Oct 2023. *Insights from Assembly Calculus: Its Structure & Application in Neuroscience*. Invited talk: MIT Theory of Distributed Systems Group, Cambridge, MA.

CONFERENCE PRESENTATIONS

For other presentations, please refer to Publication section above. Here [‡] denotes presenting author.

Nov 2022. **Xie, Y.*[‡]**, Li, Y., Ranganmani, A. *Capacity of Associative Memories and Models of Working Memory in Assembly Calculus*. Poster: Advances in the Quest to Understand Intelligence [\[event\]](#), Cambridge, MA.

Teaching Experience _____

Winter 24	6.S191 Intro to Deep Learning , Teaching Assistant [website]	MIT EECS
Winter 23	6.S191 Intro to Deep Learning , Teaching Assistant [website]	MIT EECS
Spring 22	18.600 Probability & Random Variables , Teaching Assistant [website]	MIT Math

Selected Service & Outreach

PEER REVIEW

Computational and Systems Neuroscience (COSYNE) Conference 2025.
Cognitive Computational Neuroscience (CCN) Conference 2023, 2024.

SERVICE

2024-now	Mentor for PROJECT SHORT. Shrink the socioeconomic gap in graduate school by mentoring underrepresented students on graduate school application and process.	
2023-2024	Chair of MIT Judicial Review Board. Oversee election & UA operation; rule on ambiguity and concerns regarding interpretation of constitution and governing documents.	MIT UG Association
2023-2024	Cabinet Member of MIT Presidential Advisory Cabinet (PAC). 1 of 3 undergrad nominated and selected to advise MIT President, Sally Kornbluth, with student insight and perspective on a broad range of topics. Interviewed candidates for MIT's new DEI VP.	MIT President Office
2022-2024	Advisor of MIT Student Advisory Group for Engineering (SAGE). Provide Deans of Engineering with perspectives on education, engagement, & research, and organize .	MIT Dean's office
2022-2024	Advisor of MIT Student Advisory Group for EECS (USAGE). Meet weekly with EECS department leadership to advise on academic matters and student experience; represented EECS at bi-annual visiting committee.	MIT EECS office
2022-2024	Undergrad Associative Advisor with Prof. Nancy Lynch ('22), Prof. Mina Lukovic ('23).	MIT EECS office

OUTREACH

2020-2023	Director ('22-'23), Marketing Director ('21-'22) of MIT TechX. Oversee and manage MIT's largest tech-related student org of 100+ organizers from 6 sub-orgs: HackMIT (MIT's largest hackathon), MakeMIT (MIT's largest makeathon), XFair (MIT's largest student-direct career fair), THINK (MIT's research outreach to high schoolers), ProjectX (MIT's student project fund), Blueprint (largest MIT hackathon for high schoolers).	MIT & National and International Outreach
2020-2023	Publicity Chair of MIT IEEE/ACM. Connects MIT EECS and broader community of students, faculty, laboratories, and industrial companies through 50+ events; the first to initiate and build infrastructures for social media outreach.	MIT
2018-now	Senior advisor ('20-present), Director ('18-'20) of TeenHacks LI (501(c)3 non-profit). Grew a local event to the largest free 24-hour high school hackathon in Northeast, completely run by a team of 40 student organizers (15 organizers in '18); hosted over 1,000 students to-date (at university venue in NYIT, Hofstra University, & Adelphi University; remote during COVID) with fund raising over \$100k . Team awarded as the Long Island Innovator of the Year and recognized by mainstream media such as Fox Business, Newsdays, Wall Street Journal , as well as government officials e.g., Congressman Suozzi, Nassau County Executive.	Long Island, NY & National and International Outreach
2018-2020	Admin, Planner & Instructor of United East Athletic Association (501(c)3 non-profit). Organize the summer education program with 32 enrichment classes on STEM, literature, sports, cultural art appreciation, etc., with 550+ participants annually, with students from 5-14 years old and volunteers from various age groups.	Chinatown, NY