

Eva Yi Xie

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Education

Princeton University

Princeton, NJ

PH.D. IN COGNITIVE QUANTITATIVE & COMPUTATIONAL NEUROSCIENCE

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); Carlos Brody & David Tank (upcoming); Jonathan D. Cohen (upcoming).

Massachusetts Institute of Technology

Cambridge, MA

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

Sep 2020 - May 2024

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

Research Experience

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| 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. [\[paper\]](#)

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. [\[paper\]](#)

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., Kuśmierz, L., Mihalas, S. Dynamics of neural networks with cell-type-specific 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 _____

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| 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 _____

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| 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) Excellence in Teaching & Learning Award in Math , MIT Math Department (1 of 4 awarded) | \$ 1,500 \$ 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 _____

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| 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 Outreach & Professional Development

PEER REVIEW

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

SERVICE

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| 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

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|-----------|---|---|
| 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, LIU; 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 |