JASON LI

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EDUCATION

Columbia University — New York, NY
Ph.D. in Neurobiology & Behavior — *Expected May 2029*

Massachusetts Institute of Technology — Cambridge, MA
B.S. in Brain and Cognitive Sciences & B.S. in Artificial Intelligence and Decision Making — *2020–2024*

- GPA: 5.0/5.0
- **Selected Coursework:** Projects in Intelligence, Computational CogSci, Neural Computation, Neural Circuits, Perception, Computer Vision, Natural Language Processing, Machine Learning, Design & Analysis of Algorithms

RESEARCH EXPERIENCE

Natural Intelligence Lab — December 2023 – Present
PI: Hansem Sohn — *Sungkyunkwan University*

- Design recurrent neural network model for dot counting task to study compositionality in numerical cognition

Future Urban Mobility Group — Sept. 2020 – Feb. 2022, Mar. 2023 – Present
PI: Joseph Ferreira — *Massachusetts Institute of Technology*

- Developed novel Bayesian network synthetic population approach for agent-based transportation microsimulations
- Extend pipeline with optimization procedure that boosts spatial resolution and allows generalization across the U.S.

MetaConscious Group — February 2023 – December 2023
PI: Guangyu Robert Yang — *Massachusetts Institute of Technology*

- Built ring attractor recurrent neural network model of the *Drosophila* head direction tracking neural circuit and investigated biologically confirmed connectivity patterns that emerge to support firing rate noise robustness

Jazlab — February 2021 – January 2023
PI: Mehrdad Jazayeri — *Massachusetts Institute of Technology*

- Designed novel recurrent neural network architecture as a generative model of human eye movements during maze-solving; compared model to human behavior, finding evidence for a mental simulation strategy, shedding light on computational objectives guiding eye movements

JOURNAL PUBLICATIONS

1. Zhou, M., **Li, J.**, Basu, R., & Ferreira, J. (2022). Creating spatially-detailed heterogeneous synthetic populations for agent-based microsimulation. *Computers, Environment and Urban Systems*, 91, 101717. https://doi.org/10.1016/j.compenvurbsys.2021.101717.

CONFERENCES AND WORKSHOPS

1. **Li, J.**, Watters, N., Wang, Y. S., Sohn, H., & Jazayeri., M. (2022). Modeling human eye movements with neural networks in a maze-solving task. *Neural Information Processing Systems (NeurIPS) Gaze Meets ML Workshop*. In *Proceedings of Machine Learning Research*, 210, 98-112. https://arxiv.org/abs/2212.10367.

2. **Li, J.**, Watters, N., Sohn, H., & Jazayeri., M. (2022). Modeling human eye movements with neural networks in a maze-solving task. *Conference on Cognitive Computational Neuroscience 2022*. https://2022.ccneuro.org/proceedings/0000466.pdf.

3. **Li, J.**, Zhou, M., Basu, R., & Ferreira, J. (2021). Creating spatially-detailed heterogeneous synthetic populations for agent-based microsimulation. *World Society for Transportation and Land Use Research 2022 Conference*.

WORKS IN PROGRESS

1. Basu, R., **Li, J.**, & Ferreira, J. A generalizable framework to create synthetic populations at scale. Intended submission to *Nature Computational Science*.

Presentations

- **Li, J.**, Watters, N., Wang, Y. S., Sohn, H., & Jazayeri., M. Modeling human eye movements with neural networks in a maze-solving task.
    1. **Oral Presentation and Poster**, December 2022, Neural Information Processing Systems (NeurIPS) Gaze Meets ML Workshop.
    2. **Poster**, November 2022, "Advances in the quest to understand intelligence", symposium hosted by MIT Quest for Intelligence and the Center for Brains, Minds, and Machines (CBMM).
    3. **Poster**, August 2022, Conference on Cognitive Computational Neuroscience.
- **Li, J.**, Zhou, M., Basu, R., & Ferreira, J. Creating spatially-detailed heterogeneous synthetic populations for agent-based microsimulation.
    1. **Oral Presentation,** August 2021, World Society for Transportation and Land Use Research Conference.

Awards & Honors

NSF Graduate Research Fellowship 2024–2029
National Science Foundation

Dean's Fellowship 2024-2025
Columbia University Coordinated Doctoral Programs in Biomedical Sciences

Phi Beta Kappa (PBK) April 2024
Xi Chapter of Massachusetts, PBK Honor Society

Outstanding Undergraduate Academic Award April 2024 & 2023
MIT Department of Brain and Cognitive Sciences

Robert J. Glushko Prize for Outstanding Undergraduate Research in Cognitive Science April 2023
Cognitive Science Society

Outstanding Winner (top 0.1% worldwide) April 2020
COMAP Mathematical Contest in Modeling

Semifinalist (top 300 nationwide) January 2020
Regeneron High School Science Talent Search

4th Place Research Award May 2019
Intel High School International Science and Engineering Fair

Academic Service

Panelist, "Career Guidance for College Graduates", McGovern Institute Retreat, Newport, RI, June 2024.

Program Committee, Gaze Meets ML Workshop, Neural Information Processing Systems (NeurIPS), New Orleans, LA, October 2023.

Teaching

Teacher September 2020 – March 2024
MIT Educational Studies Program *Cambridge, MA*

- Designed and taught semesterly class on linguistics or Tuvan throat singing for 6-9th graders

Lab Assistant (6.1010 Fundamentals of Programming) September 2022 – December 2022
MIT Department of Electrical Engineering and Computer Science *Cambridge, MA*

- Guided students through Python programming labs at biweekly office hours for popular class of 380 students
- Tested and refined assignments in collaboration with course staff and other assistants

See also "dynaMIT STEM Outreach Program" below.

Leadership & Community Service

Volunteer September 2022 – May 2024
MIT Banana Lounge *Cambridge, MA*

- Moved 10,000 bananas to community lounge biweekly to reduce food insecurity and support student wellbeing
- Cleaned and restocked lounge daily to create a comfortable and cohesive atmosphere for student community

Treasurer & Board Member September 2020 – May 2024
MIT Asian American Initiative *Cambridge, MA*

- Lead student-run organization for pan-Asian American advocacy, allyship, and civic engagement (60 members)
- As treasurer, managed finances, determined spending priorities, initiated fundraising, and applied to grants
- Supported diversity & identity projects; lead educational workshops; collaborated with other marginalized groups

K-12 outreach volunteer December 2022 – January 2024
MIT Department of Brain and Cognitive Sciences *Cambridge, MA*

- Assisted research tour of neuroscience department building for autistic students from MGH Aspire Program
- Helped plan and run 4-day outreach program with Cambridge public schools and the MIT Museum; worked with 100 6th graders, guiding them through activities in neuroscience, artificial intelligence, and neuroethics

Director & Board Member September 2020 – September 2023
dynaMIT STEM Outreach Program *Cambridge, MA*

- **Director** (Aug. 2022 – Sept. 2023)
  - Planned and ran a free STEM program serving 90 underserved Boston middle school students every summer
  - Directed 20 board members through logistical planning: STEM curriculum design, publicity, finances, and more
- **Board member** (Sept. 2020 – Sept. 2023)
  - Designed and taught hands-on STEM activities during spring events and summer program
- **Mentor Relations Lead** (Sept. 2020 – Aug. 2022)
  - Recruited and trained 40 MIT undergrads on STEM curriculum, mentoring strategies, and teaching skills

Skills

Programming languages: *Proficient*: Python, R, Julia; *Familiar*: C/C++, Java, HTML/CSS/Javascript
Libraries: PyTorch, Gurobi
Other technical skills: LaTeX, Slurm for HPC, Adobe Eagle for PCB design, PCB soldering
Languages: Fluent in English and Mandarin Chinese