Kristine Zheng

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Education

Massachusetts Institute of Technology — Cambridge, MA
B.S. in Computer Science and Brain & Cognitive Sciences; GPA: 5.0/5.0 — Sept. 2020 – May 2024
Minor in Women's and Gender Studies

Awards & Honors

Phi Beta Kappa, MIT Xi Chapter — April 2024
MIT EECS|CS+HASS Undergraduate Research & Innovation Scholar — Sept. 2023 – Present
Eta Kappa Nu Society - MIT Beta Theta Chapter — Sept. 2023 – Present
MIT BCS Undergraduate Award (selected for exceptional academics and research) — April 2023, April 2024
Invited presenter at the MIT President Inauguration Fair: Garden of the Mind — April 2023
MIT Undergraduate Research Opportunities Program (UROP) Grant — Sept. 2021 – Aug. 2023
Princeton Neuroscience Institute Summer Internship Program (PNI-SIP) — June – Aug. 2022

Research

Cognitive Tools Lab, Stanford Psychology — Palo Alto, CA
Principal Investigator: Dr. Judith Fan, PhD — July 2024 – Present

Computational Cognitive Science Lab, MIT Brain and Cognitive Sciences — Cambridge, MA
Principal Investigator: Dr. Joshua Tenenbaum, PhD — Sept. 2022 – Present

- Design behavioral experiments and employ neural network models to investigate mechanisms supporting the visual perception of objects' physical properties, including elasticity and viscosity
- Leverage a Bayesian theory based intuitive physics engine model to assess the stability of programmatically generated 3D structures
- Spearhead novel behavioral studies characterizing developmental intuitive physics in collaboration with Dr. Laura Schulz

Niv Lab, Princeton Neuroscience Institute — Princeton, NJ
Principal Investigator: Dr. Yael Niv, PhD — June – Aug. 2022

- Created a real-time stimulus generator method and designed a study with multi-feature stimulus to investigate latent state inference
- Simulated a variety of reinforcement learning models (e.g. Markov decision processes, actor-critic), applied them to human behavioral studies, and uncovered insights into valenced experiences

DiCarlo Lab, MIT McGovern Institute — Cambridge, MA
Principal Investigator: Dr. James DiCarlo, MD, PhD — Sept. 2021 – May 2022

- Trained and evaluated object recognition and depth perception trained computational models on how they represent object size and how well their performance on size estimation tasks align with that of primates
- Conducted reviews for experiment directions and completed certifications in behavioral and animal research methods

Presentations & Publications

Kristine Zheng, Isabella Yu. *Jenga as a Performance Art: Computational Generation of Surprisingly Stable Structures.* IEEE MIT Undergraduate Research Technology Conference (URTC), Cambridge, MA, poster: October 8, 2023

Kristine Zheng, Rachel Bedder, Yael Niv. *How do Humans Generalize and Discriminate Between Experiences?* Society for Neuroscience, FUN Undergraduate Poster Session, San Diego, CA, poster: November 12, 2022.

Vivian C. Paulun, **Kristine Zheng**, Kohitij Kar. *Distributed population activity in the macaque inferior temporal cortex but not current deep neural networks predict the ponzo illusion.* Journal of Vision: Vision Sciences Society (VSS) Annual Meeting Abstracts, abstract: December 14, 2022

Yan Gong, Wentai Liu, Runyu Wang, Matthew Harris Brauer, **Kristine Zheng**, and Wen Li. *Stability Performance Analysis of Various Packaging Materials and Coating Strategies for Chronic Neural Implants under Accelerated, Reactive Aging Tests.* Micromachines, Paper: August, 26, 2020

Teaching

MIT 9.00: Introduction to Psychology Cambridge, MA
Teaching Assistant Feb. – May 2023, 2024

- Lead recitation lessons with slides for 30+ students and grade weekly quizzes and essays
- Create exam material for the course on Canvas, and facilitate lecture questions for 300 students

Splash! with MIT Educational Studies Program (ESP) Cambridge, MA
Volunteer teacher Nov. 2023

- Taught an exploration seminar about the neural underpinnings of perceptual illusions for high school students at an annual teaching weekend

Service & Leadership

Voxel Lab, MIT InnovationHQ Cambridge, MA
Staff Facilitator and Communications Lead June 2023 – Present

- Provide general equipment, shop safety, graphic design/CAD, and sewing machine training to students and organizations
- Organize and lead workshops related to art, music and technology and track student engagement and interest

Peers Leading Education About Sexuality and Speaking Up for Relationship Empowerment (PLEASURE), MIT Cambridge, MA
Peer Facilitator Feb. 2021 – Present

- Hold workshops for student groups to promote healthy relationships and reevaluate harmful societal norms
- Run campus events and facilitate challenging conversations across campus and in dorms

Undergraduate Association (UA), MIT Sept. 2020 – Present
Executive Member and Project Lead Cambridge, MA

- Oversee an arts and creativity focused committee to plan workshops and support student innovation through establishing biannual craft markets
- Member of Ad Hoc Committee on Arts, Culture, and DEI with administrative leaders and faculty to organize a campus-wide arts festival promoting campus diversity and artistic expression (Fall 2024)
- Coordinate communications with administration leaders, with alumni funders, and on media platforms for promoting community and combating food insecurity through Banana Lounge, a student-run space serving 20k free bananas per week

Professional Experience

TigerGraph Remote
Developer Advocate Intern Jan. – Aug. 2022

- Deployed TigerGraph, FastAPI, Flutter, and Firebase to develop a full-stack product recommendation application for educational demos
- Co-led a Full-Stack Flutter application workshop for Women Who Code as part of TigerGraph's Graph for All Challenge
- Expanded user engagement and resources through promoting an active developer community forum

UnitedHealthGroup Remote
Software Engineering Intern at Optum's Advanced Technology Collaborative June – Aug. 2021

- Constructed an internal course recommendation system by integrating machine learning algorithms and TigerGraph's graph SQL language (GSQL) and algorithms
- Developed recommendation dashboards and delivered proposal presentations to company executives

Skills

Programming: Python, MATLAB, JavaScript, SQL/GSQL, HTML, CSS

Software/Libraries: PyTorch, jsPsych, ROS, Blender, Realflow, Adobe Creative Suite, Microsoft Suite

Computational: ML algorithms, Physics and Game engines, Computer Vision, Bayesian computation

Lab training: Citi Program Social Behavioral IRB, Citi Program Working with Institutional Animal Care and Use Committee (IACUC), Citi Program Biomedical IRB, Working with NHPs (Macaques) at MIT