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

2024 - Pres. **IRiSS Predoctoral Research Fellowship,** Stanford
2023 - 2024 **EECS | CS + HASS Undergraduate Research & Innovation Scholarship,** MIT
2024 **Phi Beta Kappa,** MIT Xi Chapter
2024 **Undergraduate Research Award,** MIT BCS
2023, 2024 **Academic Award,** MIT BCS
2023 **Eta Kappa Nu Society,** MIT Beta Theta Chapter
2021 - 2023 **Undergraduate Research Opportunities Program (UROP) Grant,** MIT
2022 **Princeton Neuroscience Institute Summer Internship Program (PNI-SIP)**

Research Experience

Cognitive Tools Lab, Stanford

Advised by Judith Fan *July 2024 - Present*

- Investigating social and cognitive mechanisms that support the development of statistics reasoning (e.g. problem solving, visualization, programming, natural language) in formal education through large-scale field experiments

Computational Cognitive Science Group, MIT

Advised by Joshua Tenenbaum, Vivian Paulun, Max Siegel *Sept. 2022 - Present*

- Characterizing childhood development of physical stability and support reasoning, co-advised by Laura Schulz (MIT ECCL)
- Evaluated the joint perception of object shape and physical properties (e.g., elasticity, viscosity) in both humans and neural network models.
- Leveraged a Bayesian theory-based intuitive physics model to programmatically generate 3D structures, based on human stability reasoning.

Niv Lab, Princeton

Advised by Yael Niv, Rachel Bedder *June 2022 - Aug. 2022*

- Developed a real-time stimulus generator pipeline and studied the effects of valence on latent state inference
- Simulated reinforcement learning models (e.g. Markov decision processes, actor-critic) for human behavioral studies

DiCarlo Lab, MIT

Advised by James DiCarlo, Kohitij Kar *Sept. 2021 - May 2022*

- Comparing object size representation bias in DCNNs and primate IT, and contributed benchmarks for primate-aligned vision models

Presentations & Publications

Paulun, V.C., Siegel, M.H., **Zheng, K.**, & Tenenbaum, J. (2024). Perceiving materials and objects from semi-visible interactions. *Annual meeting of the Vision Science Society (VSS), St. Petersburg, FL, USA*

Paulun, V.C., Siegel, M.H., **Zheng, K.**, & Tenenbaum, J. (2024). Seeing the invisible: Online use of rich physical constraints in perception. *Conference of Experimental Psychologists (TeaP), Regensburg, DE*

Zheng, K. & Yu, I. (2023) *Jenga as a Performance Art: Computational Generation of Surprisingly Stable Structures.* Poster presented at IEEE MIT Undergraduate Research Technology Conference (URTC). Cambridge, MA.

Zheng, K., Bedder, & R., Niv, Y. (2022). *How do Humans Generalize and Discriminate Between Experiences?* Poster presented at the Society for Neuroscience, FUN Undergraduate Poster Session. San Diego, CA.

Paulun, V.C., **Zheng, K.**, & Kar, K. (2022). Distributed population activity in the macaque inferior temporal cortex reflects perceived not retinal object size. *Annual Meeting of the Society for Neuroscience (SfN), San Diego, CA, USA*

Gong, Y., Brauer M.H., **Zheng, K.** & Li, W. (2020). Accelerated, Reactive Aging Tests of Parylene C, SiO2, and Si3N4 Packages for Chronic Neural Implants. *IEEE 15th International Conference on Nano/Micro Engineered and Molecular System (NEMS)*. San Diego, CA.

Gong, Y., Liu, W., Wang, R., Brauer, M.H., **Zheng, K.**, & Li, W. (2020). Stability Performance Analysis of Various Packaging Materials and Coating Strategies for Chronic Neural Implants under Accelerated, Reactive Aging Tests. *Micromachines*, 11(9), 810.

Teaching Experience

Fall '24	**PSYCH 10 Introduction to Statistical Methods,** Stanford
Sp. '23, '24	**9.00 Introduction to Psychology,** MIT

Professional Experience

TigerGraph

Developer Advocate Intern *Jan. - Aug. 2022*

- Developed full-stack applications, worked with clients and user community, and led workshops (Women Who Code)

Optum

Software Engineering Intern with the Advanced Technology Collaborative *June - Aug. 2021*

- Constructed recommendation systems with machine learning graph algorithms

Service & Outreach

Outreach

Fall '23	**"Neuroscience behind perceptual illusions"** seminar for HS students with MIT ESP Splash
Sp '23	**"Jenga as a Performance Art"** MIT Presidential Inauguration Weekend Exhibit – Garden of the Mind: Reflections & explorations of the mind through its physical creations.

University & Community Service

Sp '24	**MIT BCS Visiting Committee** Student Representative
2023 - 2024	**MIT Ad Hoc Committee on Arts, Culture, and DEI** Student Representative
2023 - 2024	**MIT Voxel Lab (Art & Music Innovation Makerspace)** Staff & Mentor
2021 - 2024	**MIT Peers Leading Education About Sexuality and Speaking Up for Relationship Empowerment (PLEASURE)** Facilitator
2020 - 2024	**MIT Undergraduate Association** Exec. and Project Lead (Banana Lounge, Craft Market)

Skills & Misc

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

Research Tools: PyTorch, jsPsych, ROS, Blender, Realflow, Qualtrics, Adobe Creative Suite

Misc: Design – created logos and merchandise for various orgs. at Umich, MIT, and Stanford