Jieyu Zheng

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EDUCATION

California Institute of Technology, Pasadena, U.S.A. Sep. 2020 - Present

Doctor of Philosophy in Neurobiology, Expected in Jun. 2026

Thesis topic: Complex Cognition in Mouse Maze Navigation, With and Without Cortex
Advisor: **Dr. Markus Meister**, Biaggini Professor of Biological Sciences
President of the Neurotechers, Caltech's Neuroscience Graduate Student Organization
2023 Chen Diversity and Inclusion Grant Awardee
2024 Chen Innovator Grant Awardee

University of Cambridge, Cambridge, U.K. Oct. 2018 - Jul. 2019

Master of Philosophy in Psychology and Education (First Class). Advisor: Wendy Browne
Thesis Topic: Understanding Shame in Mathematical Achievement – A Systematic Review Using Meta-analysis

Cornell University, Ithaca, NY, U.S.A. Aug. 2016 - May 2018

Bachelor of Science in Biological Engineering, Magna Cum Laude (GPA:3.80/4.3)
College of Agriculture and Life Sciences (CALS) Dean's List (GPA above 3.50 Every Semester)
2018 Rhodes Scholarship in China Finalist

Shanghai Jiao Tong University (SJTU), Shanghai, China Sep. 2014 - Jun. 2016

Bachelor of Engineering in Food Science and Engineering | Zhiyuan Honor Degree and Scholarship (Top 5%)
GPA (overall): 3.91/4.3; Total-grade ranking before transfer to Cornell: 1/162
China National Scholarship (Top 1%)

RESEARCH PROJECTS

Cognition With and Without Cortex: Mice in the Manhattan Maze [info] Dec. 2021 - Present

Advisors: **Markus Meister,** Professor of Biological Sciences; **Pietro Perona,** Professor of Electrical Engineering, Caltech

- Designed behavioral apparatus "the Manhattan Maze", experiments and built the arena for testing and recording.
- Managed, processed, and analyzed video data using computer vision tools and self-developed python packages.
- Applied to an independent neuroethology project for abstract reasoning (2024 Chen Innovator Grant).
- Leading the maze group team (inc. 2 PhD student and 5 undergraduate research assistants) across two research groups.
- Advised the application of an online human virtual maze game study in the team.
- **Talks:** Harvard RL and Brain Seminar Fall 2024; Cognitive Computational Neuroscience 2024 (with Travel Award and selected talk, <5% of the abstracts).
- **Poster presentations:** Society for Neuroscience 2022; Curiosity, Creativity and Complexity 2023 (with Travel Award); Simons Collaboration on the Global Brain (SCGB 2023 site visit); HHMI Janelia Meeting 2025; Cognitive Computational Neuroscience 2025; Society for Neuroscience 2025 (With TPDA award).

The Unbearable Slowness of Being: Human behaviors at 10 bits/s [info] Mar. 2021 – Dec. 2025

Advisor: **Markus Meister,** Professor of Biological Sciences, Caltech

- Performed literature review and wrote the review of human behavioral studies as the first author
- Talks: Chen Institute Workshop on Cross-Species Modalities in Cognition and Behavior; Explore Caltech

Mesolimbic Dopamine Signaling and Cognitive Flexibility | *Research Assistant* Sep. 2019 - Feb. 2020

Advisor: Trevor Robbins, Professor of Cognitive Neuroscience, University of Cambridge

***Ex vivo* Imaging of *Drosophila* Olfactory System Development** | *Research Assistant* May - Aug. 2017

Advisor: Liqun Luo, Professor of Biology, Investigator of Howard Hughes Medical Institute, Stanford University

High Fat Diet and Alzheimer's Disease-related Pathology | *Research Assistant* Oct. 2016 - May 2018

Advisor: Chris Schaffer, Associate Professor of Meinig School of Biomedical Engineering, Cornell University

Functions of CXCL12 during Recovery from Ischemic Strokes in Mice | *Research Assistant* Jan. - Oct. 2015

Advisor: Yongting Wang, Professor of Med-X Neuroscience and Engineering Centre, SJTU

PUBLICATIONS [Google Scholar]

Zheng, J., and Meister, M. (2024). The unbearable slowness of being: Why do we live at 10 bits/s? *Neuron 11* (2), 192-204

Zheng, J., Turan, Z., Zeyu, J., Guimaraes, R., … Perona, P. and Meister, M. (In prep). Cognition with and without cortex: Rapid Learning, Long-term Memory and Generalization in the Manhattan Maze.

Zheng, J., Guimaraes, R., Hu J.Y., Perona P., and Meister, M. (2024) Mice in the Manhattan Maze: Rapid Learning, Flexible Routing and Generalization, With and Without Cortex. *Cognitive Computational Neuroscience, 2024*.

Jiang, L., Li, W., Mamtilahun, M., Song, Y., Ma, Y., Qu, M., Lu, Y., He, X., **Zheng, J.** . . . Wang, Y. (2017). Optogenetic Inhibition of Striatal GABAergic Neuronal Activity Improves Outcomes After Ischemic Brain Injury. *Stroke, 48*(12), 3375-3383.

TEACHING AND ADVISING EXPERIENCES

Bi 23 Undergraduate Tutorial: The Ethology of Learning | *Instructor, Caltech* Spring 2025

- Independently developed the 10-week course content
- Supervised undergraduate field research projects and final presentations
- Hosted guest speakers for interdisciplinary discussions

CNS 187 Neural Computation | *Head Teaching Assistant* Spring 2022, 2023

Instructors: Markus Meister & Ueli Rutishauser, Professors of Computation & Neural Systems, Caltech

- Designed weekly homework assignments and final projects.
- Held weekly office hours and monitored online discussion forums.
- Oversaw course logistics, lecture recording and attendance.

President for the Neurotechers, Caltech 2023 - 2025

Academic Event Co-chair for the Neurotechers, Caltech Feb. 2022 - Jun. 2023

Data Science and AI for Neuroscience Summer School, Caltech | *Participant* Jul. 2022

Executive Education Programs at Møller Centre, University of Cambridge | *Client Relationship Assistant* Jul. - Sep. 2019

BEE 2600 Principles of Biological Engineering | *Undergraduate Teaching Assistant* Jan. - Dec. 2017

Cornell Cooperative Extension for Students with Special Needs | *Mentor* Feb. - May 2018

Harvard College AUSCR Summit for Young Leaders in China | *Exceptional Teaching Fellow* Aug. 2018

BEE 4890 Social Entrepreneurship with the SOS Children's Village in Chile | *Project Manager* Aug. - Dec. 2017

Cornell Empathy, Assistance and Referral Service (EARS) | *Peer Counsellor* Aug. - Dec. 2017