Jieyu Zheng

Email: jzzheng@caltech.edu Website: http://jieyusz.github.io

EDUCATION

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

Doctor of Philosophy in Neurobiology, Expected in Dec. 2025

Thesis topic: Complex Cognition in Mouse Maze Navigation, With and Without Cortex
Supervisor: **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). Supervisor: 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

Mice in the Manhattan Maze: Rapid learning and Flexible Routing, W/ and W/O Cortex Dec. 2021 - Present

Supervisor: **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.
- Processing and analyzing video data using computer vision and self-developed python packages.
- Managing the acortical animal colony and an independent neuroethology project (Awarded 2023 Chen Innovator Grant)
- Leading the maze group team (including another PhD student and 4 undergraduate research assistants) across two research groups.
- Presented at SfN 2022; Curiosity, Creativity and Complexity 2023 (with Travel Award), Simons Collaboration on the Global Brain (SCGB 2023 site visit); Cognitive Computational Neuroscience 2024 (with Travel Award and selected talk, <5% of the abstracts); Harvard RL and Brain Seminar Fall 2024.

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

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

- Maintained facilities and trained rat subjects for four different behavioral paradigms.
- Analyzed behavioral test results, fitted with reinforcement learning models, using R.

***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

TEACHING AND ADVISING EXPERIENCES

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

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

- Designed and graded 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 Jun. 2023 - Present

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

China Thinks Big Venture Challenge Program | *Team Leader* Jan. 2015

PUBLICATIONS

Zheng, J., and Meister, M. (2024). The Unbearable Slowness of Being. *Accepted by Neuron.*

Zheng, J., Hu, J., Guimaraes, R., Perona, P. and Meister, M. (In prep). Mice in Manhattan: Rapid Learning and Flexible Routing in a Massively Reconfigurable Maze.

Zheng, J., Turan, Z., (co-first authors) Pollak, D., … and Meister, M. (In prep). Life Without Cortex.

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.

Bracko, O., Cruz, J., N. Njiru, B., Swallow, M., **Zheng, J.**, Ali, M., … Schaffer, C. (2018). Stalled Blood Flow in Brain Capillaries Is Responsible for Reduced Cortical Perfusion and Impacts Cognitive Function in Mouse Models of Alzheimer's Disease. *Alzheimer's & Dementia*, *14*, P651–P652.

Bracko, O., Cruz, J., K. Vinarcsik, L., Ali, M., Swallow, M., **Zheng, J.**, … Schaffer, C. (2018). High Fat Diet Exacerbates Capillary Stalling in Alzheimer's Disease-related Pathology in the APP/PS1 Mice Model. *Alzheimer's & Dementia*, *14*, P749–P750.