

# Zelin (Linda) Zhao

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## EDUCATION

**New York University, New York, NY**

Sep 2020 - May 2024

Bachelor of Arts in Psychology, Honors

Bachelor of Arts in Mathematics

- Cumulative GPA: 3.85
- Psychology Major GPA: 4.0; Mathematics Major GPA: 3.73

## AWARDS & HONORS

Hillary Anne Citrin Award for Outstanding Honors Thesis

May 2024

Coons/Leibowitz Award & Stipend for Honors Research

May 2023

Dean's Undergraduate Research Fund Grant

May 2023 - May 2024

Dean's List for Academic Year

Sep 2020 - May 2024

## RESEARCH EXPERIENCE

**Relationship Between Cortical Magnification and Visual Crowding Distance**

Sep 2023 - Present

Psychology Honors Project

*Advisor: Dr. Jonathan Winawer (NYU)*

- Investigate the relationship between brain structure and function with respect to visual crowding; perform analyses of cortical magnification to identify whether human visual areas V1, V2, V3, or hV4 serve as the neural basis for crowding.
- Collected data of visual crowding distance through psychophysics experiments; collected structural and functional MRI scans to acquire retinotopic data.
- Performed model fitting for both crowding distance vs eccentricity and cortical magnification vs eccentricity to infer cortical crowding distance.

**Variability of Visual Areas hV4, VO1, and VO2 in a Large Sample of Humans**

Jan 2023 - Aug 2023

*Advisors: Dr. Jonathan Winawer (NYU), Dr. Noah Benson (U Washington)*

- Performed statistical analyses of the largest available dataset of retinotopic measurements in hV4, VO1, and VO2 of humans, using boundaries delineated by six researchers in the annotation project.
- Wrote python scripts to assess cortical properties (surface area, cortical magnification, etc), and ran these scripts for the dataset across researchers.
- Learned methods to calculate areal cortical magnification, radial and tangential cortical magnification.
- Executed high-dimensional optimization to analyze magnification on the cortical surface.

### **Annotation of Visual Map Boundaries**

Sep 2021 - Present

*Advisors: Dr. Jonathan Winawer (NYU), Dr. Noah Benson (U Washington)*

- Hand-label boundaries for hV4, VO1, VO2 on the human visual cortex for 362 hemispheres, using the Human Connectome Project dataset.
- Using Python, performed descriptive statistical analysis and correlation analysis on the visual area boundaries.
- Hypothesized the reasons why raters disagreed on certain observers' visual area boundaries.
- Prepared a manuscript for publication.

### **Predicting Mouse Behavior Using LSTM Model**

Jul 2023

*NeuroMatch Academy: Computational Neuroscience*

- Preprocessed behavior dataset to make it suitable for recurrent neural network data training.
- Trained an LSTM model to predict the next frame movement of the mouse using CalMS21 dataset.

### **Role of Prefrontal Cortex Activity in Behavioral Deficits Caused by Maternal Separation**

May 2022 – Aug 2022

*Advisor: Dr. Catia M. Teixeira (The Nathan S. Kline Institute for Psychiatric Research)*

- Executed operant conditioning behavioral testing, including FR1, FR5, and PR schedules, to study whether maternal separation caused deficits in motivation.
- Collaborated with postdocs to perform PCR, bicinchoninic acid (BCA) assay, western blot, delayed-non-match-to-sample test, and fear conditioning.
- Performed mouse husbandry: checking pregnancy, weaning, marking tail, ear tagging, monitoring weights, and changing new cages.

**PRESENTATIONS** **Zhao Z.**, Benson NC., Kurzawski JW., Pelli D., Winawer J., Conservation of Cortical Crowding Distance Across Eccentricity in Human V4. Poster presented at Annual Meeting of the Vision Sciences Society (May 2024)

**Zhao Z.**, Teixeira CM., Role of Prefrontal Cortex Activity in Behavioral Deficits Caused by Maternal Separation. Poster presented at New York University CAS Undergraduate Research Conference (May 2023)

### **RELEVANT SKILLS**

- Neuroimaging and Psychological Methods: psychophysics, fMRI, dMRI
- Programming Languages: Python, MATLAB, Pytorch, Julia, Java, bash
- Software: Adobe Creative Suite, Microsoft Suite, Keras
- MRI Certified: Level 3 MRI Operator at NYU Center for Brain Imaging (can operate the scanner independently)
- Languages: English, French, Chinese