Han, Zhixian

han594@purdue.edu | +1 (612)961-2676

Education

2019 - present **Ph.D. student in Psychology (Mathematical and Computational Cognitive Science area)** at Purdue University (GPA: 3.98/4.00)

2021 - present **Joint M.S. student in Statistics and Computer Science** at Purdue University (GPA: 3.98/4.00)

2017 - 2019 **M.S. in Physics** at Brown University (GPA: 3.56/4.00)

2014 - 2017 **B.S. in Physics and Psychology** at University of Minnesota, Twin Cities (GPA: 3.87/4.00)

2015 Summer Visiting Undergraduate Student at University of California, Berkeley (GPA: 4.00/4.00)

2012 - 2014 Undergraduate student major in Physics at Sichuan University (GPA: 86.96/100.00)

Publications

Zhixian Han and Anne Sereno. Space: The best kind of map for constraining the binding problem? *Submitted*, 2024.

Zhixian Han and Anne Sereno. Understanding cortical streams from a computational perspective. *Journal of Cognitive Neuroscience (In Press)*, 2024.

Zhixian Han and Anne Sereno. Is it always computationally advantageous to use segregated pathways to process different visual stimulus attributes separately? *Journal of Vision*, 23(9), 2023.

Anne B. Sereno and **Zhixian Han** . Independence, not interactions: What simulations suggest about ventral and dorsal pathways. *Journal of Vision*, 23(9), 2023.

Zhixian Han and Anne Sereno. Constraining the binding problem using maps. 2023b. Computational and Mathematical Models in Vision.

Zhixian Han and Anne Sereno. Identifying and localizing multiple objects using artificial ventral and dorsal cortical visual pathways. *Neural Computation*, 35(2):249 – 275, 2023a.

Zhixian Han and Anne Sereno. Identifying and localizing multiple objects using artificial ventral and dorsal visual cortical pathways. 2022b. Computational and Mathematical Models in Vision.

Zhixian Han and Anne Sereno. Modeling the ventral and dorsal cortical visual pathways using artificial neural networks. *Neural Computation*, 34(1):138 – 171, 2022a.

Research Experience

Modeling the cortical visual pathways using artificial neural networks
Advisor: Professor Anne B. Sereno Sept 2019 – Present

Decoding word spectrograms from neural signals recorded via intracortical microelectrode arrays implanted in auditory superior temporal cortex
Advisor: Professor Wilson Truccolo Sept 2018 – May 2019

Bayesian Theory and Visual Perception of size and depth
Advisor: Professor Daniel Kersten Sept 2016 – May 2017

Characterizing the fluorescent properties of the mEos2 proteins for Super-Resolution Microscopy
Advisor: Professor Elias Puchner Sept 2015 – May 2017

Work Experience

Consultant for the Purdue Statistical Consulting Service (SCS) January 2024 - Present

- Experimental Design and Data Analysis Consulting: This service assists with all phases of research projects, including: proposal preparation, design of studies, survey design, data input strategies, data import/export, analysis of data, interpretation of results, presentation of results, other statistics or probability problems
- Statistical Software Consulting: This service provides assistance with running a wide variety of statistical computing programs.

Lead Teaching Assistant – Neuromatch Academy, Inc. July 2021

(Computational Neuroscience Summer Course 2021)

- Guide small groups (10) of students in all aspects of live online learning. This includes guiding students in completion of code-based tutorials, guiding students in contextualizing the problemsets, and guiding students in developing peer-programming and self-learning skills.
- Guide students in their final project.
- Manage and provide support for 7-8 junior teaching assistants.

Awards

Purdue Graduate Student Government (PGSG) Travel Grant for attending Vision Science Society Annual Meeting in 2023

Selected as Lead Teaching Assistant and Content Reviewer for Neuromatch Academy Deep Learning online course in 2022

Selected as Lead Teaching Assistant for Neuromatch Academy Computational Neuroscience online course in 2021

Yan Jici Physics Scholarship, Institute of Physics Chinese Academy of Sciences, 2014

First-Class Subject Scholarship, Sichuan University, 2014

Third-Class General Scholarship, Sichuan University, 2013

Outstanding Student, Sichuan University, 2013

Skills

Programming using Python, R, MATLAB, Mathematica, C++, Database with SQL, Machine Learning, Artificial Neural Networks, Advanced Statistical Analysis