

Zhenan Shao

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EDUCATION

University of Illinois, Urbana-Champaign Ph.D., Psychology, Cognitive Neuroscience Area Advisor: Diane M. Beck	Champaign, Illinois August 2020-Present GPA: 4.0/4.0
University of Illinois, Urbana-Champaign Master of Computer Science	Champaign, Illinois Jan 2024-Present GPA: 4.0/4.0
University of Minnesota, Twin-Cities Bachelor of Science, Psychology Minor in Statistics and Integrative Neuroscience Advisor: Sheng He	Minneapolis, Minnesota August 2016-May 2020 GPA: 4.0/4.0

HONORS AND AWARDS

Elsevier/Vision Research Travel Award The 23th Annual Meeting of the Vision Sciences Society (VSS2023)	2023
Graduate College Conference Presentation Awards Department of Psychology, UIUC	2023, 2024
Illinois Distinguished Fellowship Graduate College, UIUC	2020-2023
Graduate with high distinction University of Minnesota, Twin-Cities	2020
Dean's List University of Minnesota, Twin-Cities	2016-2020
Maroon Global Excellence Scholarship University of Minnesota, Twin-Cities	2016-2020

PUBLICATIONS

- [1] Beck, D. M., Center, E., **Shao, Z.** (2024). *The Role of Real-world Statistical Regularities in Visual Perception*. Current Directions in Psychological Science, *Accepted*.
- [2] **Shao, Z.**, Ma, L., Li, B., Beck, D. M. (2024). *Leveraging the Human Ventral Visual Stream to Improve Neural Network Robustness*. arXiv, <https://arxiv.org/abs/2405.02564>
- [3] **Shao, Z.**, Beck, D. M. (2024). Is Attention Necessary for the Representational Advantage of Good Exemplars over Bad Exemplars? *European Journal of Neuroscience*, 59(9), 2129-2415.
<https://doi.org/10.1111/ejn.16291>

CONFERENCE PRESENTATIONS

- [1] **Shao, Z.**, Ma, L., Li, B., Beck, D. M., Does Leveraging the Human Ventral Visual Stream Improve Neural Network Robustness? (2024). Oral Presentation at *Vision Science Society (VSS)*, St. Pete Beach, FL. [LINK]
- [2] **Shao, Z.**, Beck, D. M. (2023). Is Attention Necessary for the Representational Advantage of Good Exemplars over Bad Exemplars? Poster presented at *Vision Science Society (VSS)*, St. Pete Beach, FL. [Link]

- [3] Yang, P-L., **Shao, Z.**, Beck, D. M. (2023). The similarity of CNN, behavioral, and PPA feature spaces. Poster presented at *Vision Science Society (VSS)*, St. Pete Beach, FL. [Link]
- [4] Castro, M., **Shao, Z.**, Engstrom, M., Teoh, J. Y., Quevedo, K. (2019). Neural correlates of maltreatment timing during self-processing in depressed adolescents. Poster presented at *Minnesota Supercomputing Institute (MSI) Research Exhibition*, Minneapolis, MN.

RESEARCH EXPERIENCE

Attention and Perception Lab, UIUC

Champaign, Illinois

Advisor: Diane M. Beck

2020-Present

- Led interdisciplinary projects integrating machine learning with vision neuroscience to unravel the mechanisms behind human object recognition invariance.
- Conducted functional Magnetic Resonance Imaging (fMRI) studies to explore human scene perception, demonstrating proficiency in designing neuroimaging experiment and managing participant sessions.
- Applied various multi-variate pattern analysis (MVPA) methods such as RSA, SVM, and ICA to neuroimaging data to build the theoretical framework of predictive visual processing.

Vision and Attention Lab, UMN

Minneapolis, Minnesota

Advisor: Sheng He

January 2019- May 2020

- Designed experimental paradigms to examine the temporal properties of visual crowding effect.
- Developed and coded the experimental procedure in Matlab while configuring the necessary experimental equipment for optimal performance.
- Conducted comprehensive statistical analysis on human behavioral data and designed advanced visualization of experimental results.

Health and Emotions in Adolescent Trajectories laboratory, UMN

Minneapolis, Minnesota

Advisor: Karina Quevedo

May 2018-May 2020

- Ran data analysis using SPM, Matlab and FSL: extracting, denoising, and reconstructing both anatomical and functional fMRI data obtained from adolescents with major depression disorder.
- Performed statistical tests using SPSS and created visualization using Photoshop.

PROFESSIONAL EXPERIENCES AND ACTIVITIES

Instructor for PSYC 100: Intro to Psychology

Champaign, Illinois

University of Illinois, Department of Psychology

August 2022-December 2022

- Designed the course curriculum and taught two sections independently.
- Graded students' writing assignments and provided feedback for developing transferable writing skills.

Teaching Assistant for PSYC 489: Neural Network Modeling Lab

Champaign, Illinois

University of Illinois, Department of Psychology

January 2022-May 2022

- Conducted office hours to assist and mentor students with programming assignments, emphasizing neural network concepts and debugging techniques.
- Graded weekly assignments and final projects and provided constructive feedback.
- Collaborated with the course instructor to develop and refine programming assignments, enhancing the practical application of course content.

Office Assistant Student Staff / Direct Service Advocate
The Aurora Center for Advocacy and Education, University of Minnesota

Minneapolis, Minnesota
February 2017-May 2020

- Completed 40-hour sexual assault and domestic violence prevention advocacy certification training as required by the state of Minnesota.
- Served on 24/7 hotline for victims and survivors of sexual assault, stalking, and domestic violence and responded to medical advocacy for the three hospitals on campus when patients are in need of a sexual violence exam.
- Coordinated outreach events and collaborated with student organizations on campus to promote awareness of women's rights.

Teaching Assistant for NSCI 2100 Human Neuroanatomy
University of Minnesota, Department of Neuroscience

Minneapolis, Minnesota
January 2020-May 2020

- Prepared lab materials including sheep and human brains for the 12 lab sections of the class.
- Led and coordinated the lab sections, leading discussions, guiding the dissection of the sheep brains, and quizzing students on anatomical structures.

Program Coordinator / Volunteer
DreamNovation (NGO)

Guangzhou & Inner Mongolia, China
March 2017-August 2017

- Organized and promoted the recruitment of 30 volunteers from universities in both North America and China for summer camps held in 5 different provinces each year.
- Worked with 2 local schools to investigate the dynamics and atmosphere of local communities to be incorporated in future education of the students.

SKILLS

Language Skills: Native in Chinese, fluent in English.

Technical Skills: Python, C/C++, Matlab, R, Java, SPSS