

Qihao He

Peking University, Beijing, 100871, China

Mobile: +86 13701263485 | E-mail: joyheqihao@gmail.com | Personal Homepage: <https://qihaojoyhe.github.io/>

EDUCATION

Peking University

B.S. in Psychology, School of Psychological and Cognitive Sciences (SPCS)

Sep. 2022 – Present

- **Average Score:** 90.4/100 | **GPA:** 3.79/4.00 | **Rank:** 1/43

- **Core Courses:** Cognitive Psychology (92), Experimental Psychology (92), Physiological Psychology (94), Physiology (91), Developmental Psychology (97), Fundamentals and Frontiers of Systems Neuroscience (94)

LL.B. in Sociology, Department of Sociology (Double Major)

Sep. 2024 – Present

FUNDING

Beijing Natural Science Foundation, Qiyao Undergraduate Research Grant QY25138, *Global-Local Reference Frame Shift: The Influence of Street Layout on Heading in Spatial Navigation*

- **Period:** Jul. 2025 – Jun. 2026 | **Role:** Principal Investigator (Undergraduate) | **Total Amount:** 50,000 CNY

CONFERENCE PAPERS & POSTERS

Papers

- Liu, J.†, He, Q.†, & Liu, Z. (submitted). Imperceptible? Testing Face Privacy Claims with Twins and Doppelgangers. *The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2026*. (†co-first authors)

Posters

- He, Q., Wang, Y., Zhang, Z., Zhang, Y., Li, Z., Jack, R., Zhan, J., & Peng, Y. (submitted). Dynamic Reconstruction of Facial Emotion Representation in Social Anxiety. *Australasian Mathematical Psychology Conference 2026*.

MANUSCRIPTS IN PREPARATION

- He, Q., & Li, S. (in preparation). Global-Local Reference Frame Shift: The Influence of Street Layout on Heading in Spatial Navigation.

RESEARCH EXPERIENCE

Dynamic Reconstruction of Facial Emotion Representation in Social Anxiety

Independent Researcher

May 2024 – Present

Supervisor: Dr. Yujia Peng, Peking University

- Investigated how individuals with high and low social anxiety (SA) perceive dynamic facial expressions. Adopted a data-driven approach to create dynamic facial stimuli based on the Facial Action Coding System (FACS) and the Generative Model of 3D Faces (GMF).
- Designed and programmed the task; collected behavioral data ($N = 70$). [Code](#) | [Demo](#).
- Applied generalized linear mixed models, Bayesian hierarchical modeling and regression hierarchical drift diffusion model (HDDM) to examine how facial dynamics predicted emotion judgments and revealed group differences.
- Reconstructed group-specific perceptual templates for positive and negative emotions using reverse correlation.

Global-Local Reference Frame Shift: The Influence of Street Layout on Heading in Spatial Navigation

Independent Researcher

Nov. 2024 – Present

Supervisor: Dr. Sheng Li, Peking University

- Employed the Judgment of Relative Direction (JRD) paradigm to investigate how individuals utilize multi-level spatial cues to construct and shift between reference frames in scene memory and navigation. [Code](#) | [Demo](#).
- Designed two behavioral experiments using panoramas with regular ($N = 36$) and irregular ($N = 24$) street layouts. Implemented computer vision models (e.g., GIST, subband entropy) to examine the influence of low-level features

and spatial layouts.

- Developed a virtual city environment in Unity and collected behavioral data ($N = 24$) to prepare for an fMRI study. Integrated CV models with Representational Similarity Analysis (RSA) and Multivoxel Pattern Analysis (MVPA) to examine how scene-selective regions (PPA, OPA, RSC) represent layouts, heading, and reference frame shifts.

Training Metacognitive Calibration with Optimal Confidence Feedback

Independent Researcher

Mar. 2025 – Sep. 2025

Supervisor: Dr. Dobrobir Rahnev, Georgia Institute of Technology

- Explored whether trial-level optimal confidence feedback improves confidence calibration in perceptual decision-making more effectively than traditional correct/incorrect feedback. [Experiment](#) | [Code](#).
- Implemented Monte Carlo simulations within a visual discrimination task to combine task difficulty with estimated internal noise and deliver trial-level optimal confidence feedback. Programmed the online experiment.
- Applied Signal Detection Theory (SDT) and HDDM to compare pre- vs. post-training changes in perceptual sensitivity, decision criterion and metacognitive sensitivity (meta-d'), assessing the efficacy of different feedback mechanisms for enhancing metacognitive calibration.

Human–Machine Comparison in Face Identity Processing

Summer Research Intern

May 2025 – Present

Supervisor: Dr. Zili Liu, University of California, Los Angeles (UCLA)

- Investigated differences between human observers and deep convolutional neural networks (DCNNs) in face identity processing across two tasks. Applied psychometric modeling and human-AI comparison.
- Twin Identification: Analyzed behavioral data ($N = 272$) on human identification twins under varying levels of adversarial distortion. Benchmarked 5 state-of-the-art deep learning models (e.g., AdaFace) for comparison.
- Age-related Face Memory: Programmed and deployed an online recognition task using MORPH Longitudinal Database faces across different ages. Collected and analyzed behavioral data ($N = 152$) under identity- vs. image-based memory conditions. [Experiment](#) | [Code](#).

TEACHING EXPERIENCE

Cognitive Psychology

Teaching Assistant | **Instructor:** Prof. Sheng Li, Peking University

Sep. 2025 – Present

- Organized student literature presentation sessions on perception, attention, memory, conceptual processing, language, decision making and reasoning.
- Graded quizzes, midterm and final examinations.

SOCIAL WORK & VOLUNTEERING

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| • <i>Committee Member</i> Liaison Department, Student Union of SPCS | Sep. 2022 – Jun. 2023 |
| • <i>Committee Member</i> Arts & Sports Department, Student Union of SPCS | Sep. 2022 – Jun. 2023 |
| • <i>Admissions Volunteer</i> Beijing Admissions Team, Peking University | Dec. 2022 – Jul. 2023 |
| • <i>Student Volunteer</i> “Leading New Swallows” Social Practice Program, Peking University | Dec. 2024 – Mar. 2025 |

HONORS & AWARDS

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| • Xiaomi First-Class Scholarship (Top 2%), Peking University | Sep. 2025 |
| • Leo Koguan Scholarship (Top 2%), Peking University | Dec. 2024 |
| • First-Class Academic Scholarship, Peking University | Oct. 2025 |
| • First-Class Academic Scholarship, Peking University | Sep. 2024 |
| • Award for Outstanding Undergraduate Research, Peking University | Nov. 2025 |
| • Award for Merit Student (Top 5%), Peking University | Sep. 2025 |

- Award for Merit Student (Top 5%), *Peking University* Dec. 2024
- Award for Community or Public Service, *Peking University* Dec. 2023

PROFESSIONAL SKILLS

Coding

- MATLAB, R, Python, JavaScript, HTML, CSS, C#, Stata

Research Method

- **Behavioral:** Experimental design (Psychtoolbox, jsPsych, Unity); psychophysics; reverse correlation
- **Computational:** Statistical Modeling (ANOVA, mixed-effects, mediation, moderation, factor analysis); Cognitive Modeling (signal detection theory, drift diffusion model, Bayesian inference); Machine Learning & Computer Vision (DCNNs, e.g., AdaFace, ArcFace; feature-based encoding, e.g., GIST, subband entropy; classification and prediction)
- **Neuroimaging:** fMRI (SPM; SVM, MVPA, RSA); EEG (time-window analysis, cluster-based permutation)

English Proficiency

- TOEFL iBT 106