Jiayu Bao

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EDUCATION

Soochow University (First Honor) Suzhou, Jiangsu Province, CN
Bachelor Degree in Applied Psychology Sep. 2022 - Jun. 2026

- ✧ **National Scholarship * 2**
- ✧ **GPA:** 3.92/4.00 (94/100 - Ranked 1st)

PUBLICATIONS

[1] **Bao, J.**, Lyu, Y., Yang, J., Jin, Y., & Gong, J. (2025). How Generative Music Affects the ISO Principle-Based Emotion-Focused Therapy: An EEG Study. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 47. https://escholarship.org/uc/item/8vm0733p

[2] **Bao, J.**, Zhao, Z., & Ying, H.* (2024, December). Neuroscience-Inspired Neural Network Exhibits More Human-Like Face Processing Abilities. In *2024 International Conference on Neuromorphic Computing* (ICNC) (pp. 1-4). IEEE. https://doi.org/10.1109/ICNC64304.2024.10987899

[3] **Bao, J.**, Zhao, Z., & Ying, H.* (2025). From Cognitive Science to Compact CNNs: Enhancing Face Perception via Dimension Reduction. (Under review in *IEEE Transactions on Neural Networks and Learning System*)

[4] **Bao, J.**, Shi, X., Deng, Y., Ju, Y., & Yang, Z. (2025). The Influence of Danmaku Quantity on Video Time Estimation An Eye-Tracking Study on Cognitive Load and Moderating Factors. (Under review in *International Journal of Human-Computer Interaction*)

[5] Li, J., **Bao, J.**, & Ying, H.* (2025). Serial Dependences of Ensemble Coding of Social Characteristics from Faces Are Similar but Different. (Under review in *perception*)

[6] **Bao, J**., Li, J., & Ying, H.* (2024). Evidence of Co-occurrence of Ensemble Coding and Serial Dependence in Face Perception. (Manuscript in preparation)

RESEARCH EXPERIENCE

From Cognition to Compact CNNs: Enhancing Face Perception via Dimension Reduction May 2024-Apr. 2025
First Author | Soochow University | Supervisor: Prof. Haojiang Ying

- ✧ Developed SE-AlexNet, a lightweight, biologically inspired convolutional neural network, by embedding Squeeze-and-Excitation (SE) modules into the fully connected layers of AlexNet.
- ✧ Conducted systematic evaluation of SE module insertion locations; found that late-stage insertion (between FC7 and FC8) yielded the most human-like accuracy, supporting hierarchical processing models in neuroscience.
- ✧ Applied Grad-CAM for interpretability analysis, revealing that SE-AlexNet learned human-like attention to facial features (eyes and mouth); further validated with occlusion-based ablation studies.

Technical keywords: PyTorch, CNNs, Squeeze-and-Excitation (SE) Modules, Transfer Learning, Grad-CAM, Facial Emotion Recognition, Psychometric Analysis, Human-CNN Comparison, Model Interpretability

Evidence of Co-occurrence of Ensemble Coding and Serial Dependence in Face Perception Sep. 2023-Dec. 2024
Individual Project | Supervisor: Prof. Haojiang Ying

- ✧ Applied Derivative-of-Gaussian (DoG) fitting and Markov Chain modeling to quantify response biases and temporal persistence across trials.

- ✧ Discovered a novel repulsive bias under certain serial conditions, suggesting an alternative mechanism contrary to standard serial attraction effects.
- ✧ Identified a sustained *n-back* effect in serial dependence extending up to five previous trials, indicating stable yet limited temporal tuning.

Technical keywords: Ensemble Coding, Serial Dependence, Face Emotion Perception, Derivative of Gaussian (DoG), Markov Chain, Temporal Tuning, Bias Analysis, Psychophysics, Matlab

Stability of Spatial Cueing Effects Induced by Subliminal Audiovisual Stimuli **Sep. 2023-Jun. 2024**

First Author | Soochow University | Supervisor: Prof. Aijun Wang

- ✧ Investigated whether subliminal visual, auditory, and audiovisual cues could stably induce spatial cueing effects across sensory modalities.
- ✧ Found consistent spatial facilitation effects (faster reaction times for valid vs. invalid cues) across all three cue types (visual, auditory, audiovisual), with no significant modality interaction.
- ✧ Demonstrated the robustness of spatial cueing under subliminal conditions, but observed no evidence for redundancy gains or multisensory integration effects.

Technical keywords: Subliminal Perception, Spatial Cueing, Audiovisual Integration, Exogenous Attention, Psychophysics, Adaptive Staircase Method, Reaction Time, MATLAB (Psychtoolbox), SPSS

How Generative Music Affects the ISO Principle-Based Emotion-Focused Therapy **Feb. 2024-Mar. 2025**

First Author | Institute for AI Industry Research, Tsinghua | Supervisor: Prof. Jiangtao Gong

- ✧ Conducted an EEG study comparing AI-generated music (AIGM) and human-composed music (HMCM) within an ISO-principle based music therapy framework.
- ✧ Quantified emotional effects through self-reports (SAM) and neural markers (e.g., gamma-band oscillations, temporal-lobe activation) following negative emotion induction.
- ✧ Demonstrated that AIGM outperformed HMCM in enhancing emotional arousal and inducing positive emotional responses, especially in positive music contexts, adherence to the ISO principle significantly improved therapeutic outcomes for both AIGM and HMCM.

Technical keywords: EEG, AI-Generated Content (AIGC), Music Therapy, ISO Principle, Emotion Regulation, Spectral Analysis, Gamma Oscillations, E-prime, Matlab (EEGLAB)

Effects of Danmaku Density on Time Estimation (Moderated Mediation Analysis) **Apr. 2024-Dec. 2024**

First Author | Soochow University | Supervisor: Prof. Zeyang Yang

- ✧ Investigated how danmaku (on-screen comment) density influences time perception during video viewing, using eye-tracking and psychometric modeling.
- ✧ Conducted moderated mediation analysis revealing that flow state and short-video addiction jointly moderated the effect of cognitive load on time estimation accuracy.
- ✧ Observed significant effects under conditions of low flow and low addiction, suggesting that attentional resource constraints served as the key underlying mechanism.

Technical keywords: Eye-Tracking, Cognitive Load, Time Perception, Danmaku, Moderated Mediation, Flow State, Short-Video Addiction, Tobii Pro, SPSS (PROCESS)

RESEARCH GRANTS

Hui-Chun Chin and Tsung-Dao Lee Chinese Undergraduate Research Endowment (CURE) Mar. 2024-May 2025

Individual Project | Directed by Prof. Ying H.

Key Project: Jiangsu Psychological Society 2025 Undergraduate Research Fund Jun. 2025-Present

Group Leader | Directed by Prof. Ying H.

HONORS & AWARDS

Awards and Titles

Outstanding Chun-Tsung Scholar, 2024	National Level	05/2025
National scholarship	National Level	12/2024
Xu Zengshou Scholarship	University Level	12/2024
Merit Student	University Level	12/2024
Special Prize (1st) Scholarship for Academic	University Level	12/2024
Innovation & Entrepreneurship Grand Prize	University Level	12/2024
2024 Comprehensive Award	University Level	12/2024
Outstanding Leader, Student Association (2023–2024)	University Level	07/2024
Special Prize (1st) Scholarship for Academic	University Level	12/2023
Scholarship for Student Leadership & Service	University Level	12/2023

Honors

1st, National Undergraduate Psychology Innovation and Entrepreneurship Forum	National Level	05/2025
1st, 2025 “Challenge Cup” Science & Technology Competition	Univeristy Level	03/2025
3rd, 19th Student Career Planning Competition	University Level	11/2024
1st, Psychology and Behavior Online Experiment Elite Competition	National Level	10/2024
2nd, National College Student Psychology Tutorial Teaching Innovation Exhibition	National Level	05/2024
Excellence Award, Tsinghua Social Science Undergrad Forum	National Level	05/2024
3rd Prize, “Internet +” College Student Innovation and Entrepreneurship Competition	National Level	10/2023
1st, “Internet +” University Student Innovation and Entrepreneurship Competition	University Level	06/2023

EXTRACURRICULAR ACTIVITIES

Voluntary Activities

Member, East Asia Youth Network of Red Cross	International Level	03/2023 - 12/2024
Volunteer, 2023 Soochow International Humanitarian Forum & International Red Cross Conference		
Executive President, Student Association Union	University Level	06/2024 - 08/2025
President, the i-Psychology Society	University Level	07/2023 - 07/2024
Project Leader, “Kapok Plan” Teaching Group, Suzhou University	University Level	06/2023 - 07/2023

Internships

Executive Vice Chairman, Qingkang Youth Health and Growth Service Center (NGO)	01/2022 – 12/2025
Intern, Ziyou Xinshe Consulting Co., Ltd.	07/2022 - 09/2022

SKILLS AND CERTIFICATIONS

Programming: MATLAB (EEGLAB, Psychtoolbox), Python (Numpy, Pytorch, PschoPy, TensorFlow), C++, JAVA.

Other Software: Adobe Illustrator, SPSS, GPower, Graphpad Prism, 3D Max, NVivo, E-Prime.

Analysis Skills: Markov Chain Model, Hidden Markov Chain Model, Ideal Observer Model, Gaussian Derivatives, Improved Mean Squared Error, Response Error, Eye-tracking, EEG.

Language: Mandarin (Native), English (IELTS 7)