Baiqiao Zhang

CONTACT INFORMATION

Department of Computer Science and Engineering
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EDUCATION

Shandong University, Shandong, China

B.S. Computer Science (*SDU-ANU Joint Program*), August 2021 - July 2025

- **Advisor:** Yulong Bian, Xiangxian Li and Juan Liu
- **Courses:** Human-Computer Interaction Technology(99), Machine Learning, VR System Development and Usability Evaluation(99), Digital Image Processing(92), 3D Content Design and Creation(96), Web Technology(93), Java Programming(93), Calculus(91), Linear Algebra, Probability Theory, Data Structures, Database Systems, Algorithm Design and Analysis.
- **Thesis**: *Exploring a Gamified Personality Assessment Method through Interaction with Multi-Personality LLM Agents.*
- **GPA**: 88.20/100
- **Rank**: 5/102

Hong Kong University of Science and Technology, Hongkong SAR, China

Ph.D. in Computer Science and Engineering, August 2025 - June 2029 (expected)

- **Advisor:** Xiaojuan Ma

RESEARCH EXPERIENCE

Exploring The Features and Method of Detecting Simultaneous Flow Experiences Based on EEG Signals.
Research Assistant — May. 2023 to Aug. 2024
Shandong University, Shandong, China
Supervisor: Yulong Bian

- Designed a two-user task for continuously measuring simultaneous flow in collaboration based on which we constructed the first multichannel EEG dataset of simultaneous flow.
- Through intensive experiments and analyses of ML models, validated the effectiveness of inter-brain synchrony features in team flow state recognition.

Enhancing Recognition of Stereotyped Movements in ASD Children through Action Pattern Mining and Multi-Channel Fusion.
Research Assistant — Aug. 2023 to Apr. 2024
Shandong University, Shandong, China
Supervisor: Xiangxian Li, Juan Liu

- Proposed a multi-modal fusion framework for ASD stereotyped movements recognition through the effective construction of structured modeling of skeleton point information and the achievement of efficient fusion of visual and structural information.
- Achieved SOTA performance in stereotyped movements recognition in children with autism, significantly aiding in early screening.

AttentionGo: A Family-based Tangible Neurofeedback Tool Supporting Sustainable Training for Children with ADHD

Research Assistant Feb. 2024 to Aug. 2024
Shandong University, Shandong, China
Supervisor: Yulong Bian, Juan Liu

- Collected a 64-channel EEG dataset of tongue motor imagery using high-precision EEG equipment.
- Designed the transfer learning algorithm META-EEG, which uses full-channel EEG signals from the training data to enhance the representation learning of target low-channel EEG signals, enabling accurate real-time tongue movement recognition with low-channel EEG devices in interactive tasks.

Becoming An Animal? Exploring Proteus Effect Based on Human-avatar Hand Gesture Consistency
Research Assistant Feb. 2024 to Oct. 2024
Shandong University, Shandong, China
Supervisor: Yulong Bian, Juan Liu

- Explored the impact of the Proteus Effect on human cognition and behavior when using non-human avatars in VR environments. To objectively assess this effect, I developed and trained a hand gesture recognition model based on Gated Recurrent Units (GRU), capable of detecting the consistency between user gestures and avatar gestures in real-time.

Exploring a Gamified Personality Assessment Method through Interaction with Multi-Personality LLM Agents
Research Assistant May. 2024 to Apr. 2025
Tsinghua University, Beijing, China
Supervisor: Yulong Bian, Chao Zhou, Yongjin Liu

- Implemented personality editing for LLM agents using prompt engineering to explore user preferences and effectiveness in game scenarios.
- Designed a conceptual architecture and gamified assessment pipeline. Created an integrated system architecture for LLM agents, combining role-playing, perception, cognition, and game environment interaction to simulate realistic interactions and assess personality traits.

Rethinking Personality Assessment from Human-Agent Dialogues: Fewer Rounds May Be Better Than More
Research Assistant Apr. 2025 to Jul. 2025
Shandong University, Shandong, China
Supervisor: Yulong Bian, Xiangxian Li, Xiaojuan Ma

- Introduced Personality-1260 dataset, addressing the gap in existing datasets that lack either interactivity or authentic user labels.
- Experimentally explored how different interaction rounds and agent personalities influence personality assessment.

Social Decision Prediction via Human-Agent Interaction: The Role of Agent Personality and Personality Compatibility
Research Assistant Apr. 2025 to Present
Tsinghua University, Beijing, China
Shandong University, Shandong, China
Supervisor: Yulong Bian, Yongjin Liu, Xiaojuan Ma

- Proposed a Multi-Agent framework that performs dynamic modeling and decision prediction for users through modeling psychological states and extracting social reasoning-related information.
- Explored how the personality traits of interactive agents and human-agent personality compatibility affect user social decision prediction.

Research Interests

My long-term research goal is to use AI technology to better understand human needs, emotions, and behavior by analyzing physiological signals, user interactions, and behavior data, and to advance the development of intelligent systems in human-computer interaction, personalized services, and mental health.

As a part of my research, my interests covering the following areas:

- Human-Computer Interaction
- Brain-Computer Interface
- Pattern Recognition
- Ubiquitous Computing
- VR
- User Experience
- LLM
- Machine Learning

Honors And Awards

- **ACM Multimedia 2025 Outstanding Paper Award** 2025
- **Outstanding Graduate of Shandong University (6%)** 2025
- **Finalist for Shandong University President's Award (Research Track) (25/42254)** - Highest Honor of SDU 2024
- **CHCI 2024 Best Paper Honorable Mention Award** 2024
- **Shandong University 120th Anniversary Scholarship (120/42254)** 2024
- **Second Prize in National College Student Software Innovation Competition (20th/1139)** 2024
- **CHCI 2023 Best Paper Honorable Mention Award** 2023
- **Shandong University Special Talent Scholarship** 2022-2023
- **Shandong University Academic Scholarship** 2022

Programing

Python, PyTorch, Matlab, SQL, C/C++, Java, Unity and LaTeX.

Community service, and mentorship

- **Master Student Mentoring (SDU)** 2024
  - Guided three master students in research topics related to team flow calculation based on EEG signals. The mentor helped improve test accuracy and provided guidance on article writing. Some of the results have been submitted to Ubicomp/IMWUT 2025.
- **Undergraduate Student Mentoring (SDU)** 2024
  - Guided three undergraduate students in the research topic of brain computer interfaces, including preprocessing EEG data and developing deep learning algorithms for classifying tongue movement signals. The mentor helped transfer the model from multi-channel to fewer channels and applied it to control a remote-controlled car for rehabilitation training of children with ADHD. Some of the results won the Second Prize in the National College Student Software Innovation Competition and have been submitted to the International Journal of Human-Computer Studies.
  - Guided an undergraduate student in the research topic of potential applications of Large Language Models (LLMs) in intention understanding. The student has been admitted to Tsinghua University's Winter Camp, and some of the results will be submitted to EMNLP 2025.

Publications

1. **Baiqiao Zhang**, Xiangxian Li, Yunfan Zhou, Juan Liu, Weiying Liu, Chao Zhou*, Yulong Bian*. *Are We in The Zone? Exploring The Features and Method of Detecting Simultaneous Flow Experiences Based on EEG Signals*, **Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/Ubicomp)**, 2024,.
2. **Baiqiao Zhang**, Yanran Yuan, Wei Qin, Xiangxian Li, Weiying Liu, Wenxin Yao, Yulong Bian and Juan Liu*. *Enhancing Recognition of Stereotyped Movements in ASD Children through Action Pattern Mining and Multi-Channel Fusion*, **IEEE Journal of Biomedical and Health Informatics (JBHI)**, 2024, *Featured Article*.
3. **Baiqiao Zhang**, Xiangxian Li, Chao Zhou, Juan Liu, Xue Yang, Xinyu Gai, Yong-Jin Liu*, Yulong Bian*, *Exploring a Gamified Personality Assessment Method through Interaction with Multi-Personality LLM Agents*, submitted to **a top HCI conference**, 2025.
4. **Baiqiao Zhang**, Zhifeng Liao, Xiangxian Li*, Chao Zhou, Juan Liu, Xiaojuan Ma*, Yulong Bian*, *Rethinking Personality Assessment from Human-Agent Dialogues: Fewer Rounds May Be Better Than More*, submitted to **a top NLP conference**, 2025.
5. Yunfan Zhou**, **Baiqiao Zhang****, Juan Liu, Yulong Bian. *Research on Team Flow Experience Recognition Based on EEG Signals*, **CHCI**, 2023, *Best Paper Honorable Mention Award*, ** Co-first authors.
6. Xiangxian Li, Yawen Zheng*, **Baiqiao Zhang**, Yijia Ma, XianhuiCao, Juan Liu, Yulong Bian, Jin Huang, Chenglei Yang. *MAGNeT: Multimodal Adaptive Gaussian Networks for Intent Inference in Moving Target Selection across Complex Scenario*, **ACM International Conference on Multimedia**, 2025, *Outstanding Paper Award (Oral)*.
7. Weiying Liu, Yanyan Zhang, **Baiqiao Zhang**, Qianqian Xiong, Hong Zhao, Sheng Li*, Juan Liu*, Yulong Bian. *Self-Guided DMT: Exploring a Novel Paradigm of Dance Movement Therapy in Mixed Reality for Children with ASD*, **IEEE Transactions on Visualization and Computer Graphics**, 2024.
8. Tangjun Qu, Junjie Wang, Yongjiu Lin, Juan Liu, Chao Zhou, **Baiqiao Zhang**, Kaiyuan Jiang, Yulong Bian*. *Becoming An Animal? Exploring Proteus Effect Based on Human-avatar Hand Gesture Consistency*, **IEEE International Symposium on Mixed and Augmented Reality (ISMAR)**, 2024.
9. Chao Zhou, Juan Liu, Wenxiu Geng, **Baiqiao Zhang**, Kaiyuan Jiang, Yulong Bian*. *Positive or Negative? The Effect of Self-motion Speed on Flow Experience is Moderated by Susceptibility to VR Sickness*, **IEEE International Symposium on Mixed and Augmented Reality (ISMAR)**, Poster, 2024.
10. Yuan Yue, Chao Zhou, Tangjun Qu, **Baiqiao Zhang**, Juan Liu, Junhao Wang, Tianren Luo, Yulong Bian*, Multi-sensory Simulation of Wind Sensation (MSSWS): An Approach of Reducing Motion Sickness in Passive Virtual Driving, **IEEE VR**, Poster, 2025.