

# JIZHOU GUO

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Research Interests: Large Language Models and Foundation Models.

## EDUCATION

**Shanghai Jiao Tong University** • Shanghai, China Aug 2022 – Present  
*Bachelor of Science* • Zhiyuan College (**Honor, Top 10%**) • Mathematics and Applied Mathematics • GPA: 3.8  
**Relevant Coursework:** Data Structure (Honor), Introduction to Computer Science, Foundations of Data Science, Mathematical Statistics, Numerical Methods for ODE & PDEs, Selected Topics in Scientific Computing, Numerical Analysis and Scientific Computing, Probability, Stochastic Process, Real Analysis, Mathematical Analysis (Honor), Advanced Algebra (Honor), Differential Geometry, Topic Course (Applied Mathematics & Deep Learning), Independent Research.

## PUBLICATIONS

*\* denotes equal contribution*

### Reward Inside the Model: A Lightweight Hidden-State Reward Model for LLM’s Best-of-N sampling

Jizhou Guo, Zhaomin Wu, Philip S. Yu

Under review [\[arXiv\]](#)

- Proposed *ELHSR*, a highly parameter-efficient reward model leveraging the LLM hidden states, which **systematically outperforms baselines** with **less than 0.005% of the parameters** of baselines, resulting in orders-of-magnitude efficiency improvement. It also performs well with limited data and extends to logit-only training.
- I was solely responsible for the ideation, experimental validation, and writing of the manuscript.

### Model-based Large Language Model Customization as Service

Zhaomin Wu\*, Jizhou Guo\*, Junyi Hou, Bingsheng He, Lixin Fan, Qiang Yang

Under review [\[arXiv\]](#)

- Proposed *Llamdex*, a novel framework that facilitates LLM customization as a service for domain-specific applications. It achieved substantial performance improvements in domain-specific tasks, **boosting accuracy by up to 26%** while preserving privacy and maintaining efficiency on par with the base LLM.
- I designed the core modules (encoder and mapping module), conducted extensive experimentation, and contributed to manuscript writing.

### Calibrating Reasoning in Language Models with Internal Consistency

Zhihui Xie, Jizhou Guo, Tong Yu, Shuai Li

*NeurIPS 2024* [\[arXiv\]](#) [\[poster\]](#) [\[code\]](#)

- Developed a novel “*internal consistency*” approach to calibrate reasoning in LLMs, resulting in a significant boost in reasoning performance **without requiring additional training**.
- I assisted with experimentation, including conducting in-depth analysis of Chain-of-Thought (CoT) reasoning in LLMs through the lens of internal representations, and actively participated in the submission rebuttal process.

### Cross-Stimulus Transfer Learning: Enhancing Emotion Recognition from Visual-Auditory to Olfactory Perception

Jiaqi Wang\*, Zhengting Chen\*, Keyan Huang, Yifan Wu, Dian Zhang, Jizhou Guo, Xinglan Liu, Dan Peng, Baoliang Lu, Weilong Zheng

*EMBC 2025* (Full Contributed paper)

- Implemented a Transformer-based Domain-Adversarial Neural Network (DANN) to transfer knowledge from visual to olfactory EEG data for emotion classification.
- I assisted with the execution of experiments.

### EEG-based Emotion Recognition in an Olfactory Stimulation Paradigm

Jiaqi Wang\*, Zhengting Chen\*, Keyan Huang, Yifan Wu, Dian Zhang, Jizhou Guo, Xinglan Liu, Dan Peng, Baoliang Lu, Weilong Zheng

*EMBC 2025* (Research posters abstract) *In submission to main conference*

- Collected data and applied machine learning techniques to predict human emotions from EEG signals in response to various olfactory stimuli.
- I assisted in preparing experiment materials and participated in EEG signal collection experiments.

## RESEARCH EXPERIENCE

### Xtra Group - National University of Singapore

Jun 2024 – Aug 2024

Advisor: [Prof. Bingsheng He](#)

### John Hopcroft Center for Computer Science - Shanghai Jiao Tong University

Oct 2023 – May 2024

Advisor: [Prof. Shuai Li](#) and [Dr. Tong Yu](#)

### Zhiyuan Innovative Research Center - Shanghai Jiao Tong University

Dec 2022 - Jan 2024

Advisor: [Prof. Bao-Liang Lu](#) and [Prof. Wei-Long Zheng](#) [\[Certificate of Completion\]](#)

### Quantitative Biology Summer School - Center for Life Sciences, Peking University

Jul 2023

- Chosen from 50 candidates nationwide.

### Tencent Spark Project - Tencent Corporation

Aug 2022

- Chosen from 50 high-school students with talents nationwide.
- Engineered a robust palm liveness detection system and successfully blocking palm images displayed on screens and improving overall system reliability.

### SELECTED PROJECTS

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#### Two-Area RNN: Representations for Context-Dependent Decisions

Fall 2024

Team leader, advised by [Prof. Douglas Zhou](#) [PDF] [code]

- Presented the Two-Area Recurrent Neural Network (2aRNN) model, which extends the understanding of context-dependent decision-making processes by simulating the neural dynamics.

#### Vertical Federated Learning Challenge

Spring 2024

Individual project, advised by [Prof. Bingsheng He](#) [code]

- Implemented SplitNN within a Vertical Federated Learning framework for distributed computing and conducted a scalability assessment.

#### Deep Reinforcement Learning: Insights from AlphaGo

Spring 2024

Team leader, advised by [Prof. Dan Hu](#) (Scored 100)

- Demonstrated the core mechanisms of AlphaGo, corresponding deep reinforcement learning approaches, and related theoretical frameworks.

#### Frequency principle in deep learning

Autumn 2023

Individual project, advised by [Prof. Zhi-Qin John Xu](#) (High-mark project)

- Validated the frequency principle: deep neural networks often fit target functions from low to high frequencies.

### SELECTED AWARDS

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Click [here](#) to view all certificates

#### Contest Prizes

- **Gold Award** and **First Runner-up** in the National College Students' Career Planning Contest (Shanghai), Jan 2025
- Third Prize in Mathematics competition of Chinese College Students (Shanghai), Dec 2023
- **First Prize** in Shanghai Collegiate Programming Contest, Sep 2023 (Ranked 2nd in Shanghai)
- **Gold Medal** in Astar Programming Contest (Shanghai region), Aug 2023 (Ranked 2nd in Shanghai)
- **Gold Medal** in 2023 China Collegiate Programming Contest (**CCPC**) National Invitational Contest (Hunan), May 2023
- **Gold Medal** in 2023 International Collegiate Programming Contest (**ICPC**) Xi'an Invitational Contest, May 2023
- **Gold Medal** in 2022 International Collegiate Programming Contest (**ICPC**) Asia Hangzhou Regional Contest, Dec 2022 (Ranked 8th nationwide)
- **Gold Medal** in 2022 China Collegiate Programming Contest (**CCPC**) (Shanghai region), Sep 2022
- **Silver Medal** in National Olympiad in Informatics (**NOI**), Jul 2021
- **Ranked 22nd nationwide** in National Olympiad in Informatics (**NOI**) Online Senior Group, Mar 2021

#### Honors

- Zhiyuan **First-Class** Overseas Research Scholarship
- Merit Student of SJTU
- Second-Class Academic Scholarship, SJTU (Top 10%, ranked 2nd overall)
- Zhiyuan Honors Scholarship (three times)

### SERVICES

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Invited as reviewer: EMBC 2025

### SKILLS

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- Programming languages: Python, C/C++, Matlab, GNU Bash, L<sup>A</sup>T<sub>E</sub>X.
- Language: Chinese (Native Speaker), English (Proficient, TOEFL 105, CET6 648).
- Expertise & Hobbies: Piano (Amateur Level 10), Singing (Amateur Level 9), Music Theory (Amateur Level 5).