

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 *ELHSSR*, 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 entire research lifecycle, including the ideation, experimental validation, and article writing, with co-authors providing feedback on the writing style.

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 article 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, contributed to article writing (including illustration), 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

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

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

Invited as reviewer: EMBC 2025

SKILLS

- Programming languages: Python, C/C++, Matlab, GNU Bash, \LaTeX .
- 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).