

JIZHOU GUO

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Research Interests: Large Language Models, AI for Science.

EDUCATION

Shanghai Jiao Tong University • Shanghai, China Aug 2022 – Present
Bachelor of Science • Zhiyuan College (**Honor, Top 10%**) • Mathematics and Applied Mathematics • GPA: 3.77
Relevant Coursework: Introduction to Computer Science, Introduction to Data Science, Selected Topics in Scientific Computing, Numerical Analysis, Probability Theory, Stochastic Processes, Real Analysis, Ordinary Differential Equations, Partial Differential Equations.

PUBLICATIONS

* denotes equal contribution

- **Model-Based Differentially Private Knowledge Transfer for Large Language Models**
Zhaomin Wu*, **Jizhou Guo***, Junyi Hou, Bingsheng He, Lixin Fan, Qiang Yang
Under review [\[arXiv\]](#)
- **Calibrating Reasoning in Language Models with Internal Consistency**
Zhihui Xie, **Jizhou Guo**, Tong Yu, Shuai Li
NeurIPS 2024 [\[arXiv\]](#)
- **Olfactory-EEG Paradigm: Emotion Elicitation and Cross-Stimulus Transfer Learning Analysis**
Jiaqi Wang, Zhengting Chen, Yifan Wu, Keyan Huang, Dian Zhang, **Jizhou Guo**, Xinglan Liu, Dan Peng, Weilong Zheng, Baoliang Lu
Under review

RESEARCH EXPERIENCE

Xtra Group - National University of Singapore Jun 2024 – Oct 2024
Advisor: [Prof. Bingsheng He](#)

- Proposed Llamdex, a novel framework that integrates privacy-preserving, domain-specific models into LLMs.
- Demonstrated significant performance gains in domain-specific tasks, with up to 26% accuracy improvement while maintaining differential privacy guarantees.
- Achieved comparable inference efficiency to base LLMs while enhancing domain-specific capabilities.

John Hopcroft Center for Computer Science - Shanghai Jiao Tong University Oct 2023 – May 2024
Advisor: [Prof. Shuai Li](#) and [Dr. Tong Yu](#)

- Developed a novel “internal consistency” approach to calibrate reasoning in Large Language Models (LLMs), resulting in a significant boost in reasoning performance.
- Conducted in-depth analysis of Chain-of-Thought (CoT) reasoning in LLMs through the lens of internal representations.

Zhiyuan Innovative Research Center - Shanghai Jiao Tong University Dec 2022 - Jan 2024
Advisor: [Prof. Bao-Liang Lu](#) and [Prof. Wei-Long Zheng](#)

- Designed and executed experiments to predict human emotions from EEG signals under various olfactory stimuli.
- Implemented and compared multiple deep learning models (MLP, CNN, Transformer) with Domain-Adversarial Neural Networks (DANN).

Quantitative Biology Summer School - Center for Life Sciences, Peking University Jul 2023

- Completed advanced courses in Systems Biology, Computational Neuroscience, and Bioinformatics, earning relevant certifications.
- Conceptualized and simulated a novel bio-responsive bandage using MATLAB, modeling drug diffusion processes for optimized wound healing.

Tencent Spark Project - Tencent Corporation Aug 2022

- Engineered a robust palm liveness detection system.
- Integrated MediaPipe library to implement real-time palm movement validation.
- Developed an innovative screen detection algorithm using RGB to YCrCb color space conversion, successfully blocking palm images displayed on screens and improving overall system reliability.

COURSE PROJECTS

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](#) (**Achieved the top score**)

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

- Conducted experiment on frequency principle when fitting different functions or using different hyperparameters.

Fresnel Integral & Van der Waals equation

Spring 2023

Team project, advised by [Prof. Zhenli Xu](#)

- Tested and compared the performance of various methods when calculating Fresnel Integral.
- Compared the performance of Newton's method and fixed point iteration method when solving Van der Waals equation.

HONORS AND AWARDS

Contest Prizes

- **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

- Merit Student in the Student Community (**Among 19 SJTU undergraduate and graduate recipients**)
- Second-Class Academic Scholarship, SJTU (**Top 5%, ranked 2nd overall**)
- Zhiyuan Honors Scholarship (**twice**)

TECHNICAL SKILLS

- Programming languages: Python, C, C++, MATLAB, Linux Shell.
- 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).