

# 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).

## 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 – Aug 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 LLMs, **resulting in a significant boost in reasoning performance** without requiring additional training.
- 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.
- Successfully blocking palm images displayed on screens and improving overall system reliability.

## COURSE PROJECTS

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

Fall 2024

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

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

### 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.

## 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 Region)
- 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)

## SKILLS

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