Jizhou Guo

Homepage • sjtu18640985163@sjtu.edu.cn • LinkedIn • Google Scholar • Github

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*

Model-Based Privacy-Preserving 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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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)

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).