YIJIA XIAO

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Objective

Seeking to apply my expertise in **Multimodal Large Language Models** and **LLM Agents** to:
I. Multi-Modal Alignment: Fuse domain-specific data (e.g., science, finance) with text/image modalities using LLMs.
II. First Principles: Derive complex properties from primary data like financial time series and biological sequences.

Education

- **University of California, Los Angeles** *2022 – June 2027*
  Ph.D. Student in Computer Science Los Angeles, CA, USA
  - Advisor: Professor Wei Wang
- **Tsinghua University** *2018 – 2022*
  Bachelor of Computer Science and Technology Beijing, China
  - Advisor: Professor Jie Tang

Experience

- **Amazon Web Services** *June 2024 – Sep. 2024*
  Applied Scientist Intern Seattle, WA, USA
  - Researched the applications of Large Language Model Agents in automated code deployment.
  - Developed an LLM multi-agents framework to automate GitHub repositories deployment by enabling instruction understanding, shell script drafting, tool execution (e.g., Linux Shell, Perplexity Search), system log analysis, and issue database retrieval using Retrieval-Augmented Generation (RAG).
  - First-Authored a paper based on internship work, accepted at NAACL Main Track (Publication [C.2]).
  - Received excellent feedback rating from mentor and manager, resulting in a **return offer** for next year's internship.
- **NEC Labs America** *July 2023 – Sep. 2023*
  Research Intern Princeton, NJ, USA
  - Conducted research on privacy-preserving fine-tuning of Large Language Models, proposing a lightweight tuning scheme that balances utility and privacy.
  - Published the work at the EMNLP 2024 main conference (Publication [C.3]).
  - Applied the method to medical scenarios, leading to a U.S. patent application filed on behalf of the company.
- **Tsinghua University** *Dec. 2020 – Aug. 2021*
  Project Leader Beijing, China
  - Led and Pre-trained the world's 2^{nd}-largest Protein LLM **ProteinLM** (*Wen Su*), significantly improving contact prediction accuracy from 36% to 75%. Wikipedia Page for my work, part of WuDao LLM.
  - Developed ProteinLM, a protein language model pretraining framework based on NVIDIA's Megatron-LM.
  - Managed a cluster of 504 NVIDIA Tesla V100 (32G) GPUs to pre-train *Wen Su*.
  - Model request form statistics show that ProteinLM has been used by researchers from over 20 institutions, including Harvard, University of Toronto, and NVIDIA, etc.
- **Sequoia Capital China** *July 2022 – Sep. 2022*
  Seed Group Intern Beijing, China
  - Focused on investments in computer infrastructure, renewable energy (photovoltaic, hydrogen), and AI4Science.
  - Contributed to over 20 investment deals by assisting in market analysis, technical roadmap reviews, due diligence, team roadshows, term sheet drafting, and more.
- **Toyota Technological Institute at Chicago (TTIC)** *June 2021 – June 2022*
  Research Assistant Chicago, IL, USA
  - Led the project *Unsupervised Contact Prediction with Large MSA Language Model*.
  - Proposed *fragment training* to balance the width and depth of Multiple Sequence Alignments (MSA), allowing pre-training of a 1-billion-parameter MSA model (the world's largest) using only 10% of the data required by previous state-of-the-art methods.
  - Achieved a 3.5% improvement over state-of-the-art results and exceeded Meta AI's performance using significantly less training data.
  - Demonstrated that increasing model scale enhances the capture of long-range dependencies in sequences.
- **Tencent Inc.** *Sep. 2021 – May 2022*
  Research Intern Shenzhen, China
  - Developed models for protein multiple sequence alignments and localized protein database services.
  - Published research on deep-learning-powered protein-ligand docking affinity prediction under data-scarce scenarios in *Briefings in Bioinformatics*.

I. Large Language Model Agents

[C.1] **Yijia Xiao**, Edward Sun, Di Luo, Wei Wang. (2025). **TradingAgents: Multi-Agents LLM Financial Trading Framework**. Accepted at *Multi-Agent AI in the Real World, AAAI 2025*.

- TradingAgents has received interest from venture capital firms and financial startups.
- See a financial expert's *Summary on LinkedIn*. Visit the TradingAgents Homepage for more details.

[C.2] **Yijia Xiao**, Runhui Wang, Luyang Kong, Davor Golac, Wei Wang. (2024). **CSR-Bench: Benchmarking LLM Agents in Deployment of Computer Science Research Repositories**. Accepted at *NAACL* 2025.

- CSR-Agents is a multi-agents LLM framework for automated code repository deployment.
- My internship performance received excellent feedback from my mentor & manager, leading to a return offer. The paper and framework will be released soon.

[C.3] Yiqiao Jin, Qinlin Zhao, Yiyang Wang, Hao Chen, Kaijie Zhu, **Yijia Xiao**, Jindong Wang. (2024). **AgentReview: Exploring Peer Review Dynamics with LLM Agents**. In *Empirical Methods in Natural Language Processing (EMNLP) 2024*.

II. Multimodal Large Language Model

[S.1] **Yijia Xiao**, Edward Sun, Yiqiao Jin, Qifan Wang, Wei Wang. (2024). **ProteinGPT: Multimodal LLM for Protein Property Prediction and Structure Understanding**. Submitted to *KDD 2025*.

- Collaboration with *Meta AI*: ProteinGPT is a multi-modal Protein ChatGPT-like system that integrates sequence and structure encoders with an LLM for precise analysis and responses.

[C.4] **Yijia Xiao**, Edward Sun, Yiqiao Jin, Wei Wang. (2024). **RNA-GPT: Multimodal Generative System for RNA Sequence Understanding**. In *Machine Learning for Structural Biology Workshop, NeurIPS 2024*.

[S.2] **Yijia Xiao**, Edward Sun, Wei Wang. (2024). **LogicVista: Multimodal LLM Logical Reasoning Benchmark in Visual Contexts**.

[C.5] Tianyu Liu, **Yijia Xiao**, Xiao Luo, Hua Xu, W. Jim Zheng, Hongyu Zhao. (2023). **Geneverse: A Collection of Open-source Multimodal Large Language Models for Genomic and Proteomic Research**. In *Empirical Methods in Natural Language Processing (EMNLP) 2024*.

[C.6] Fan Zhang, Changhu Wang, et al., Dongjie Wang, **Yijia Xiao**, Chong Chen, Xian-Sheng Hua, Xiao Luo. (2025). **DREAM: Decoupled Discriminative Learning with Bigraph-aware Alignment for Semi-supervised 2D-3D Cross-modal Retrieval**. In *AAAI 2025*.

III. AI for Biology & Healthcare

[C.7] **Yijia Xiao**, Jiezhong Qiu, Ziang Li, Chang-Yu Hsieh, Jie Tang. (2021). **Modeling Protein Using Large-scale Pretrain Language Model**. In *Pretrain Workshop, KDD 2021*.

- The **1st** and **largest** Protein LLM in China as of 2021-2023, ProteinLM (*Wen Su*), is part of the Wu Dao project.
- Wikipedia page covering Protein LLM *Wen Su*: Wu Dao.

[J.1] Zi-Yi Yang, Zhao-Feng Ye, **Yi-Jia Xiao**, Chang-Yu Hsieh, Sheng-Yu Zhang. (2022). **SPLDExtraTrees: Robust Machine Learning Approach for Predicting Kinase Inhibitor Resistance**. In *Briefings in Bioinformatics*.

[S.3] **Yijia Xiao**, Dylan Steinecke, Alexander Russell Pelletier, Yushi Bai, Peipei Ping, Wei Wang. (2023). **Know2BIO: A Comprehensive Dual-View Benchmark for Evolving Biomedical Knowledge Graphs**.

[C.8] Mingyu Ma, **Yijia Xiao**, Anthony Cuturrufo, Xiaoxuan Wang, Vijay Nori, Wei Wang. (2024). **Memorize and Rank: Elevating Large Language Models for Clinical Diagnosis Prediction**. In *AAAI 2025*.

[C.9] Rakesh Bal, **Yijia Xiao**, Wei Wang. (2023). **PGraphDTA: Improving Drug Target Interaction Prediction using Protein Language Models and Contact Maps**. In *NeurIPS AI for Science Workshop 2023*.

[S.4] **Yijia Xiao**, Fang Sun, Xiao Luo, Yizhou Sun, Wei Wang. (2024). **RLMC: RNA Language Model with Contrastive Learning**.

IV. LLM Security & Evaluation

[C.10] **Yijia Xiao**, Yiqiao Jin, Yushi Bai, Yue Wu, Xianjun Yang, Xiao Luo, Wenchao Yu, Xujiang Zhao, Yanchi Liu, Quanquan Gu, Haifeng Chen, Wei Wang, Wei Cheng. (2023). **PrivacyMind: Large Language Models Can Be Good Privacy Protection Learners**. Accepted at *Empirical Methods in Natural Language Processing (EMNLP) 2024*.

[P.1] Wei Cheng, Wenchao Yu, Yanchi Liu, Xujiang Zhao, Haifeng Chen, and **Yijia Xiao**. (2023). **Privacy Protection Tuning for LLMs in Medical Decision Making**. *Patent Application No. Docket 23060*.

[C.11] Yushi Bai, Jiahao Ying, Yixin Cao, et al., **Yijia Xiao**, Haozhe Lyu, Jiayin Zhang, Juanzi Li, Lei Hou. (2023). **Benchmarking Foundation Models with Language-Model-as-an-Examiner**. In *NeurIPS 2023*.

Honors and Awards

- **Research Excellence Scholarship**, Tsinghua University, 2021. Ranked top 2%, 3rd out of 230 students.
- **Science and Technology Innovation Scholarship**, Tsinghua University, 2021. Ranked top 2%, 3rd out of 230 students.
- **Technology Innovation Scholarship**, Tsinghua University, 2020. Ranked top 5%, 6th out of 230 students.
- **Silver Medal**, International Collegiate Programming Contest (ICPC) Asia East Continent Final, 2020.
- **Gold Medal**, International Collegiate Programming Contest (ICPC) Asia Regional Contest, 2020.
- **First Prize**, Chinese Collegiate Physics Olympiad, 2019.
- **National Bronze Medal**, Chinese Physics Olympiad, 2017.
- **National Bronze Medal**, China Western Mathematics Invitational, 2017.

Leadership Experience

- **Business Development Team** | ***Chinese Entrepreneurs Organization*** *2022 – 2024*
  Engaged in business development activities at Stanford, CA
- **Organizer** | ***Tsinghua Future Internet Computing Club*** *2020 – 2022*
  Organized events and workshops related to future internet computing
- **Member** | ***Tsinghua Entrepreneurship Training Program*** *2020 – 2022*
  Selected as one of 30 members per year in Tsinghua University

Professional Memberships

- **Reviewer**, NeurIPS 2023/2024, ICML 2023/2024, ICLR 2023, AISTATS 2024, ACM Multimedia, PLOS ONE, etc.