YUANYUAN ZHANG

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EDUCATION

Purdue University, West Lafayette, IN, US 2021.9 – 2026.5(expect)

Ph.D student in Computer Science, GPA: 3.8/4.0

University of Chinese Academy of Sciences,Beijing, China 2018.8 – 2021.6

Master in Computer Science

Sichuan University, Sichuan, China 2014.9 – 2018.6

Bachelor in Computer Science and Technology

EXPERIENCE

Samsung America, Seattle WA, US 2025.5 – 2025.8

Research intern

Large Language Model post-training, Chain-Of-Thought reasoning on scaled model

- Developed novel LLM-based log anomaly detection method that provides root cause analysis beyond detection, achieving 97% F1 score with 8B model (beating 235B baselines).
- Proposed novel hierarchical Chain-of-Thought knowledge distillation from teacher model to student model significantly reducing training cost while maintaining performance.
- Achieved 3.2x improvement in reasoning quality and 16x improvement in root cause diagnosis compared to larger LLMs, reducing debugging time by 60% in production tests

Noble Lab and Wang Lab, University of Washington Seattle, WA, US 2024.6 – 2024.8

Research intern Advisor: Prof. William Stafford Noble and Sheng Wang

Self-supervised foundation model on Hi-C image data

- developed a contrastive based masked autoencoder for Hi-C data.
- integrated vision transformer as network architecture.

Neural radiance field(NeRF) on cryo-EM 3D image reconstruction

- worked on NeRF application on cryo-EM 3D image
- designed heterogenity-aware encoder for cryo-EM heterogeneity problem
- utilized hash encoding to effectively encode the query coordinates.

KiharaLab, Purdue University West Lafayette, IN, US 2022.5 – Present

Research assistant Advisor: Prof. Daisuke Kihara

Flow-matching on cryo-EM map segmentation

- developed a conditioned rectified flow matching algorithm for cryo-EM 3D density image segmentation
- used Unet based transformer architecture to effectly extract features

3D detection on Cryo-EM map

- proposed a 3D-MUNet to accurately detect structural class from 3D density input.

Protein structure prediction based on AlphaFold2

- proposed a fine-tuning pipeline to optimize structure module in AF2 under constraints.
- designed multi-task loss to optimize structure prediction

Key Laboratory of Nerwork Data Science and Technology, CAS Beijing, China 2019.8 – 2021.6

Research assistant

Sentiment analysis and knowledge graph network by deep learning

Xiaomi Co., Ltd. Beijing, China 2019.3 – 2019.7

Machine Learning Algorithm Intern

Optimize recommendation algorithm based on feeds information

Selected Publications

- **Zhang, Y.**, Bai, Y., Zhu, J., Hao, H. & Min, S. (2025) LLMAD-mini: Efficient Distilling Chain-of-Thought for Interpretable Log Anomaly Reasoning and Detection using Large Language Model. (*Submitted to ICLR 2026*)
- Jiang, Y.*, Li, X.*, **Zhang, Y.***, Han, J., Xu, Y., Pandit, A., ... & Liu, J. (2025). PoseX: AI Defeats Physics Approaches on Protein-Ligand Cross Docking. (*Submitted to ICLR 2026*)`https://arxiv.org/abs/2505.01700`
- Liu, X.*, **Zhang, Y.***, Lu, Y., Yin, C., Hu, X., Liu, X., ... & Wang, X. (2025). Biomedical Foundation Model: A Survey. `https://arxiv.org/abs/2503.02104`
- Wang, X.*, **Zhang, Y.***, Ray, S., Jha, A., Fang, T., Hang, S., ... & Wang, S. (2024). A generalizable Hi-C foundation model for chromatin architecture, single-cell and multi-omics analysis across species. bioRxiv. *Nature Methods* (Under 2nd review). `https://www.biorxiv.org/content/10.1101/2024.12.16.628821v1.abstract`
- **Zhang, Y.**, Zhang, Z., Kagaya, Y., Terashi, G., Zhao, B., Xiong, Y., & Kihara, D. (2023). Distance-AF: Modifying Predicted Protein Structure Models by Alphafold2 with User-Specified Distance Constraints. *Accepted by Nature Communications Biology*. `https://www.biorxiv.org/content/10.1101/2023.12.01.569498v1`
- Xu, Z., Wu, F., **Zhang, Y.**, & Zhao, Y. (2024). Retrieval-reasoning large language model-based synthetic clinical trial generation. (*Accepted by 2025 SIGKDD*) `https://arxiv.org/abs/2410.12476`
- Qu, H., Wang, X., **Zhang, Y.**, Wang, S., Noble, W. S., & Chen, T. (2025). CryoNeRF: reconstruction of homogeneous and heterogeneous cryo-EM structures using neural radiance field. *Nature Biotechnology*. (Under 1st review) `https://www.biorxiv.org/content/10.1101/2025.01.10.632460v1`
- **Zhang, Y.**, Wang, X., Li, S., Terashi, G., Nakamura,T. & Kihara, D. (2024). DAQ-ATOM score for protein models evaluation from high-resolution Cryo-EM maps.*In submission to Nature Methods*
- Xu, Z., Wu, F., **Zhang, Y.**, & Zhao, Y. (2024). Retrieval-reasoning large language model-based synthetic clinical trial generation. arXiv preprint arXiv:2410.12476. `https://arxiv.org/abs/2410.12476`
- **Zhang, Y.**, Wang, X., Zhang, Z., Huang, Y., & Kihara, D. (2024). Assessment of Protein–Protein Docking Models Using Deep Learning. Protein-Protein Docking: Methods and Protocols, 149-162.
- Wang, X., **Zhang, Y.**, Yu, S., Liu, X., & Wang, F. Y. (2018). Computerized adaptive English ability assessment based on deep learning. In Image and Video Technology: PSIVT 2017 International Workshops, Wuhan, China, November 20-24, 2017, Revised Selected Papers 8 (pp. 158-171). Springer International Publishing.
- Wang, X., **Zhang, Y.**, Yu, S., Liu, X., Yuan, Y.,& Wang, F. Y. (2017, October). E-learning recommendation framework based on deep learning. In 2017 IEEE international conference on systems, man, and cybernetics (SMC) (pp. 455-460). IEEE.
- Farheen, F., Broyles, B. K., **Zhang, Y.**, Ibtehaz, N., Erkine, A. M., & Kihara, D. (2024). Predicting transcriptional activation domain function using Graph Neural Networks. bioRxiv, 2024-05.
- Bou Abdallah, F., Fish, J., Terashi, G., **Zhang, Y.**, Kihara, D., & Arosio, P. (2024). Unveiling the stochastic nature of human heteropolymer ferritin self assembly mechanism. Protein Science, 33(8), e5104.
- Gagliardi, L., Raffo, A., Fugacci, U., Biasotti, S., Rocchia, W., Huang, H., Amor, B.B., Fang, Y., **Zhang, Y.**, Wang, X. and Christoffer, C., 2022. SHREC 2022: Protein–ligand binding site recognition. Computers & Graphics, 107, pp.20-31.
- Lensink, M. F., Brysbaert, G., Raouraoua, N., Bates, P. A., Giulini, M., Honorato, R. V., ..., **Zhang, Y.**, ...& Wodak, S. J. (2023). Impact of AlphaFold on structure prediction of protein complexes: The CASP15 CAPRI experiment. Proteins: Structure, Function, and Bioinformatics, 91(12), 1658-1683.

Honors and Awards

D.E. Shaw DESRES Doctoral Fellowship, New York, US	2024.3
Graduate Student Scholarship of ICT CAS (Top 1%), Beijing, China	2018.9-2021.6
Outstanding Graduate of Sichuan University (Top 1%) Chengdu, China	2018.6
Outstanding Student of Sichuan University (Top 3%), Chengdu, China	2015.9-2018.6
National Endeavor Fellowship (Top 1%), Sichuan Universiy, Chengdu, China	2016.9-2017.6

Skills

- **Expertise:** Python, Deep Learning, Machine Leanring, Pytorch, TensorFlow
- **Capable:** Hadoop, Spark, C, C++, Java, Matlab