

Education

- 2024– **University of Southern California, Ph.D.**
- Major: Computational Biology and Bioinformatics
 - Awards: Graduate School Fellowship
- 2021–2024 **Fudan University, M.S.**
- Major: Applied Mathematics
 - Research Interests: Protein Language Model, Homologous Protein Search
 - Awards: Outstanding Graduate of Fudan University
- 2017–2021 **Southeast University, B.Eng.**
- Major: Automation (Pattern Recognition)
 - Grades: 88.4/100, 3.8/4.0, 9/114
 - Awards: Haila Scholarship (2/114)

Competition awards

- 2023 **Kaggle — CAFA 5 Protein Function Prediction, Rank 1 in the Leaderboard**
- 2021 **China Computer Federation Bioinformatics Conference Challenge 2, Rank 3**
- 2018 **ACM-ICPC Asian Regional Competition Nanjing Station, Bronze Medal**

Research experiences

- 2021–2024 **Graduate Student Researcher, Fudan University (Shanghai, China), Advisor: Shanfeng Zhu**

Research topics

- 2024 **PLMSearch, Nature communication**, Invited to present on **WAIC 2023 (World Artificial Intelligence Conference)**
- Wei Liu, Ziye Wang, Ronghui You, Chenghan Xie, Hong Wei, Yi Xiong, Jianyi Yang* and Shanfeng Zhu*. *PLMSearch: Protein language model powers accurate and fast sequence search for remote homology.* [\[DOI\]](#), [\[WebServer\]](#), [\[GitHub\]](#)
 - With deep representations from a pre-trained **Protein Language Model** to predict similarity, PLMSearch can search millions of query-target protein pairs in seconds like MMseqs2 while increasing the sensitivity by more than threefold, and is comparable to state-of-the-art structure search methods with only sequences as input.
- 2024 **COMEBin, Nature communication**
- Ziye Wang, Ronghui You, Haitao Han, Wei Liu, Fengzhu Sun* and Shanfeng Zhu*. *Effective binning of metagenomic contigs using contrastive multi-view representation learning.* [\[DOI\]](#), [\[GitHub\]](#)
 - Verify the two downstream tools **Resistance Gene Identifier** (RGI version 6.0.2) and **antiSMASH** (version 6.1.1) and polish the manuscript.

Research funding application

- 2023 **Photosynthetic Fund Phase III, Large-scale Protein Function Prediction**
- Parallel optimization of the existing NetGO framework to power large-scale function prediction.
- 2023 **Wudao Research Funding of Beijing Academy of Artificial Intelligence, Protein Language Model Pre-training**
- We offer a unified contrastive learning paradigm as well as a prompt-guided multi-task pre-training framework to assist SimPLM in learning from multi-modal protein similarity at the same time.

Internship experience

- 2024– **Biomap, Beijing (Remote), Algorithm Intern**
- Improve existing MSA (Multiple Sequence Alignment) generation methods through PLMSearch, a better homologous protein search tool, and further improve protein structure prediction methods (2024.2–)
- 2020–2021 **ByteDance, Shanghai, Real-Time Communications Client Department**
- Research and development engineer, responsible for the development of the basic components (2020.10–2021.03)
 - Reconstruction of log report module
 - Task scheduling and execution status reporting
 - Thread deadlock detection