Wei Liu

Curriculum Vitae

Education

2021–2024 **Fudan University**, *M.S.*
  ○ Major: Applied Mathematics
  ○ Research Interests: Homologous Protein Search, Protein Function Prediction, and Protein Structure Prediction
  ○ English: TOFEL 99 (R28+L27+S18+W26)

2017–2021 **Southeast University**, *B.S.*
  ○ Major: Automation
  ○ Grades: 88.4/100, 3.8/4.0, 9/114
  ○ Scholarship: 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**
  ○ <u>*Wei Liu*</u>, *Ziye Wang, Ronghui You, Chenghan Xie, Hong Wei, Yi Xiong, Jianyi Yang* and Shanfeng Zhu*. Protein language model powers accurate and fast sequence search for remote homology.* [DOI]
  ○ 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.
  ○ Webserver: `https://dmiip.sjtu.edu.cn/PLMSearch`
  ○ Github: `https://github.com/maovshao/PLMSearch`

2024 **COMEBin, Nature communication**
  ○ *Ziye Wang, Ronghui You, Haitao Han,* <u>*Wei Liu*</u>, *Fengzhu Sun* and Shanfeng Zhu*. COMEBin allows effective binning of metagenomic contigs using COntrastive Multi-viEw representation learning.* [DOI]
  ○ Verify the two downstream tools **Resistance Gene Identifier** (RGI version 6.0.2) and **antiSMASH** (version 6.1.1) and polish the manuscript.

Internship experience

2024– **Biomap**, *Beijing (Remote)*, Algorithm Intern
- Improve existing MSA (Multiple sequence alignment) generation methods through PLM-Search, 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