Ziyang Xu

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Education Background

•The Chinese University of Hong Kong *Aug. 2024 -*
Ph.D. in Mathematics Hong Kong SAR, China

•Lanzhou University *Sept. 2020 - Jul. 2024*
B.S. in Statistics | GPA: 92.69/100 | Ranking: 1/52 Lanzhou, China

•High School Affiliated To Nanjing Normal University *Sept. 2017 - Jul. 2020*
Nanjing, China

Interests and Skills

- **Research Interests**: Deep Learning, Statistical Machine Learning, Bioinformatics, Medical Image Processing
- **Programming**: Python, Pytorch, C/C++, Matlab, R, Linux

Selected Honors and Awards

•Outstanding Graduate of Gansu Province, [News] *Mar. 2024*
•Chun-Tsung Scholar, (The 25th Annual) [News] *May. 2023*
•Mitacs Globalink Research Intern Scholarship, (2023) [News] *April. 2023*
•National Scholarship, (Rank 1/117) [News] *Dec. 2022*
•Merit Student of Gansu Province, (0.6%) [News] *Jun. 2022*
•National Scholarship, (Rank 1/157) [News] *Dec. 2021*

Publications

PTransIPs: Identification of phosphorylation sites enhanced by protein PLM embeddings [PDF] [Code]
Ziyang Xu†, Haitian Zhong†, Bingrui He, Xueying Wang, Tianchi Lu. IEEE Journal of Biomedical and Health Informatics(SCI Q1)
PTransIPs, a new deep learning framework for the identification of phosphorylation sites. PTransIPs utilizes protein pre-trained language model (PLM) embeddings to achieve SOTA performance, with AUCs of 0.9232 and 0.9660 for S/T and Y sites, respectively. PTransIPs is also a universal framework for all peptide bioactivity tasks.

Research Projects

•Deep Learning for Integrating Multimodal Data for Precision Medicine [PDF] [Code] *Jun. 2023 - Present*
Mitacs Globalink Research Internship 2023 (Advisor: Pingzhao Hu) Western University, Canada

- **Purposes**: Developing deep learning algorithms for predicting spatial transcriptomics from histology images.
- **Methods**: Using contrastive learning architecture, autoencoder, and graph neural network to achieve higher prediction accuracy and downstream clustering performance.

•Multi-Resolution Tensor Learning for High-Dimensional Spatiotemporal Data *Mar. 2022 - Mar. 2023*
Hui-Chun Chin and Tsung-Dao Lee Chinese Undergraduate Research Endowment(CURE)(Advisor: Zhouping Li) Lanzhou University, China

- **Purpose**: Developed an adaptive multi-resolution tensor learning algorithm applied to precipitation prediction inland;
- **Methods**: Dynamically optimized Batch size, Finegraining criteria, and Patience threshold, not only showing slightly improved loss and interpretability but also achieving 3-4 times speedup compared to the original algorithm MRTL.

•Fundamental Theory of Visual Cryptography Scheme: Linear Algebra Construction [PDF] *Mar. 2021 - Mar. 2023*
National Training Program of Innovation and Entrepreneurship for Undergraduates (Advisor: XingXing Jia) Lanzhou University, China

- Constructed multi-share XVCS with perfect pixel expansion and contrast, providing necessary and sufficient conditions.
- Proposed a noise-free solution to SXVCS, provided a series of conclusions and proofs, constructed the optimal (2,n)-XVCS.

Academic services

- **Reviewer**: IEEE Journal of Biomedical and Health Informatics(IF=7.7)
- **Membership**: IEEE Student Member