

# Ziyang Xu

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## EDUCATION BACKGROUND

- **The Chinese University of Hong Kong** Aug. 2024 -  
Hong Kong SAR, China  
Ph.D. in Mathematics
- **Lanzhou University** Sept. 2020 - Jun. 2024  
Lanzhou, China  
B.S. in Statistics | GPA: 92.69/100 | Ranking: 1/52
- **High School Affiliated To Nanjing Normal University** Sept. 2017 - Jul. 2020  
Nanjing, China

## INTERESTS AND SKILLS

- **Research Interests:** AI for Science, Bioinformatics, Medical Image Processing
- **Programming:** Python, Pytorch, C/C++, Matlab, R, Linux

## SELECTED HONORS AND AWARDS

- **Brilliant Graduate of Lanzhou University - Academic Type**, (Top 5 from university) [News] Jun. 2024
- **CUHK Vice-Chancellors PhD Scholarship**, Mar. 2024
- **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