

# Ziyang Xu

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## ACADEMIC BACKGROUND

### •Lanzhou University

B.S. in Statistics | GPA: 92.69/100 | Ranking: 1/52

Sept. 2020 - Present

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,

• **Skills:** Python, R, Matlab, Latex, Linux, Pytorch

## HONORS AND AWARDS

•**National Scholarship**, (Rank 1/117)

Dec. 2022

•**National Scholarship**, (Rank 1/157)

Dec. 2021

•**Chun-Tsung Scholar**, (The 25th Annual)

May. 2023

•**Mitacs Globalink Research Intern Scholarship**, (2023)

April. 2023

•**Merit Student of Gansu Province**, (0.6%)

Jun. 2022

## 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.

•**Identification of phosphorylation sites based on pretrained model and Transformer** [PDF] [Code] Nov. 2022 - Aug. 2023

Individual research

– **Results:** Improving deep learning algorithms for the identification of phosphorylation sites, achieving AUROCs of 0.9232 and 0.9660 for identifying phosphorylated S/T and Y sites respectively, the best performance to date.

– **Methods:** The CNN and Transformer based architecture, using protein pretrained embeddings to improve the 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

## OTHER EXPERIENCES

•**Summer School "Data Science and Machine Learning"**

Aug. 2022

Department of Applied and Computational Mathematics and Statistics, University of Notre Dame (Instructor: Jun Li)

– Implemented common machine learning algorithms using R language, nominated as the best student in class by the professor.

•**2023 IGEN/IDEC Team "LZU-CHINA" Member**[Wiki] [Code]

Mar. 2023 - Present

School of Life Sciences, Lanzhou University (Advisor: Xiangkai Li)

Paris, France

– **Title:** Intelligent cholesterol management system

– **Awards:** [IDEC]: Bronze Award(World's Top 7th), Best Target Molecule Nominees, Best Hardware Winner;

– **My Work:** The mathematical modeling of Intelligent cholesterol management system(Oleic acid induction).

Last updated: November 22, 2023