Ziyang Xu

School of Mathematics and Statistics, Lanzhou University
Tel: +86 19951969128 | +1 (548)991-1312
Email: xuzy20@lzu.edu.cn | ziyangxu0205@gmail.com   [Github]   [Website]

ACADEMIC BACKGROUND

- **Lanzhou University**   *Sept. 2020 - Present*
  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,
- **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*
- **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**: (Currently working) Using contrastive learning architecture, graph autoencoder, and data augmentation 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(2020).

- **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.

- **Mathematics modeling group member in iGEM 2023 Team "LZU-CHINA"** [Wiki] [Code]   *Mar. 2023 - Present*
  School of Life Sciences, Lanzhou University (Advisor: Xiangkai Li)   Paris, France
  - **Title**: Intelligent cholesterol management system
  - **My Work**: The mathematical modeling of Intelligent cholesterol management system(Oleic acid induction).