Zaishuo Xia

GitHub xiazaishuo@gmail.com xiafire.github.io

Education

Renmin University of China (RUC), Beijing, China 2020 – Present

Bachelor of Science, School of Statistics, Major in Data Science

- **About RUC**: I gained admission to RUC with a ranking in the top 0.1% in the national college entrance examination (Gaokao).
- **GPA**:3.62/4.00 **WES GPA**: 3.82/4.00
  Junior Year GPA: 3.84 (Ranked Top 1 in Major)
- **Maths and Stats Courses:** Convex Optimization(96), Computational Statistics(95), Mathematical Analysis III(92), Probability Theory(89), Stochastic Processes(86), Regression Analysis(86)
- **CS Courses:** C Programming (94), Python Programming(90), Data Structure and Algorithm(90), Parallel Computing(91), Blockchain(95)

Scholarly Works

- **Zaishuo Xia***, Han Yang*, Binghui Wang and Jinyuan Jia. GraphGuard: Provably Robust Graph Classification against Adversarial Attacks. Submitted to *ICLR*, 2024. [OpenReview Link]
  **Reviews' Ratings: 8, 8, 6*
- **Zaishuo Xia**, Yanbing Bai, Bolin Zhang, Shubo Zeng, Zhe Liu, Ziyue Zhang, and Xuxin Mao. Weakly Supervised Deep Learning for Fine-grained Socioeconomic Development Index Inference Based on Satellite Imagery. Submitted to SCI journal, 2023. [Paper Link]
- **Zaishuo Xia**, Zelin Li, Yanbing Bai, Jinze Yu, and Bruno Adriano. Self-Supervised Learning for Building Damage Assessment from Large-scale xBD Satellite Imagery Benchmark Datasets. In *International Conference on Database and Expert Systems Applications (DEXA)*, 2022. [Paper Link]

Research Experience

Research Intern, The Pennsylvania State University 2023

- Project: Trustworthy Machine Learning for Graph Neural Network
- Build a graph classifier whose predictions are provably robust under bounded perturbations.
- Compared with other provably robust approaches, such as Random Ablation and Random Smoothing.
- Evaluated the defensive capabilities of the classifier against adversarial attack.
- **Innovation:** Created a novel method to eliminate randomness, establishing deterministic lower bounds in mathematics, as opposed to relying on probabilistic lower bounds in past research. This innovation led to state-of-the-art results, and significantly improved computational efficiency.

Research Assistant, SCHOOL OF INTERDISCIPLINARY, Renmin University of China 2022

- Project: Case Analysis on Blockchain and Big Data
- Conducted data visualization and report writing for blockchain-related case analysis.
- Engaged in the Research Program and presented a report on the intersection of big data and the economy.

Research Assistant, Renmin University of China 2021

- Contributed as a teaching assistant in preparing a course on parallel computing.
- Project 1: Self-Supervised Learning for BDA from xBD Datasets
  - Area: Computer Vision, Self-Supervised Learning.
  - Designed self-supervised learning network for remote sensing images and applied it to semantic segmentation tasks.
- Project 2: Weakly Supervised Deep Learning for Socioeconomic Development Index Inference
  - Area: Computer Vision, Representation Learning, Metric Learning.
  - Utilized representation learning to extract economic development indices from remote sensing images.

Competitions

ECV2022 Computer Vision Developer Competition (Top 1 in 500, Award $1000)
Link to My Solution 2022

- Area: Computer vision, object detection
- Awarded Champion in the "Hanging Clothes along the Street" group (with over 500+ participants).
- Mainly used Yolo v5 and tensorrt for deployment.
- The trained model was adopted by the Qingdao City Government, and I was awarded 7000 CNY in the competition.

Kaggle UW-Madison GI Tract Image Segmentation (Top 8%) 2022

- Area: Deep learning, medical imaging, semantic segmentation
- Achieved 0.868 in the competition evaluation metric of 0.4 Dice metric and 0.6 Hausdorff distance, compared to the highest score of 0.885.

Kaggle Gold Notebook Link to the Notebook 2022

- Area: Machine Learning, Bioinformatics
- Predicted how DNA, RNA & protein measurements co-vary in single cells using machine learning methods.

Teaching Assistant

**I have undertaken these Teaching Assistant roles in response to the professors' invitations. I attended the professors' classes, and they recognized my abilities.*

Parallel Computing 2023
Data Mining 2023

Honors and Awards

"JD Cup" Student "Entrepreneurial Star" Competition Champion, Team of 5. **Award of 150,000 CNY** 2023
Academic Progress Second Class Scholarship, Renmin University of China 2022
First Prize in Chinese Mathematics Competitions, Team of 3 (Top 8%) 2021

Co-curricular and Extra-curricular Learning

- **Conference:** Attended the 2022 International Conference on Database and Expert Systems Applications and presented our paper orally.
- **Volunteering:** Remote volunteer math teacher of 7th graders in Yuji Middle School, Liaocheng, Shandong, China.
- **Association:** Participated in the development of the RUC 70th Anniversary Celebration WeChat Mini Program. The mini program was widely used by alumni.

Skills

Python (PyTorch, Scikit-learn, etc.), LaTeX, R, Linux, Git

My Strengths

- I am self-motivated and have an inherent drive and interest in research. I enjoy exploring cutting-edge technologies and am always willing to try new and interesting things.
- I possess excellent practical skills and enjoy experimenting with various applications on the internet, which is exemplified by my work in developing several telegram bots.
- I am a rationalist who enjoys using mathematical tools to construct a purely rational representation of the world. I frequently browse math blogs and frequently discuss mathematical problems with my classmates.