QINGQI ZHANG

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EDUCATION

Zhejiang University, **College of Computer Science and Technology**, Hangzhou — Sep. 2018 - present

- **Zhejiang University Morningside Cultural China Scholar** (36 selected from 12,000)
- Chu Kochen Honors College member (700 selected from 6,400)
- B.Eng. in Computer Science and Technology, expected in June 2022
- Minor in Statistics
- Major GPA: 3.98/4.00 (92.7/100) (top 3%)
- Selected courses: Introductory Lectures on Optimization (95), Probability theory, Mathematical Statistics (93), Regression Analysis (99), Ordinary differential equation (96), Real Variable Analysis (99), Stochastic Process (92)

HONORS & AWARDS

- Chu Kochen Honors College Scholarship for Top Students (20 out of 2000) 2021
- Zhejiang Provincial Scholarship (top 2%) 2021
- First Class Scholarship for Outstanding Merit (top 3%) 2021
- Gold Medal, The 2019 ICPC Asia-East Continent Final (10th place among 380) 2019
- Gold Medal, The 2019 ICPC Asia Regional Contest (twice, 2nd and 3rd place among 300) 2019

EXPERIENCE

MIT-IBM Watson AI Lab | IBM | Research Affiliate — Jul. 2021 - present

Advisor: Research Staff Member and Manager Jie Chen

- Extended the application of the Contrastive Explanation Method (CEM) to explain the decisions of graph neural networks for node classification task (CEM-G), using PP/PN features, PP/PN edges
- Used the FISTA and Adam methods to implement CEM-G based on Pytorch-geometry, found that Adam converges more smoothly
- Solved the problem of the unreasonable distribution of PP features in the graph by using a proper selection criterion
- Analyzed the optimization process, and found the reason why the abnormally large learning rate is optimal
- Explained the GNN's prediction for one node based on PP/PN features, compared the explanation with MLP's, and found three possible reasons for GNN to make mistakes

School of Mathematical Sciences | Zhejiang University | Assistant — Feb. 2021 - May. 2021

Advisor: Professor Peng Zhang

- Attempted to develop a novel lossless data compression scheme with a higher compression ratio
- Studied the principles and methods of lossless and lossy data compression
- Raised potential problems of the lab's original approach which uses polynomial bases and dense reference points, conducted experiments using the k-means algorithm to verify the conjecture
- Proposed to apply machine learning algorithms to more accurately capture the data structure (e.g. conditional probability distribution)
- Participated in developing novel compression algorithms based on deep models (such as LSTM), balanced speed and compression ratio, contributed to an IT company's large-scale data backup

Zhejiang University ICPC Team | Zhejiang University | Team Leader — Jul. 2018 - Jul. 2020

Coach: Associate Professor Can Wang

- Attended 84 online contests and 3 ICPC training camps, learned algorithms about data structure, string processing, computational geometry, graph theory and randomization, etc.
- Coordinated the team's training sessions and helped to improve the strategies for the contests
- Served as a major coder and algorithm designer in the team during competitions

Online Course Project | Massachusetts Institute of Technology | Team Leader — Aug. 2020

Advisor: Professor Suvrit Sra

- Developed a roadmap to detect Covid-19 positive cases from the COVID-19 Chest X-Ray dataset (only 700 samples)
- Adopted preprocessing techniques such as lung segmentation and histogram equalization
- Selected the VGG16 neural network and pretrained the model using other X-Ray images
- Used the Grad-CAM method to visualize and justify the prediction
- Achieved a detection accuracy of 75% in the dataset

ADDITIONAL INFORMATION

Computer & Programming: python, C++, C, java, R, MATLAB, SQL, LaTeX, shell; Linux

Interests: Chinese philosophy, Chinese poetry, playing Go (Amateurish Level-4), playing the piano (Level-8 certificate)