

# QINGQI ZHANG

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## EDUCATION

<b>Zhejiang University, College of Computer Science and Technology</b> , Hangzhou	Sep. 2018 - present
➤ Chu Kochen Honors College member (700 selected from 6,400)	
➤ Zhejiang University Morningside Cultural China Scholars Program (36 selected from 12,000)	
➤ 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

➤ Zhejiang University Scholarship for Outstanding Merit (twice, top 15%)	2020
➤ The 2020 Chu Kochen Honors College Scholarship (50 out of 2000)	2020
➤ Gold Medal, The 2019 ICPC Asia-East Continent Final (10 <sup>th</sup> place among 380)	2019
➤ Gold Medal, The 2019 ICPC Asia Regional Contest (twice, 2 <sup>nd</sup> and 3 <sup>rd</sup> place among 300)	2019

## EXPERIENCE

<b>MIT-IBM Watson AI Lab</b>   IBM   Research Intern	Jul. 2021 - present
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Advisor: Research Specialist 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 graph by using 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

<b>School of Mathematical Sciences</b>   Zhejiang University   Assistant	Feb. 2021 - May. 2021
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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 improving existing compression algorithms based on deep models (such as LSTM), balanced speed and compression ratio, contributed to an IT company's large-scale data backup

<b>Zhejiang University ICPC Team</b>   Zhejiang University   Team Leader	Jul. 2018 - Jul. 2020
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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 competition

<b>Online Course Project</b>   Massachusetts Institute of Technology   Team Leader	Aug. 2020
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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)