# Zhihao Jiang

CONTACT INFORMATION

Tsinghua University,
Beijing, 100084

zhihaojiang99@gmail.com

RESEARCH INTERESTS

- Approximation Algorithms and Online Algorithms
- Algorithmic Game Theory
- General Algorithm Design and Theoretical Computer Science

EDUCATION

**Tsinghua University**, Beijing, China                                    2016 – now

Undergraduate, Special Pilot Computer Science Class (Yao Class)
- GPA: 3.6/4.0.

RESEARCH EXPERIENCE

**Research Intern**, Duke University                                    2019 – now

Working with Prof. Debmalya Panigrahi
- Sometimes online algorithms are guided by machine learning predictions. Given forecasts on future inputs, we design online algorithms expecting comparable performance with offline algorithms if the forecasts are good, and expecting comparable performance with online algorithms without prediction even if the forecasts are adversarial. We aim to achieve this goal in the weighted paging problem, the k-server problem, *etc*.

**Research Intern**, Duke University                                    2019 – now

Working with Prof. Kamesh Munagala
- We work on determining the optimal metric distortion of deterministic social choice rules. The optimal distortion was known to be between 3 and 4.236 and we try to close the gap. One idea is to prove or disprove a combinatorial conjecture in a recent EC submission. We start by solving smaller cases and using computer-aided experiments to verify conjectures and to gain intuition.

**Research Assistant**, Tsinghua University                                    2018 – now

Working with Prof. Jian Li
- We provide the first FPTAS for the stochastic unbounded min-knapsack problem, a variant of the stochastic knapsack problem. Our main technique is to round the weights of items in a certain way, which is inspired by the FPTAS for the deterministic 0/1 knapsack problem. The result is published in the 13th International Frontiers of Algorithmics Workshop (FAW 2019).
- We work on designing approximation algorithms for the tree sparsity problem. The state of the art is $O\left(\frac{n}{\varepsilon^2} \cdot \log^{12} n \cdot \log^2 x_{\max}\right)$, and we try to design faster algorithms and reduce the exponent 12 in the term $\log^{12} n$.

PUBLICATIONS

1. Yu Cheng, Zhihao Jiang, Kamesh Munagala, Kangning Wang. *Group Fairness in Commitee Selection*. EC2019

2. Zhihao Jiang, Haoyu Zhao. *An FPTAS for Stochastic Unbounded Min-Knapsack Problem*. FAW2019

AWARDS

- Scholarship for Academic Progress, Tsinghua University                                    2018
- Outstanding Freshman Scholarship, Tsinghua University                                    2016
- Gold Medal (12th out of 300) in Chinese National Olympiad in Informatics    2015
- Gold Medal (4th out of 230) in IOI Chinese Team Selection Contest            2015