Hongao Wang

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Education

Shanghai Jiao Tong University — Shanghai, China
B.S.E. in Information Engineering — 2014–2018

Experience

Shanghai University of Finance and Economics — Shanghai, China
Part-time Student Intern at ITCS — Aug 2017–Dec. 2018

- Prophet Inequality for Bipartite Matching
- This project was done with Prof. Nick Gravin. In this project, we provide a $\frac{1}{3}$-prophet inequality for bipartite matching and a counterexample showing no algorithm can reach $\frac{1}{2.25}$-approximation.

Shanghai Jiao Tong University — Shanghai, China
Undergraduate at AIMS — May 2017–Dec. 2017

- Knowledge based analysis of blockchain
- In this project, I learnt some basic knowledge about knowledge based analysis, which is a logic framework for analysing consensus

Nanyang Technological University — Singapore
Project Officer at SPMS — Jan. 2019–Present

- MMS Allocation for Mixed Goods
- This work was done with Prof. Xiaohui Bei, Dr. Shengxin Liu and Xinhang Lu. We study the problem of how to build an MMS allocation on the mixed of divisible and indivisible goods.
- Prophet Inequality for k-copy matroid constraint
- This work is doing with Prof. Nick Gravin and Prof. Matthew Weinberg. In this project, we try to build a prophet inequality for k-copy matroid constraint based on OCRS method.

Publications

[1] X. Bei, S. Liu, X. Lu, and **H. Wang**, "Maximin fairness with mixed divisible and indivisible goods", *ArXiv*, vol. abs/2002.05245, 2020.

[2] X. Bei, S. Liu, C. K. Poon, and **H. Wang**, "Candidate selections with proportional fairness constraints", in *Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems, AAMAS '20, Auckland, New Zealand, May 9-13, 2020*, 2020, pp. 150–158.

[3] N. Gravin and **H. Wang**, "Prophet inequality for bipartite matching: Merits of being simple and non adaptive", in *Proceedings of the 2019 ACM Conference on Economics and Computation*, ser. EC '19, Phoenix, AZ, USA, 2019, pp. 93–109.

Teaching

- **Teaching Assistant** at Nanyang Technological University Fall 2019&2020
  Discrete Mathematics (MH1812)

Academic Services

- Subreviewer at WINE'18 & SAGT'19

- PC member at AAAI'21
  PC member in AAAI conference is similiar to the subreviewer of theoretical conferences.

Projects

- Online Selfish Expert Problem(Scoring Rule,2018 with Prof. Lu
  This problem was first studied by Tim Roughgarden and Okke Schrijvers. They use the proper scoring rule to compute the weight for every expert and provide the bounds of regret, in order to affirm the truthfulness of those selfish experts. Their bounds did not match, but I found a counterexample showing that their upper bound is tight. This construction is tricky, because the upper bound is irrational.
- Prophet Inequality for bipartite Matching (Pricing Method, 2018) with Prof. Gravin
  In this project, we provide a $\frac{1}{3}$ prophet inequality for bipartite matching with a non-adaptive pricing method. In the meanwhile, we provide a counterexample showing that we cannot get $\frac{1}{2.25}$ prophet inequality for bipartite matching, which separate this setting with the matroid constraint. At last, we publish a paper in ACM EC'19.
- MMS Allocation for Mixed Goods (Bag Filling, 2019) with Prof. Bei, Dr.Liu and Miss Lu
  In this project, we build a MMS allocation for mixed goods, which contains both divisible and indivisible goods. We show that if the volumn of cake is big enough, we can get an MMS allocation of mixed goods. In the meanwhile, we show that the cake is not always helpful, which means if we only add a little cake, the approximation ratio of the mixed goodss will be smaller than pure indivisible goods. This paper will appear in AAAI'21.
- Prophet Inequality for k-copy matroids (OCRS, 2020) with Prof. Gravin and Prof. Weinberg
  This project was undergoing.

Hobbies

- **Reading:** Textbooks and Intro books in other area, such as, politics, economics and philosophy. Now I am reading World Order.
  Fantasy novels and mystery fictions.
- **Games:** Video Games: Assassin's Creed, Monster Hunter, etc.
  Board Games: Hanabi, Dixit, etc. Learning D&D
- **Swimming:**

Languages

- **English:** Foreign Language, Fluently
- **Chinese:** Mother Tongue, Native
- **Italian:** Foreign Language, Very Beginning