Yichen Tao

ychtao@umich.edu · (734) 389-5934

Research Interests

Programming Languages, Formal Methods

Education

2023 – Present **University of Michigan, Ann Arbor** – Michigan, USA
Ph.D. student in Computer Science and Engineering
Advisors: Jean-Baptiste Jeannin, Max New

2019 – 2023 **Shanghai Jiao Tong University** – Shanghai, China
B.Eng in Computer Science and Technology
IEEE Honors Class & Zhiyuan Honors Program for Engineering
Advisor: Qinxiang Cao *GPA: 3.83 / 4.3.*

Publications and Drafts

2023 (Draft) **A Complete Landscape for the Price of Envy-Freeness**
Zihao Li, Shengxin Liu, Xinhang Lu, Biaoshuai Tao and Yichen Tao. (Alphabetical authorship)
A draft submitted to International Conference on Autonomous Agents and Multi-Agent Systems 2024.

2023 **Adaptivity Gap for Influence Maximization with Linear Threshold Model on Trees**
Yichen Tao, Shuo Wang, Kuan Yang. (Alphabetical authorship)
International Joint Conference on Theoretical Computer Science – Frontier of Algorithmic Wisdom 2023.

2022 **LOGIC: A Coq Library for Logics**
Yichen Tao, Qinxiang Cao.
Symposium on Dependable Software Engineering. Theories, Tools and Applications 2022.

Research Experience

September 2021 – June 2023

Formalization of logics in Coq

Advised by Prof. Qinxiang Cao at Shanghai Jiao Tong University

Aimed a Coq library for formalizing logic studies, concerning logics' applications and metatheories;

Formalized propositional logic, separation logic, shallowly-embedded first-order logic in Coq proof assistant, including the connectives, judgements, and proof rules;

Formally proved the derivations of connectives and judgements, and the relevant proof rules;

Implemented a logic generator and automatically generates exportable Coq logic libraries based on the commands given by users.

January 2022 – June 2023

Fair division and influence maximization

Advised by Prof. Biaoshuai Tao at Shanghai Jiao Tong University

Explored two problems regarding theoretical computer science and its applications in economics: fair division and influence maximization;

For fair division, aimed to bound the price of fairness (loss of social welfare when enforcing a fairness requirement) under different fairness notions;

For influence maximization, aimed to bound the adaptivity gap (the extent to which an adaptive policy outperforms a non-adaptive one) of influence maximization under linear threshold model.

Teaching Experience

Fall 2022

Teaching assistant, CS 445: Combinatorics (Shanghai Jiao Tong University)

Design homework and exam problems; grade homework; hold office hours.

Technical Skills

Programming languages

Coq, Python, C, C++, Pascal

Software

LaTeX, Git, SQL, Markdown

Languages

Mandarin (native), English (fluent)