

Yaxin Tu

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Research Interests

I'm broadly interested in theoretical computer science, with a focus on computational logic, proof complexity, pseudo-randomness and their interplay with other fields.

Education

- ◇ **B. Eng. in Computer Science and Technology, Tsinghua University** Aug. 2019 - July 2023
 - Yao Class, [Institute for Interdisciplinary Information Sciences \(IIIS\)](#), led by Prof. [Andrew Yao](#)
 - GPA: **3.86/4**, major GPA: **3.90/4**
 - Relevant courses: Linear Algebra(100); Calculus; Abstract Algebra(98); Mathematics for Computer Science(Andrew Yao); Logic, Computation and Games(Johan van Benthem); The Physics of Information; General Physics; Algorithm Design; Proof Complexity; Theory of Computation(98); Fundamentals of Cryptography(98)

Research Experience

- ◇ Function Secret Sharing for Multi-point Functions, [FACT center](#), Reichman University Feb. 2022 - Present

Advisor: [Elette Boyle](#)

 - We proposed a new PRG-based scheme to succinctly share multi-point functions with computation time independent of the sparsity of the vector, which appears to be the practically fastest solution in most application scenarios.
 - Collaborate with [Elette Boyle](#), [Yuval Ishai](#), [Niv Gilboa](#), and Matan Hamilis.
- ◇ Modal Substitution Logic with Simple and Iterative Substitutions, Tsinghua University May 2022 - Present

Advisor: [Fenrong Liu](#)

 - We proposed a new logic called modal substitution logic (MSL), an extension of the basic modal logic that is capable of expressing the computation of general fixed-points, and study its properties.
 - Collaborate with Fenrong Liu, Sujata Ghosh, and Dazhu Li.

Publications

- ◇ [On the subtle nature of a simple logic of the hide and seek game](#) WoLLIC 2021

Dazhu Li, Sujata Ghosh, Fenrong Liu and [Yaxin Tu](#)

 - For any simple logic, it is always interesting to find the impact of adding an equality constant.
 - We introduced a new member to the class of logics whose satisfiability problem suddenly becomes undecidable after being extended with equality constant.

Course projects

System lab

Spring 2021

- Built RISC-V processor to realize 5-stage pipelined processor model.
- Designed cache between processor and memory according to typical cache models.

Thompson transformations and equivalences among different forms of games

December 2020

- Compared different ways to express a imperfect information game.
- Found location for the equivalence led by Thompson transformations.

Honors and awards

- Science and Technology Innovation Merit Scholarship | Tsinghua University 2022
- Chinese Mathematical Olympiad, Gold Medal (*Preadmitted to Yao Class*) | Chinese Mathematical Society 2018
- Chinese Women's Mathematical Olympiad, Gold Medal (*Rank 5th*) | Chinese Mathematical Society 2018