# Yifan Guo

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## Education

**University of Science and Technology of China** Expected, June 2024
**GPA: 4.02/4.3 (Top 5%)**

- Bachelor of Mathematics
- **School of the Gifted Young** (skip the last year of high school)

**Selected Math Coursework:** Advanced Combinatorics 100, Combinatorics 99, Graph Theory (Graduate) 98, Probability Theory 98, Real Analysis 95, Modern Algebra 95, Differential Equations 95, Functional Analysis 95, Topology 92, Complex Variable 90.
**Selected CS Coursework:** Computational Economics (Graduate) 92, Foundations of Algorithms 100, Data Structure and Database 97.

**University of Chicago** Mar. 2023 - Aug. 2023
**Visiting Student, hosted by Prof. Haifeng Xu and Prof. Ozan Candogan**
Seminars: UChicago CS Theory Lunch, Booth OMMS/Econ/Finance Workshops, TTIC ML Seminar.

## Working Papers

- **(α-β)** Ozan Candogan, **Yifan Guo**, Haifeng Xu. On Information Design with Spillovers. Major revision request, Re-submitted to ***Operations Research.*** [link]
- **(Randomized order)** Jibang Wu ⓡ Haifeng Xu ⓡ **Yifan Guo** ⓡ Weijie Su. An Isotonic Mechanism for Overlapping Ownership. In submission to ***Management Science.*** [link]

## Research Experience

**On Information Design with Spillovers** Mar. 2023 - Nov. 2023
Advised by Prof. Ozan Candogan and Prof. Haifeng Xu

- Considered different settings of spillovers on the network and identified the optimal information structure for the information design problem.
- Characterized the computational complexity of the problem under different communication protocols and provided dynamic programming algorithms when the problem is tractable.
- Implemented our framework for information design in supply chains with spillovers.

**An Isotonic Mechanism for Overlapping Ownership** Mar. 2023 - Aug. 2023
Joint work with Prof. Weijie Su, Jibang Wu, and Prof. Haifeng Xu

- Designed a simple and efficient mechanism (Isotonic Mechanism) to score items under overlapping ownership by truthfully eliciting information from their owners.
- Applied Isotonic Mechanism to improve the scoring procedure of large academic conference peer review where a paper often has multiple authors and many authors have multiple papers.
- Invited to present the result in the poster session at the IDEAL Annual Conference.

**Algorithmic Pricing of Machine Learning Predictions** Mar. 2023 - Present
Advised by Prof. Haifeng Xu

- Studied the problem of selling information to data buyers who face a decision problem under uncertainty, using the classic Bayesian decision-theoretical model.
- Found the optimal solution to sell information to buyers and extract the maximum possible revenue, subject to different realistic constraints such as the limited number of menus and externalities.
- Recipient of NSFC Student Research Fellowship (sole PI: Yifan Guo, $14K, Sep. 2023 - June 2024).

## Honors and Awards

- China National Scholarship (Top 1%) 2023, 2022
- SGY Class of 87 Innovation Scholarship (Top 1%) 2021
- Excellent Student Scholarship Gold (Top 3%) 2021
- S.-T.Yau College Student Mathematics Contest (Final, Rank 8th in China) 2022
- The ICPC Asia Nanjing Regional Contest (Silver Medal) 2022, 2021, 2020
- Anhui College Programming Contest (First Prize) 2021
- National Olympiad in Informatics in Provinces (First Prize) 2019, 2018, 2017

## Teaching Experience

**Functional Analysis |** Teaching Assistant USTC 2023 Fall

**Algorithmic Game Theory |** Teaching Assistant USTC 2023 Fall

**Foundations of Algorithms |** Teaching Assistant USTC 2022 Fall

## Leadership

**USTC Programming Club |** President 2021 - 2022

- Led the club to achieve a 4-star rating and received the Outstanding President award.

**The Student Union of School of the Gifted Young |** Member 2020 - 2021

**Men's Football Team of School of the Gifted Young |** Captain 2020 - Present

- Third Place in the "Champions Cup" (Team's All-Time Best) 2021
- Second Place in the "Chuying Cup" 2020
- Most Valuable Player (MVP) in the "Chuying Cup" 2020

## Technical Skills

- Language: Chinese, English
- Programming Languages: Python, C, C++, SQL, LaTex, Assembly