

CHENGHAN ZHOU

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RESEARCH INTERESTS

Algorithmic Game Theory, Algorithmic Mechanism Design, Computational Economics

EDUCATION

University of Virginia, Charlottesville, Virginia
B.A. in Computer Science & Cognitive Science

Aug 2017 - Dec 2020
GPA: 3.97/4.0

Princeton University, Princeton, New Jersey
M.S.E. in Computer Science

Sep 2022 - Present
GPA: 4.0/4.0

RESEARCH EXPERIENCE

Princeton University, Theory of Computation Group

Sep. 2022 – Present

- Advisor: Professor [Matt Weinberg](#).
- Research Topics: Mechanism Design in Cryptocurrency.
- Research Focus: Characterize statistical detectable strategies from a macroscopic perspective and explore how the design of blockchain protocols influences detectability of selfish behaviors.

Shanghai University of Finance and Economics, Institute for Theoretical Computer Science

Sep. 2021 – Jun. 2022

- Advisor: Professor [Pinyan Lu](#).
- Research Topics: Mechanism Design, Combinatorial Auctions, Approximation Algorithms.
- Research Focus: Improved approximation ratio of combinatorial auctions with interdependent valuations under incentive-compatible constraints.

University of Virginia, Strategic Intelligence for Machine Agents Lab

Jan. 2019 – Jul. 2022

- Advisor: Professor [Haifeng Xu](#).
- Research Topics: Information Design, Convex Optimization, Complexity.
- Research Focus: Identified possibilities and limits of algorithmic information design in congestion games and security games for social welfare maximization.

PUBLICATIONS

(α - β) [Pinyan Lu](#), [Enze Sun](#), [Chenghan Zhou](#), **Better Approximation for Interdependent SOS Valuations**, In Proc. of the 18th Conference on Web and Internet Economics (WINE 2022) [[arxiv](#)].

[Chenghan Zhou](#), [Andrew Spivey](#), [Haifeng Xu](#), [Thanh H. Nguyen](#), **Information Design for Multiple Uncoordinated Defenders: Work Less, Pay Off**, In Proc. of the Conference on Uncertainty in Artificial Intelligence (UAI 2022), also accepted to [MDPI Games Journal](#).

[Chenghan Zhou](#), [Thanh H. Nguyen](#), [Haifeng Xu](#), **Algorithmic Information Design in Multi-Player Games: Possibility and Limits in Singleton Congestion**, In Proc. of the 23rd ACM Conference on Economics and Computation (EC 2022) [[arxiv](#)].

INDUSTRIAL EXPERIENCE

NetEase Game Department, Algorithm Engineer Intern

Jun. 2021 – Aug. 2021

- Designed a skill-point allocation algorithm with max-flow min-cost that can dynamically recommend skill-point strategy based on different lineup matches. Implemented statistical inference, Bayesian Neural Networks and Simplex algorithm for max-flow min-cost in Python 2.7 without any dependency.
- Integrated the algorithm with the game codebase and released this feature to over 100 million players.

Google LLC, Pigweed Project, Software Engineer Intern

May. 2020 – Aug. 2020

- Added automated test for QEMU simulator and improved performance of 2~3 seconds on Mac OS in Python.
- Replaced C library's dynamic memory allocation in C++, GN, linked script and design tooling API to provide memory summary. visualized heap fragmentation, detect heap corruption, create prototype of debug information, etc.

AWARDS

CRA Undergraduate Research Awards, Honorable Mentions

2020

Women in CyberSecurity Conference, Scholarship

2019

Dean's List

Fall 2017, Fall/Spring 2018, Spring/Fall 2019

TEACHING

Algorithm (CS4102), teaching assistant

UVA 2019F

Computer Architecture (CS3330), teaching assistant

UVA 2019F

Artificial Intelligence (CS4710), teaching assistant

UVA 2020S

Theory of Algorithms (COS423), teaching assistant & preceptor

Princeton 2022F

Economics and Computation (COS445), teaching assistant & preceptor

Princeton 2023S