Gary Peng

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RESEARCH INTERESTS

I am broadly interested in mechanism design and algorithms/complexity. I am currently working on **bilateral trade** and **lower bounds for biclique**.

EDUCATION

University of Maryland **Fall 2022 – Spring 2026**
Bachelor of Science, Computer Science and Mathematics
GPA: 4.00 / 4.00

RESEARCH EXPERIENCE

University of Maryland **January 2024 - Present**
Advisors: MohammadTaghi Hajiaghayi, Suho Shin

- Study sample-based profit maximization in bilateral trade
- Showed that the approximation ratio to the first-best gains-from-trade can be arbitrarily close to zero in bilateral trade with a broker
- Proved that a simple single-sample mechanism simultaneously achieves constant-factor approximations to the first-best gains-from-trade, first-best social welfare, and optimal profit in certain regimes of bilateral trade

Rutgers University **Apil 2025 - Present**
Advisor: Karthik C.S.

- Study lower bounds for biclique in the constant-parameter regime
- Discovered a simple proof bypassing the PCP Theorem that any constant-factor approximation for clique requires $n^{\Omega(\log n)}$ time under the Exponential Time Hypothesis

INTERNSHIPS

DIMACS Research Experience for Undergraduates, Rutgers University **Summer 2025**
Advisor: Karthik C.S.

Director's Summer Program, National Security Agency (*regretfully declined)* **Summer 2025**

AWARDS & HONORS

John D. Gannon Scholarship **July 2025**
Department of Computer Science, University of Maryland Award Amount: $3,243.04

Philip Merrill Presidential Scholar **May 2025**
University of Maryland

Abramowitz Award **May 2025**
Department of Mathematics, University of Maryland Award Amount: $1,000.00

Honorable Mention for Outstanding Undergraduate Researcher Award **January 2025**
Computing Research Association

President's Scholarship **February 2022**
University of Maryland Award Amount: $12,000.00 (annually)

Platinum Contestant **April 2021**
USA Computing Olympiad

ACCEPTED PAPERS

Gains-from-Trade in Bilateral Trade with a Broker **SODA25**
Ilya Hajiaghayi, MohammadTaghi Hajiaghayi, Gary Peng, Suho Shin

SUBMITTED PAPERS

Single-Sample Bilateral Trade with a Broker
MohammadTaghi Hajiaghayi, Gary Peng, Suho Shin

PROFESSIONAL SERVICE

External Reviewer **SODA26**

TEACHING EXPERIENCE

Calculus II (MATH141), University of Maryland **Spring 2025**
Strauss Teaching Assistant

Calculus I (MATH140), University of Maryland **Fall 2024**
Strauss Teaching Assistant

Design and Analysis of Computer Algorithms (CMSC451), University of Maryland **Summer 2024**
Teaching Assistant

Discrete Structures (CMSC250), University of Maryland **Spring 2023**
Teaching Assistant