

Yi Xu

Second-year Master's student, University of Science and Technology of China, Hefei, China
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RESEARCH INTERESTS

Parameter approximation on graphs, spectral graph theory, sublinear algorithms, streaming algorithms, learning theory

EDUCATION

University of Science and Technology of China, Hefei, China

- **Master of Engineering in Computer Science and Technology** Sept. 2023 – Present
Cumulative GPA: 3.84/4.30 Rank: 44/148
Advisor: Prof. Pan Peng
- **Bachelor of Engineering in Computer Science and Technology** Sept. 2019 – June 2023
Cumulative GPA: 3.70/4.30 Rank: 40/170

PREPRINTS

- Pan Peng, Christian Sohler, Yi Xu* (alphabetical order). *Sublinear Algorithms for Estimating Single-Linkage Clustering Costs*. arXiv:2510.11547.
Developed sublinear-time algorithms for estimating hierarchical clustering (single-linkage) costs. Primarily responsible for formulating proofs of key theorems and validating results through comprehensive experiments.
- Zhiyuan He, Yi Xu*, Cheng Luo, Lili Qiu, Yuqing Yang. *Replica Server Placement in a Satellite Network*. arXiv:2510.13689.
Applied facility location and greedy algorithms to optimize CDN deployment via satellites.
- Kyoungjun Park, Zhiyuan He, Cheng Luo, Yi Xu*, Lili Qiu, etc. *Joint Optimization of Handoff and Video Rate in LEO Satellite Networks*. arXiv:2504.04586.
Experimented with reinforcement learning models for adaptive bitrate and satellite selection.

TALKS

- Women in Theory Workshop 2025** Simons Institute, UC Berkeley
Student rump session (3 minutes) Slides June 2025
Briefly presented recent work on sublinear algorithms for estimating SLC costs.
- Theory Student Day 2025** USTC, Hefei, China
Invited talk (30 minutes) Slides March 2025
Presented an in-depth overview of our work on sublinear algorithms for estimating SLC costs.

ACADEMIC EXPERIENCE

- TCS Workshop in Nanjing University in China** Nanjing, China
Attendee July 2023 and July 2024
Engaged in presentations and discussions with researchers from Nanjing University, Google Research, and Miller Institute.
- University of Science and Technology of China** Hefei, China
Master's Student Sept. 2023 – Present
Investigated efficient approximation algorithms for maximum matching, k -spanner, and metric Steiner tree problems, building through literature review and collaborative research.
- Microsoft Research Asia (MSRA)** Shanghai, China
Research Intern, Wireless Group Aug. 2022 – March 2023
Studied applications and algorithms on satellites; Implemented signal processing on USRP and analyzed wireless sensing data in Python.

TEACHING EXPERIENCE

Teaching Assistant, University of Science and Technology of China, Hefei, China

- Design and Analysis of Algorithms (2024) & Algorithms for Big Data (2025): Designed and graded assignments, led exercise classes to explain solutions, held office hours for student support and mentoring, and assisted with exam grading.

PROJECTS

ASC22-23 International Supercomputing Competition

Team Leader

Hefei, China
Jan. 2022 – May 2023

- Led a team to optimize various applications, including numerical simulation and large language models (LLMs).
- Accelerated a Fortran-based weather forecasting model (WRF) by developing data preprocessing pipelines to observe performance in large-scale datasets, and utilizing Intel VTune to analyze and enhance runtime performance.
- Awarded **Silver Prize** among 24 teams in the final round.

VSCode–Azure DevOps Integration Extension

Team Leader

Microsoft Research Asia, Shanghai, China
Sept. 2022 – Dec. 2022

- Led the design and development of a Visual Studio Code extension enabling pull request (PR) workflows with Azure DevOps.
- Coordinated implementation of secure login, comment management and integration of profile images into PR dashboards.
- Implemented core functionalities including PR creation, display, and completion directly within VSCode.

ISC21 International Supercomputing Competition

Participant

Online
Oct. 2020 – June 2021

- Enhanced a Fortran-based weather forecasting model (WRF) by optimizing compilation flags and parallelization strategies.
- Conducted and improved supercomputing benchmarks (HPL and HPCG) through parameter tuning.
- Ranked **1st** on the WRF application and **6th** overall among 13 finalist teams in the competition.

RoboGame2020 Competition

Participant

Hefei, China
June 2020 – Oct. 2020

- Collaborated in designing and programming a robot with STM32 embedded systems for moving simulated patients to designated beds; programmed and controlled the robotic arm for task execution.
- Achieved **Fourth Place** in the second round of the competition.

Pixel-Style Graphic PC Game

Participant

Hefei, China
Oct. 2019 – June 2021

- Utilized C++ to implement features for character navigation, combat, item selection, map loading and NPC interaction.

SELECTED COURSES

- **Algorithms & Theory:** Design and Analysis of Algorithms, Foundations of Algorithms, Algorithms for Big Data, Formal Languages and Computational Complexity, Data Structures
- **Mathematics:** Graph Theory, Stochastic Processes, Probability and Statistics, Linear Algebra, Algebraic Structures, Calculus, Mathematical Logic
- **Special Topics:** Applied Mathematics for Computer Science, Computational Methods, A Guide to Formal Methods, Privacy Issues in Big Data
- **External Reading (Self-study):**
 - Sublinear Time Algorithms (MIT)
 - Modern Spectral Graph Theory (University of Washington)
 - Eigenvalues and Polynomials (University of Waterloo)

AWARDS & SCHOLARSHIPS

- **First-Class Academic Scholarship**, University of Science and Technology of China (2023, 2024)
- **Silver Prize**, ASC22-23 International Supercomputing Competition (2023)
- **Star of Tomorrow**, Microsoft Research Asia (2022)
- **Silver Award**, Outstanding Student Scholarship, University of Science and Technology of China (2019, 2020)

TEST SCORES

TOEFL iBT: 103/120 Reading: 24 Listening: 27 Speaking: 24 Writing: 28 (Test date: May 2025)

SKILLS

- **Theory:** Approximation algorithms, Computational complexity, Spectral graph theory, Stochastic processes, Linear algebra
- **Programming:** C++, Python, Linux shell script, Verilog (hardware description), STM32 (embedded systems), JavaScript
- **Collaboration and Communication:** Team leadership, Seminar presentation, Mentoring and teaching, Fast learner, Strong intellectual curiosity, Resilience