Jing Guo

Curriculum Vitæ

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Research Interests

Extremal and probabilistic combinatorics, graph theory, and extremal set theory
Analytic and combinatorial aspects of number theory
Applications of discrete mathematics to theoretical computer science and data science

Education

Fall 2022 – Present **M.Sc. Mathematics**, *ALGANT Master program*, Universität Regensburg and Universiteit Leiden.

Fall 2020 – Summer 2021 **Budapest Semesters in Mathematics (Online)**, Budapest, Hungary.

Fall 2016 – Spring 2020 **B.S. Mathematics**, *University of Utah*, Salt Lake City, UT, USA.
Minor in Computer Science

Spring 2019 **Budapest Semesters in Mathematics**, Budapest, Hungary.

Fall 2018 **Math in Moscow**, *Independent University of Moscow*, Moscow, Russia.

Professional Experience

Summer 2021 **Research Assistant**, *Budapest Semesters in Mathematics (Online)*, Budapest, Hungary.
Supervisor: Dr. András Gyárfás
Description: Linear Turán number of the Crown C_{13} in linear 3-graphs

Sep. 2019 – Sep. 2020 **Undergraduate Researcher**, *School of Computing*, University of Utah.
Supervisor: Dr. Blair D. Sullivan
Description: Improve heuristics and approximation algorithms for Vertex Cover and Odd-Cycle Transversal with fixed-parameter tractable algorithms

Honors and Awards

2022 – 2024 **ALGANT Excellence Scholarship**, *ALGANT*.

April 2020 **Undergraduate Research Scholar**, *University of Utah*.

Publications and Preprints

[1] Alvaro Carbonero, Willem Fletcher, Jing Guo, András Gyárfás, Rona Wang, and Shiyu Yan. Crowns in linear 3-graphs of minimum degree 4. *The Electronic Journal of Combinatorics*, 29(4):P4.17, 2022.

Research Visits

Feburary 2022 — **Department of Mathematics, Czech Technical University**, Prague, Czech.
Hosted by Dr. Jan Volec, for 4 days

Talks

June 2023 — **Seminar on Turing machines, lambda calculus, and proofs as programs**, *Universität Regensburg*.
Register machines, Turing computability, and recursive functions.

February 2023 — **Seminar on Open Covers and Complexity**, *Universität Regensburg*.
Topological complexity of the root-finding problem and its relation to sectional category.

December 2022 — **Seminar on Lattice-Based Cryptography**, *Universität Regensburg*.
Worst-case to average-case reductions based on Gaussian measures.

Professional Activities

2018 — **The Racket Summer School**, Salt Lake City, UT, USA.

Work Experience

June 2023 – Present — **Research Programmer (Remote)**, *SageMath*, Google Summer of Code.
Supervisor: Dr. Benjmain Hutz
Description: Fix bugs and generalize height algorithms in number fields.

June 2022 – Sep. 2022 — **Research Programmer (Remote)**, *SageMath*, Google Summer of Code.
Supervisor: Dr. Benjmain Hutz and Alexander Galarraga
Description: Fix bugs and improve implementations of height functionalities, and implement the Arakelov-Zhang pairing of rational maps in algebraic geometry

Nov. 2021 – Feb. 2022 — **Common Lisp Software Intern (Remote)**, *Atlas Engineer*, USA and Germany.

Sep. 2020 – Oct. 2020 — **Contract Research Programmer (Remote)**, *University of Bergen*, Bergen, Norway.
Supervisor: Dr. Mateus de Oliveira Oliveira
Description: Implement functionalities related to treewidth and tree decomposition in structural graph theory

Open Source Contributions

SageMath, *Free open-source mathematics software system.*
June 2022 – Oct. 2022, June 2023 – Present

Nyxt Browser, *Keyboard-driven web browser written in Common Lisp.*
Nov. 2021 – Feb. 2022

Other Information

Programming Languages — Python, Common Lisp, Clojure, Java, C/C++, and LaTeX

Languages — Chinese, English, French (Basic), and Russian (Basic)