Krish Singal

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EDUCATION

Columbia University

B.S. in Computer Science
Cumulative GPA: 4.02/4.0   *2020 - 2024*

Relevant Coursework*: Advanced Algorithms, Real Analysis, Abstract Algebra, Topology, Probability Theory, Property Testing, Algorithms for Massive Data, Complexity Theory, Learning Theory, Quantum Computing, Operating Systems, Distributed Systems

RESEARCH EXPERIENCE

- Senior Thesis (Parallel Algorithms for Single Linkage Clustering). Supervised by Prof. Alexandr Andoni   *2023 - Present*
- Independent Research (Distribution-Free k-Junta Testing). Supervised by Prof. Xi Chen.   *2023 - Present*
- SMALL REU at Williams College (Chip-firing games on graphs). Supervised by Prof. Ralph Morrison.   *Summer 2023*

PUBLICATIONS/PREPRINTS

1. Suman Jana, Samanway Sadhu, Abhishek Shah, Dongdong She, and **Krish Singal**. MC^2: Rigorous and Efficient Directed Greybox Fuzzing. *ACM CCS*, 2022.

2. (Preprint in progress) Seamus Connor, Steven DiSilvio, Sasha Kononova, Ralph Morrison, and **Krish Singal**. On the Size and Complexity of Scrambles.

3. (Preprint in progress) Marchelle Beougher, Nila Cibu, Steven DiSilvio, Sasha Kononova, Chan Lee, Ralph Morrison, and **Krish Singal**. The Gonality of Chess Graphs.

4. (Preprint in progress) Marchelle Beougher, Nila Cibu, Steven DiSilvio, Sasha Kononova, Chan Lee, Ralph Morrison, and **Krish Singal**. Chip Firing Games on Banana Graphs.

TEACHING EXPERIENCE

- Mentor for Columbia Undergraduate TCS Learning Seminar (Analysis of Boolean Functions)   *Fall 2023*
- Teaching Assistant for COMS 4236 (Computational Complexity Theory)   *Fall 2023*
- Teaching Assistant for CSOR 4231 (Analysis of Algorithms I)   *Spring 2023*
- Teaching Assistant for CSOR 4231 (Analysis of Algorithms I)   *Fall 2022*

TALKS/PRESENTATIONS

- Young Mathematicians Conference (YMC) 2023. On the Size and Complexity of Scrambles
- (Accepted to) Joint Mathematics Meetings (JMM) 2024. On the Size and Complexity of Scrambles
- (Accepted to) Joint Mathematics Meetings (JMM) 2024. Bananas, Eggs, and Chips: A Recipe for Graph Gonality

PROFESSIONAL EXPERIENCE

- Software Engineering Intern at Apple. Supervised by Gabrielle Belzberg and Evan Kriminger   *Summer 2022*
- Software Engineering Intern at Amazon Web Services. Supervised by Harsh Mohan   *Summer 2021*

PROJECTS

- Solution Manual to chapters 1-4 of *Analysis of Boolean Functions* by Ryan O'Donnell   *Spring 2023*
- Survey on Dynamic Graph Sketching: AGM Sketch and its Optimality — Advanced Algorithms Final Project   *Spring 2023*

HONORS/AWARDS

- Putnam Exam Score of 10 (Top 900) — *2022*
- American Invitational Mathematics Exam (AIME) Qualifier — *2020*
- USA Computing Olympiad (USACO) Gold Division — *2017-2020*
- US National Chemistry Olympiad (USNCO) Honors Recognition (Top 150) — *2020*
- International Physics Bowl 1st Place Team and Top 50 Individual — *2019*
- National Science Bowl (NSB) 2nd, 7th, 16th Place — *2018-2020*