

Hasan Saad

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SUMMARY

Passionate and detail-oriented Ph.D. candidate in Mathematics, with a deep interest in artificial intelligence and machine learning. My academic background, enriched by extensive analytical and statistical training, has prepared me for complex challenges in the AI field. I excel in problem-solving, data analysis, and computational methods. Eager to apply my skills in diverse AI environments, I am committed to contributing to innovative solutions in the rapidly evolving landscape of AI and machine learning technologies.

EDUCATION

Ph.D. Mathematics, University of Virginia

Aug. 2020 – May 2024

Advisor: Ken Ono

Thesis Title: *On the Distributions of Point Counts on Hypergeometric Varieties*

- Conducted research in number theory using tools from probability theory, arithmetic geometry, and automorphic forms.
- Instructor of record for Survey of Calculus I (MATH 1210) and Calculus II (MATH 1320).
- Leading mentor of undergraduate students in the REU in Number Theory.

M.S. Mathematics, American University of Beirut

Sep. 2018 – Dec. 2020

- Due to being accepted for a Ph.D. in UVA before finishing my degree, I did not continue my studies for the 4th semester.

B.S. Mathematics, Lebanese University

Sep. 2015 – Jun. 2018

EXPERIENCE

Erdős Institute Data Science Boot Camp

Sep. 2023 – Dec. 2023

- Developed a convolutional neural network with Gaussian filter and Discrete Fourier Transform to detect AI-generated images.
- Created a Gradio interface to showcase the model.
- Achieved top-5 finalist status among approximately 40 teams.

Lead Mentor, University of Virginia

Jun. 2023 – Jul. 2023

- Lead Mentor for the UVA REU in Number Theory, focusing on distributions for matrix points on varieties.

Instructor, University of Virginia

Aug. 2020 – Dec. 2023

- Taught MATH 1320 in Fall 2023 and MATH 1210 in Fall 2021, Spring 2022.
- Served as a Teaching Assistant for various math courses.

Assistant Mentor, University of Virginia

Jun. 2022 – Jul. 2022

- Assisted in a UVA REU in Number Theory with a project on Sato—Tate analogue for some K3 surfaces.

Teaching Assistant, American University of Beirut

Sep. 2018 – Dec. 2020

- Supported instruction for math courses.

SELECTED PROJECTS

Detecting Images Generated by Neural Networks

Sep. 2023 – Dec. 2023

- Github Link: <https://github.com/Alina-Beaini/AlvsReal>
- Implemented a convolutional neural network to distinguish AI-generated images.
- Developed a Gradio interface for model visualization.

SELECTED PUBLICATIONS

- Explicit Sato—Tate type distribution for a family of K3 surfaces

CONFERENCE TALKS

- Invited speaker at 20 seminars and conferences, including the Joint Mathematical Meetings in Boston 2022 and San Francisco 2023.

SKILLS

- **Technical Skills:** Python, C, Sage, Keras, PyTorch
- **Languages:** English (bilingual), Arabic (native)