ESPEN SLETTNES

slettnes@mit.edu espenslettnes.net Espen Slettnes US Citizen

Undergraduate student with a strong background in research and problem-solving in math and CS, seeking a summer internship to contribute to novel applications and innovations in AI/ML.

EDUCATION

Massachusetts Institute of Technology Cambridge, MA Sep 2023 - May 2027
Bachelor of Science in Artificial Intelligence and Decision Making (GPA: 5.0 / 5.0)
Selected Coursework: Graph Theory and Additive Combinatorics (graduate level); Design and Analysis of Algorithms; Machine Learning; Fundamentals of Programming; Neuroscience; Biology; Principles of Chemical Science.
Courses in Progress (Fall '24): Advanced Algorithms (graduate level); Quantitative Methods for Natural Language Processing; Theory of Computation; Principles of Microeconomics; Probability

University of California, Berkeley Berkeley, CA Aug 2016 - May 2023
Concurrent Enrollment during middle and high school years (GPA: 3.972 / 4.0)
Selected courses: Groups, Rings, and Fields (graduate level); Algebraic Combinatorics (graduate level); Mathematical Economics; Complex Analysis; Real Analysis; Combinatorics; Number Theory; Classical Geometries; Abstract Algebra; Linear Algebra; Electromagnetism, Waves, and Optics; Mechanics and Relativity; Classical and Quantum Walks.

PUBLICATIONS AND PREPRINTS

Sharp bounds on the price of bandit feedback for several models of mistake-bounded online learning 2023
R. Feng, J. Geneson, A. Lee, **E. Slettnes**, Theoretical Computer Science, Volume 965, 18 July 2023, 113980. DOI: 10.1016/j.tcs.2023.113980. arXiv: 2209.01366.

Minimal Embedding Dimensions of Rectangle k-Visibility Graphs 2021
E. Slettnes. Journal of Graph Applications and Algorithms, Vol. 25, no. 1, pp. 59-96, January 2021. Mentor: Dr. Jesse Geneson of San Jose State University. DOI: 10.7155/jgaa.00550. Interactive 3-D models available at: espenslettnes.net.

Extracting Tree Statistics from the Quasisymmetric Bernardi Polynomial (PDF) 2020
L. Cai, **E. Slettnes**, and J. Zhou; Mentor: Dr. Duncan Levear of MIT.

Expected Capture Time and Throttling Number for Cop versus Gambler 2019
J. Geneson, C. Quines, **E. Slettnes**, and S. Tsai. arXiv: 1902.05860.

Variations of the Cop and Robber Game on Graphs 2017
E. Slettnes, C. Quines, S. Tsai, and J. Geneson. arXiv: 1710.11352.

JOBS AND INTERNSHIPS

MIT Laboratory for Information & Decision Systems (LIDS) Summer 2024
- Undergraduate Researcher, Azizan Lab: Design and develop generative AI and deep learning algorithms for generating synthetic graph data with differential privacy guarantees. Implement these algorithms as part of a Python library, aimed for providing a pipeline for data curators to securely share sensitive datasets while preserving privacy.

MIT Department of Electrical Engineering and Computer Science (EECS) 2024 - present
- Lab Assistant: Hold office hours to explain machine learning concepts, assist students with programming tasks, provide debugging and technical support.

Berkeley Math Circle
- Math Lecturer and Problem Writer, Advanced Group. (video recordings and handouts) 2018 - present
- Lead Monthly Contest Designer and Coordinator, overseeing college and high school collaborators. 2018 - 2023

MIT PRIMES-USA 2018 - 2022
- Research Intern: Focused on graph theory, game theory, online learning, and combinatorial structures.

PROGRAMMING LANGUAGES AND SOFTWARE

Python, PyTorch, NumPy, C#, Java, C++, LaTeX, Asymptote, Godot, HTML

SELECTED SCHOLARSHIPS, HONORS, AND AWARDS

The Atlas Fellowship Fellow 2023

Caroline D. Bradley Scholarship Scholar Class of 2023

USA Mathematical Olympiad (USAMO) National Gold Award Winner 2022
(Silver Award winner in 2023, Honorable Mention in 2020)

Davidson Fellows Honorable Mention 2021

Spirit of Ramanujan Fellow 2018, 2019, 2020

Shing-Tung Yau Science Award Semifinalist 2019

Joint Mathematics Meeting Undergraduate Poster Session, Outstanding Presentation Award 2019, 2022

USA Computing Olympiad (USACO) Gold Division 2018

Broadcom MASTERS National Science Fair, First place in Mathematics 2018
- Received the honor of MIT Lincoln Laboratory naming minor planet *34379 Slettnes* after me.

California Science & Engineering Fair Project of the Year 2018

USA Physics Olympiad (USAPhO) Bronze Medalist 2018

Bay Area Scholastic Writing Award Personal Essay and Memoir Category, Silver Key 2022

President's Volunteer Service Award Gold Level 2021

SELECTED PROJECTS

Sokoban Puzzle Game Co-creator 2023 - present
- Co-developed game concept and its puzzles, balancing challenge and engagement. Programmed core game logic and mechanics, building a functional prototype for playtesting. Recruited and coordinated 50 volunteers for in-person playtesting, using feedback to iteratively improve game medhniacs and level design.

ISL Marabot Creator 2020 - 2022
- Conceived and developed a Discord bot that helps each of its thousands of users sharpen their problem-solving skills and train for math olympiads. Documentation available at marabot.net.

SELECTED CONFERENCES AND SUMMER PROGRAMS

MAA's Mathematical Olympiad Program (MOP) 2020, 2022

Summer Program on Applied Rationality and Cognition (SPARC) 2021, 2022, 2023, 2024

Joint Mathematics Meetings (JMM) 2019, 2020

MIT PRIMES Conference 2018, 2019, 2021

Summer Workshop in Fundamentals of Data Science 2021
Institute for Computational & Mathematical Engineering (ICME), Stanford University

Canada/USA Mathcamp 2017, 2018

COMMUNITY SERVICE AND VOLUNTEERING

Summer Program for Applied Rationality and Cognition (SPARC) Summer 2024
- Junior Counselor and instructed a class
- Reviewed applications and interviewed applicants

MIT Splash & Spark Volunteer Teacher 2023 - present
- Taught classes on west coast swing and techniques for acceptance, self-assurance, and peace of mind

Stanford Online High School Peer Tutor in Computer Science 2021 - 2023

Hard Problems Circle at Stanford OHS Founder and Lead 2021 - 2023

Youth Euclid Association Volunteer Math Teacher 2017 - 2022

OTHER INTERESTS

Game & puzzle design, ballroom dancing, piano improvisation, cognition and psychology, social deduction & deception games, running community-building events, helping others develop healthy mental habits