Ethan Lu

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Citizenship: USA

EDUCATION

AUG 2020-MAY 2022	Master of Science in Mathematics, **Carnegie Mellon University** Thesis: TBA Advised by Gautam Iyer
AUG 2018-MAY 2022	Bachelor of Science, **Carnegie Mellon University** Major in Mathematical Sciences, Minor in Computer Science	Courses CURRENT GPA: 4.0/4
AUG 2014-MAY 2018	Dual Enrollment at **University of Nevada, Reno** GPA: 4.0/4 | Courses

WORK AND RESEARCH EXPERIENCE

AUG 2021-MAY 2022	Teaching Assistant, DEPT. OF MATHEMATICS AT CMU Teaching assistant for Mathematical Studies Algebra I (honors).
JUN 2021-AUG 2021	Quantitative Trading Intern, SUSQUEHANNA INTERNATIONAL GROUP (SIG) Intern under equity options desk.
JAN 2021-JUN 2021	Teaching Assistant, DEPT. OF COMPUTER SCIENCE AT CMU Grading and curriculum design for 15-458: Discrete Differential Geometry.
APR 2020-AUG 2020	Summer Undergrad Research Fellow, DEPT. OF MATHEMATICS AT CMU Research in partial differential equations and fluid dynamics under the supervision of Professor Ian Tice, studying surfactant dynamics from the Arnold perspective. Supported by NSF Grant 1653161.
APR 2019-JUN 2021	Research Assistant at THE GEOMETRY COLLECTIVE (CMU CSD). Research in computer graphics and geometry processing under the supervision of Professor Keenan Crane, developing algorithms and optimization techniques for intrinsic geometry processing. Supported by NSF Grant 1717320.
JUN 2017 & 2018	Summer Mathematics Research Training Camp at TEXAS A&M High school research camp led by Professors Kuchment, Zelenko, and Shatalov. **2017:** Galois theory, finite fields, Reed-Soloman error correcting codes **2018:** Application of the Fourier and Radon Transforms to Medical Imaging
SEP 2016-JAN 2018	Tutor at UNIVERSITY OF NEVADA, RENO MATH CENTER Hired to tutor UNR students in all available undergraduate math, statistics, and physics courses. Organized, created, and led comprehensive review sessions for midterms/finals.
JUL-AUG 2017	Math Faculty at A-STAR MATH CAMPS, Santa Clara, CA Created, developed, and taught intensive 4-block 3-week curriculum to promote problem solving and competition skills. Revised and rewrote existing Number Theory curriculum.

Publications And Talks

1. *Surfactant Dynamics from the Arnold Perspective.*
   Ethan Lu, J. Jenkins, C. Lee, Y. Liu, Ethan Lu, D. Reed.
   SIAM Undergraduate Research Online, vol. 14, Society for Industrial & Applied Mathematics (SIAM), 2021. Crossref, doi:10.1137/20s1378144.

2. *Central Limit Theorems for Compound Paths on the 2-Dimensional Lattice*
   E. Fang, J. Jenkins, Z. Lee, D. Li, Ethan Lu, S. Miller, D. Salgado, J. Siktar
   Fibonacci Quart. vol 58 (2020), no. 3, pp. 208-225.
   https://arxiv.org/abs/1906.10645
   Invited talk at the **19th International Conference on Fibonacci Numbers**.

3. *Circular Arc Triangulations*
   Ethan Lu, Keenan Crane. *In preparation*.

Projects

Current	**CATOpt** https://github.com/elu00/CATOpt Research codebase for optimization and processing of circular arc triangle (CAT) meshes.
Jun 2020	**Probase** https://github.com/CMU-Math/probase Implemented test export/rendering functionality for CMIMC problem database.
Sep 2018	**HackCMU 2018: viz.ml** https://github.com/TheNumbat/viz.ml Implemented Barnes-Hut TSNE algorithm for use in 3D dataset visualization.
Nov 2018	**HackPrinceton 2018: styledev.rt** https://github.com/elu00/styledev.rt Real-time style transfer through video games. Machine learning category finalist.

Interests and Activities

Mathematics

- Putnam Exam Top 500 Scorer (2019).
- Volunteer at the CMIMC (CMU), PUMaC (Princeton), and HMMT (Harvard/MIT) competitions.

Programming

- Languages: C/C++, Python, C#, R, LaTeX.
- Software: Cinema 4D, Vegas Pro, Adobe After Effects/Premier, Mathematica.

Languages

English:	Native Speaker
Chinese:	Fluent

Bachelor/Master of Science in MATHEMATICS
Grades

COURSE CODE	COURSE TITLE	GRADE	CREDIT HRS
21-721	Probability (Graduate)	A	12
21-720	Measure and Integration	A	12
21-640	Functional Analysis	A	12
21-623	Complex Analysis	A	12
21-238	Mathematical Studies Algebra II	A	12
21-237	Mathematical Studies Algebra I	A	12
21-236	Mathematical Studies Analysis II	A	12
21-235	Mathematical Studies Analysis I	A	12
21-269	Vector Analysis	A	10
21-499	Research in Number Theory and Probability	A	9
21-375	Mathematical Paradoxes	A	9
21-329	Set Theory	A	9
21-295	Putnam Seminar	A	3
21-242	Matrix Theory	A	10
21-228	Discrete Math	A	9
21-128	Math Concepts and Proofs	A	12
15-458	Discrete Differential Geometry	A	12
15-451	Algorithm Design and Analysis	A	12
15-295	Competitive Programming	A	5
15-251	Great Ideas in Theoretical Computer Science	A	12
15-210	Parallel and Sequential Data Structures and Algorithms	A	12
15-150	Principles of Functional Programming	A	10
15-122	Principles of Imperative Computing	A	12
15-112	Fundamentals of Programming and CS	A	12
03-121	Modern Biology	A	9
33-224	Stars, Galaxies, and the Universe	A	9
38-101	EUREKA Discovery and Impact	A	6
57-209	The Beatles	A	9
73-102	Principles of Microeconomics	A	9
76-101	Interpretation and Argument	A	9
76-270	Writing for the Professions	A	9
80-150	Nature of Reason	A	9
	GPA	4.0/4.0	

Courses at UNIVERSITY OF NEVADA, Reno

COURSE	GRADE
Calculus III	A
Statistics 352	A
Differential Equations	A
Linear Algebra	A
Introduction to Analysis (IS)	A
GPA	4.0