

# Ethan LU

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## EDUCATION

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AUG 2020-MAY 2022	Master of Science in Mathematics, <b>Carnegie Mellon University</b> Thesis: TBA
AUG 2018-MAY 2022	Bachelor of Science, <b>Carnegie Mellon University</b> Major in Mathematical Sciences, Minor in Computer Science CURRENT GPA: 4.0/4 Recipient of the Richard A. Moore Award (2020) Relevant Classes: Measure and Integration, Math Studies Algebra/Analysis I/II, Matrix Theory, Algorithm Design and Analysis, Discrete Differential Geo, Imperative + Functional Programming
AUG 2014-MAY 2018	Dual Enrollment at <b>University of Nevada, Reno</b> GPA: 4.0/4

## WORK AND RESEARCH EXPERIENCE

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APR 2020-AUG 2020	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 2020-AUG 2020	Actuarial and Predictive Modeling Intern at EMPLOYERS INSURANCE CO. Developed claims development and forecasting models in R and Python. Automated rate indication/filing process for use in production. Performed territory studies to determine optimal clustering for use in pure premium model.
APR 2019-FEB 2020	Research Assistant at <b>THE GEOMETRY COLLECTIVE</b> (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.

## PUBLICATIONS AND TALKS

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1. *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. Siktart  
*Fibonacci Quart.* vol 58 (2020), no. 3, pp. 208-225.  
Invited talk at the **19th International Conference on Fibonacci Numbers**.  
<https://arxiv.org/abs/1906.10645>
2. *Surfactant Dynamics from the Arnold Perspective*  
J. Jenkins, C. Lee, Y. Liu, Ethan Lu, D. Reed. *In review*.

## PROJECTS

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CURRENT	CATOpt <a href="https://github.com/elu00/CATOpt">https://github.com/elu00/CATOpt</a> Research codebase for optimization and processing of circular arc triangle (CAT) meshes.
JUN 2020	Probase <a href="https://github.com/CMU-Math/probase">https://github.com/CMU-Math/probase</a> Implemented test export/rendering functionality for CMIMC problem database.
SEP 2018	HACKCMU 2018: viz.ml <a href="https://github.com/TheNumbat/viz.ml">https://github.com/TheNumbat/viz.ml</a> Implemented Barnes-Hut TSNE algorithm for use in 3D dataset visualization.
NOV 2018	HACKPRINCETON 2018: styledev.rt <a href="https://github.com/elu00/styledev.rt">https://github.com/elu00/styledev.rt</a> Real-time style transfer through video games. Machine learning category finalist.

## INTERESTS AND ACTIVITIES

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### 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,  $\text{\LaTeX}$ .
- Software: Cinema 4D, Vegas Pro, Adobe After Effects/Premier, Mathematica.