Curriculum Vitae

Elanor Tang

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EDUCATION

Carnegie Mellon University — **Pittsburgh, PA**
Ph.D., Computer Science (Candidate) — *August 2024 - Present*
Advisor: Professor Bryan Parno

University of Michigan — **Ann Arbor, MI**
Master of Science, Computer Science — *August 2022 - December 2023*
GPA: 4.00/4.00
Bachelor of Science, Dual Major in Computer Science and Mathematics | Minor in Physics — *September 2018 - April 2022*
GPA: 3.99/4.00

Graduate Coursework: *Programming Languages, Compilers, Category Theory, Formal Verification*
Undergraduate Computer Science Coursework: *Programming Languages, Algorithms, Operating Systems, Machine Learning*
Undergraduate Mathematics Coursework: *Mathematical Logic, Combinatorics, Abstract Algebra, Advanced Calculus I*

RESEARCH EXPERIENCE

Sandia National Laboratories — **Livermore, CA**
Formal Methods Intern — *May 2023 - August 2023*

- Completed the entire Logical Foundations textbook on Coq, including the exercises.
- Formalized algebraic structures in Coq..
- Proved validity of the memory model for adding concurrent semantics to CompCert.

University of Michigan — **Ann Arbor, MI**
Research Assistant, Professor Jean-Baptiste Jeannin, Department of Aerospace Engineering — *May 2021 - April 2023*

- Implemented algorithms in Python to automatically run in seconds a process that formerly took hours or days by hand, formally verifying a vehicle control system's ability to prevent collisions with other vehicles or objects.
- Wrote proof of completeness of these algorithms.
- Constructed proofs of soundness in PVS to verify output of this Python code.

PUBLICATIONS

Nishant Kheterpal, Elanor Tang, and Jean-Baptiste Jeannin. 2022. Automating Geometric Proofs of Collision Avoidance with Active Corners. In *Proceedings of the 22nd Conference on Formal Methods in Computer-Aided Design – FMCAD 2022,* Alberto Griggio and Neha Rungta (Eds.), Vol. 3. TU Wien Academic Press, 359–368.

TEACHING EXPERIENCE

University of Michigan — **Ann Arbor, MI**
Courses:

- Computer Science Theory: Fall 2023 (Graduate TA)
- Upper-Level Algorithms: Fall 2022 (Graduate TA)
- Data Structures and Algorithms: Fall 2020, Spring 2021, Fall 2021 (Undergraduate TA)

Responsibilities:

- Taught a weekly recorded discussion to 15 students to review lecture material and do homework-relevant practice problems.

- Facilitated student collaboration to construct and analyze algorithms; provided support with the homework.
- Wrote problems and solutions for weekly student homeworks.
- Advocated for student well-being by pushing for a more reasonable assignment schedule.
- (In Data Structures and Algorithms) Enabled students to debug their C++ projects by providing coaching on IDE usage and strategies for writing test cases.

SOFTWARE ENGINEERING EXPERIENCE

Strata Oncology **Ann Arbor, MI**

Software Engineering Intern *May 2022 - August 2022*

- Created a React Typescript component for uploading and integrating documents with customer order forms.
- Wrote unit tests with Jest and Python Unit testing frameworks.
- Collaborated with UX designer and other software engineers to plan scope of work.

SKILLS

Verus • Dafny • Coq • PVS • C/C++ • React • TypeScript • JavaScript • Git • HTML/CSS • Python • LaTeX • Jira

AWARDS

Electrical Engineering & Computer Science Scholar, *April 2021 - April 2022*
awarded to seniors with a GPA of 3.9 or above

M.S. Keeler Department of Mathematics Merit Scholarship *August 2021*

7-Term University Honors, *Dec 2018 - April 2022*
awarded for each 14-credit term with a minimum GPA of 3.5

7-Term James B. Angell Scholar, *March 2019 - April 2022*
awarded for 7 consecutive 14-credit terms of all A's (A+/A/A-)

William J. Branstrom Freshman Prize, *March 2019*
awarded to the top 5 percent of the LSA class in the first term of freshman year

Regents Merit Scholarship *August 2018*

National Merit Finalist *February 2018*

PROFESSIONAL SOCIETIES

Member of Phi Beta Kappa