

EMMA SHEDDEN

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EDUCATION

University of Pennsylvania, Computer and Information Science | Philadelphia, PA *Aug 2024 - May 2029 (expected)*
Doctor of Philosophy, *Computer Science* | Advisors: Rajeev Alur, Osbert Bastani

University of Michigan, College of Engineering | Ann Arbor, MI *May 2024, Summa Cum Laude*
Bachelor of Science in Engineering, *Computer Science* | Minor, *Mathematics*

- GPA: 3.99/4.0. College of Engineering Honors Program

PUBLICATIONS

Shedden, E., Alur, R., Bastani, B. (2026). Leveraging VLMs for Specification-Guided Policy Learning. *Preprint*, submitted to AAAI 2027. https://emmashedden.github.io/files/VLM_task_graphs_AAAI_27.pdf

Santiesteban, P., **Shedden, E.**, Endres, M., Weimer, W. (2026). An Empirical Study of Anonymous, Unmoderated, and Online Peer-to-Peer Programming Tutoring Conversations. In *Proceedings of the 48th International Conference on Software Engineering (ICSE-SEET)*. Presenting author. <https://doi.org/10.1145/3786580.3786958>

Ahmad, H., Endres, M., Newman, K., Santiesteban, P., **Shedden, E.**, & Weimer, W. (2024). Causal Relationships and Programming Outcomes: A Transcranial Magnetic Stimulation Experiment. In *Proceedings of the 46th International Conference on Software Engineering (ICSE)*. **Distinguished Paper Award**. <https://doi.org/10.1145/3597503.3639096>

Chu, S., **Shedden, E.**, Zhang, C., Meira-Góes, R., Moreno, G. A., Garlan, D., & Kang, E. (2023). Runtime Resolution of Feature Interactions through Adaptive Requirement Weakening. In *Proceedings of the 18th Symposium on Software Engineering for Adaptive and Self-Managing Systems*, ser. SEAMS (Vol. 23). <https://doi.org/10.1109/SEAMS59076.2023.00025>

RESEARCH EXPERIENCE

Undergraduate Researcher | **Westley Weimer Lab, University of Michigan** *Sep 2022 - Aug 2024*

- Designed a blinded data analysis using multilevel linear regression on psychometric data from a 15-participant human study, *accepted to ICSE 2024. Received Distinguished Paper Award.*
- Conducted a mixed-methods study of online peer tutoring transcripts from nontraditional computer science student interactions, *accepted to ICSE-SEET 2026. Presenting author.*

Undergraduate Researcher | **LoG(M), University of Michigan** *Jan 2023 - Apr 2023*

- Implemented and analyzed 4 competing algorithms for simulation of standard and fractional Brownian motions. Presented in a department-wide poster symposium. Supervised by Dr. Hai Le.

Undergraduate Researcher | **Eunsuk Kang Lab & REUSE, Carnegie Mellon University** *Jun 2021 - May 2022*

- NSF-sponsored Research Experience for Undergraduates (REU) in Software Engineering 2021 scholar in the Institute for Software Research (ISR, now S3D)
- Designed a novel reconciliation framework to resolve feature conflicts in cyber-physical systems using formal methods and Mixed Integer Linear Programming (MILP), *published in SEAMS 2023*
- Collaborated on a novel autonomous navigation algorithm applying formal methods to continuous Monte Carlo Tree Search; built a new suite of test environments for training and validating 2D control algorithms
- Presented work in NSF REU sponsored poster symposium attended by 30 faculty, 50 PhD students, and 40 peers

TEACHING EXPERIENCE

Teaching Assistant, CIS 4190/5190: Applied Machine Learning | University of Pennsylvania *Aug 2025 - Dec 2025*

- 2 semesters | Developed and taught 2-lecture sequence on Reinforcement Learning
- Collaborated on creation of assignments and exams, grading, and day-to-day administration; held office hours

Instructional Aide, EECS 203: Discrete Mathematics | University of Michigan *Jan 2022 - Apr 2024*

- 5 semesters | Contributed to course design and development; collaborated on creation of assignments and exams, grading, and day-to-day administration. Interviewed 4 candidate staff members
- Planned and delivered weekly one-hour recitations for a class section of 40 undergraduate students; held weekly two-hour office hours to provide individualized student support for a class of ~1,000 students

Supplemental Instruction Leader, Discrete Mathematics | University of Michigan *Feb 2021 - Dec 2021*

- Led weekly 90-minute classes of 15 undergraduate students; held individual and group office hours
- Introduced a new IBL-based class structure to increase student engagement and opportunities to collaborate
- Tutored undergraduate courses including Calculus, Linear Algebra, C++ Programming, and Data Structures

PROFESSIONAL EXPERIENCE

Software Engineer Intern | Meta Platforms, Inc. (Facebook) *May 2022 - Aug 2022*

- Designed and implemented a generalized service and library to enforce internal access controls on AI assets, scaled to reliably handle over 200 million queries per second using limited cloud resources
- Performed cost-benefit analyses of several internal tools to support server- and client-side caching solutions
- Proposed and implemented design and reliability improvements in multiple other data privacy projects
- Communicated my software design and deliverables in three presentations to team members and other engineers

LEADERSHIP EXPERIENCE

Drone Subteam Lead | UM::Autonomy, University of Michigan Ann Arbor *Sep 2020 - Aug 2022*

- Led team of 5 to develop software solutions to three new challenges in RoboNation's 2022 RoboBoat competition
- Designed and implemented an interface for radio communication between an autonomous quadcopter and boat
- Submitted technical report to 2021 RoboBoat Competition, covering hardware, electrical, and software projects

SERVICE

Student Volunteer | 37th IEEE/ACM International Conference on Automated Software Engineering *Oct 2022*

- Ran logistics and tech support for hybrid format speaker sessions over 5 days

AWARDS & CERTIFICATIONS

NSF Graduate Research Fellow \$159K award, <8% acceptance rate	<i>U.S. National Science Foundation, 2025</i>
Abel Lukens Stout Fellow \$3K award	<i>University of Pennsylvania, 2024-25</i>
James B. Angell Scholar, Dean's List, and University Honors	<i>University of Michigan, 2020-24</i>
William J. Branstrom Freshman Prize College of Engineering top 5%	<i>University of Michigan, 2020-21</i>
Advanced Certificate in C++ Programming	<i>Washtenaw Community College, 2021</i>
Michigan Affiliate Award, Aspirations in Computing	<i>National Center for Women & Information Technology, 2019</i>

ACTIVITIES

Ceramist; Artistic Merit award at the NCECA K-12 conference 2018	<i>ClayWorkStudio Ann Arbor, 2015-2022</i>
Ballet & Chinese dancer; two Elite Platinum awards at the regional Taoli Cup 2019	<i>China Doll Dance Team, 2016-2020</i>
Vice President of Operations & Lion Dance Team member	<i>Formosa Association of Student Cultural Ambassadors, 2016-2020</i>