Warren Shepard

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Education

Dartmouth College September 2022 - June 2026

Bachelor of Arts, Computer Science and Mathematics *GPA: 3.99 / 4.00*

- *Computer Science Coursework:* Object Oriented Programming, Principles of Programming Languages, Security and Privacy, Discrete Math, Algorithms, Multi-modalities of GenAI (grad), Randomized Algorithms (grad), Computer Vision (grad), Information Theory (grad)
- *Mathematics Coursework:* Multi-variable Calculus, Linear Algebra, Differential Equations, Probability (honors), Topology, Algebra (honors), Real Analysis (honors), Mathematics and AI

Skills

Languages: Python, Java, Bash, C/C++, R, GO, JavaScript, Ruby, Perl
Libraries/Tools: Numpy, Tensorflow, sklearn, pytorch, Transformers, git, pandas, AWS, SLURM

Publications

[1] Alan Sun, Ethan Sun, **Warren Shepard**, Algorithmic Phase Transitions in Large Language Models: A Mechanistic Case Study of Arithmetic. *ATRIB @ NeurIPS* (2024)

Research Experience

Machine Learning Research June 2024 – Present

Dartmouth College (Advisor: Dr. Alice Schwarze) *Hanover, NH*

- Invited by professor due to publication-worthy final project/top performance; paper submitted to NuerIPS 2024
- Investigating the use of approximation algorithms to optimize graph-convolutional neural networks (GCNs)

Probability Research April 2024 – Present

Dartmouth College (Advisor: Prof. Ethan Levian) *Hanover, NH*

- Invited by professor due to publication-worthy final project and top performance (top 10%) in Honors Probability
- designing novel stochastic models and algorithms to represent bacterial population dynamics and gene transfer

Graph Theory & Algorithms Research April 2024 – Present

Dartmouth College (Advisor: Prof. Deeparnab Chakrabarty) *Hanover, NH*

- Awarded Presidential Scholars Fellowship for high GPA and performance in Algorithms coursework (top 5%)
- Finding optimal solutions to modern graph problems, with a focus on randomized/approximation algorithms

Computational Biology Research Assistant Feb 2023 – Present

Geisel School of Medicine at Dartmouth College (Advisor: Prof. Xiaofeng Wang) *Hanover, NH*

- Led the design and implementation of a back end data-processing system used to analyze mass quantities of genetic data from cancer patients for genetic markers; increased runtime efficiency by over 75%
- Implemented machine learning models to predict stem cell differentiation in cancerous vs. noncancerous cells
- Presented at weekly meetings, mentored four new students, and contributed to paper accepted for publication

Internship Experience

Incoming SWE Intern @ Microsoft June 2025 – August 2025

Microsoft *Cambridge, MA*

- Software Engineering Internship for summer 2025

Research and Development Intern @ LGC January 2021 – Aug 2022

LGC Technologies *Madison, Wisconsin*

- Designed computational simulations in python to design faster and higher yield protocols for manufacturing components for COVID-19 testing kits; increased speed by 50% and upscaled manufacturing by 500%
- Worked 1500+ hours, concluding with a presentation at a symposium to an audience of 200+ people

Teaching Experience

Teaching Assistant — Object Oriented Programming **March 2023 - Present**

- Lead weekly recitation and office hours, fostering an interactive learning environment and reinforcing key ideas
- Brainstorm ideas to improve the course with a team of 15 TAs based on observations of students during office hours. Improvements include new practice tests, updated lecture notes, and tutorial videos
- Grade 15 assignments and 3 exams per term, providing feedback to students within 5 days of submission

Honors and Awards

James O. Freedman Presidential Scholar **2024**

- Selective merit-based grant for my research under Professor Deeparnab Chakrabarty. Awarded to students in top 40% of class and with a strong research proposal.

Several Citations for Academic Excellence **2023-2024**

- Multi-modalities of GenAI: *"This is a graduate-level course that covers a wide range of advanced topics in Natural Language Processing, Computer Vision, Audio Signal Processing, Computer Graphics, and Large Language Models. Warren A. Shepard performed exceptionally well. For the term project, Warren A. Shepard and his teammate successfully reproduced the results from the paper Progress measures for grokking via mechanistic interpretability, ICLR 2023. Additionally, they conducted extensive experiments to study the behavior of Grokking and transformer interpretability, providing valuable insights into regularization techniques and Grokking acceleration"*
- Algorithms: *"Warren Shepard performed very well in the class showing mastery in the material. Warren scored 100% on the in-class assignments, and did an amazing amount of extra-credit assignments where he also maintained his high quality of work. Warren probably attended every lecture in the class and was an active participant in these. All this shows much more than mastery: it shows a deep love for the subject material. It was a pleasure having Warren in my class. Great job, Warren!"*
- Introductory Physics II: *"Tied for top score in a class of over 100, an accomplishment that speaks for itself"*

Rufus Choate Scholar **2023 - 2024**

- Top honor group at Dartmouth, awarded to the top 5% of the class.

URAD Scholar (3x) **2023-2024**

- Grant to conduct research in the Wang Lab.

Waterhouse Research Award **2023**

- Award and grant to conduct research in the Wang Lab during summer of 2023.

Service

Reviewer, NeurIPS Workshop on Mathematical Reasoning and AI 2024
Reviewer, NeurIPS Workshop on Attributing Model Behavior at Scale 2024