# Warren Shepard

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## Education

**Dartmouth College** Anticipated Graduation: 06/26

*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
- *Activities:* Dartmouth Outing Club (former Vice President), Sexual Assault Peer Alliance, Zeta Psi Fraternity

## Skills

**Languages:** Python, Java, Bash, C/C++, R, Haskell, 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) [pdf]

## Research Experience

**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 – June 2024

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

- Led computational component of research on SWI/SNF mutations, which occur in $> 25\%$ of cancer
- Presented at weekly meetings, mentored four new students, and contributed to paper accepted for publication

***Next Gen Sequencing Data Processing/Analysis System*** *2023-2024*

- Led the design and implementation of a high-throughput 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
- dynamic resource allocation using SLURM scheduling

***Data Visualization System (R, python, HTML, Bash)*** *2023*

- Designed automated system for generating publication-ready figures, reducing time spent from days to minutes
- Increased reproducibility by integrating modular code components to handle diverse datasets and produce dozens of figures from a single command

## Internship Experience

**Incoming SWE Intern @ SpaceX (Starlink)** March 2025 – June 2025

*SpaceX (Starlink)* *Redmond, WA*

- Software Engineering Internship for spring 2025; gateway team

**Incoming SWE Intern @ Microsoft** June 2025 – August 2025

*Microsoft* *Cambridge, MA*

- Software Engineering Internship for summer 2025; specific team TBD

**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

**Grader — Calculus** January 2025 - Present

- Grade weekly problem sets and homework as well as two exams, providing feedback to students within one week 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

Citations are awarded by professors for exceptional performance and make up $\sim 2.4\%$ of grades at Dartmouth.

> *"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."*
>
> — Prof. Yu Wing Tai; **Multi-modalities of GenAI**

> *"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!"*
>
> — Prof. Deeparnab Chakrabarty; **Algorithms**

> *"Tied for top score in a class of over 100, an accomplishment that speaks for itself"*
>
> — Prof. James William LaBelle; **Introductory Physics II**

**Rufus Choate Scholar** 2023 - 2024

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

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

- Grant from Dartmouth to conduct research in the Wang Lab.