

William Ashcraft

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Professional Summary

Hi, I'm Will! I graduated from CU Boulder with a bachelor's degree in physics, and now I'm a masters student at the University of Rochester. I've been lucky enough to pick up a lot of skills in university including teaching, programming and research. My research interests are focused in quantum materials and quantum computing. Currently I'm researching electron decoherence to better understand how systems interact with their environment.

Skills Summary

Programming

I've got to practice a lot of programming in both research and educational contexts. I've taught 7 semesters of introductory programming, currently maintain my own website using css, js and github pages, and built machine learning models to research crystallographic materials. I'm proficient in Python, C++ and Julia, but feel comfortable picking up most languages.

Research

As a member of the Heinz and McCamant Laboratory, I've gotten to research hybrid organic-inorganic structures and ultrafast spectroscopy. I've received training on laser safety, and feel confident with class 4 and class 3 lasers. My projects have allowed me to improve my presentation and research skills which included a presentation at an American Chemical Society conference.

Pedagogy

As a Learning Assistant, I received training on pedagogical techniques including facilitating student-student interaction, feedback, eliciting student ideas and learner centered teaching.

Team Leadership

I led teams of 10-15 mentors through professional challenges to ensure success for a campus of ~200 learning assistants every semester. As a Teaching Assistant, I led teams of 15-20 learning assistants to equip them to teach introductory programming.

Peer Mentorship

As a Learning Assistant Mentor, I received training on peer mentoring including balancing coaching, collaboration and consulting stances to improve feedback for peers. Working with folks at the same skill level, while giving and receiving substantive feedback is one of my strengths.

Research History

Graduate Research Assistant, September 2025 - Current

University of Rochester, McCamant Laboratory

- Performed experimental research on electron decoherence, including CW and ultrafast raman spectroscopy to analyze electron decoherence.
- Engaged in laser safety training and maintenance, including the use of class 4 and 3B lasers.
- Utilized density functional theory calculations to contribute to spectroscopy and vibrational analysis.

Undergraduate Research Assistant, August 2023 - August 2024

University of Colorado Boulder, Heinz Laboratory

- Conducted research on hybrid organic-inorganic structures, utilizing machine learning to analyze and interpret data, culminating in a poster presentation for the American Chemical Society's Fall conference.
 - Collected, organized, and analyzed large datasets with python, leading to key insights.
 - Conducted literature reviews to identify trends and gaps in hybrid organic-inorganic structures, guiding the development of innovative research questions and methodologies
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Education History

(Current) Masters, expected 2027

University of Rochester, Hajim School of Engineering & Applied Sciences

Masters in Material Science, 3.9 *current GPA*

As a masters student at the University of Rochester in the material science program, I'm highly interested in understanding quantum material science, and thinking about how to utilize the microscopic quantum properties for macroscopic device results. My focus during the program is on research with the McCamant group.

Bachelor of Arts, 2025

University of Colorado Boulder, College of Arts and Sciences

Major in Physics with minors in Computer Science and Quantum Engineering, 3.7 GPA

My undergraduate academics included a wide breadth of math, science, engineering and programming. I got to take on roles as an Research Assistant in Engineering & Applied Science, serve as a Lead Learning Assistant Mentor, and teach as a Computer Science Learning Assistant. I've been lucky enough to leverage my skills in C++ and Python to both enhance educational methodologies and research crystallography as a member of cutting edge teams.

High School Diploma, 2021

Garland High School

AP Scholar and IB diploma Program, 4.4 GPA

In High School I got to focus on community as a member of multiple organizations including orchestra, robotics, debate and youth & government. I completed my high school diploma alongside the AP scholars program and IB diploma program.

Teaching History

Undergraduate Teaching Assistant, January - May 2025

University of Colorado Boulder, Starting Computing

- Taught groups of students using formal pedagogical techniques to introduce programming concepts through lectures and practice problems.
- Taught and managed other undergraduate students in pedagogical practices to form a team of well equipped instructional staff.
- Helped develop instructive lectures and innovative activities to enhance learning for students.

Teaching Assistant, May - August 2023

CU Science Discovery

- Facilitated engaging, STEM lessons for K-12 students, fostering curiosity and critical thinking.
- Taught programming, physics, and engineering concepts, tailoring content to diverse learning styles and ensuring accessibility for all participants across multiple age groups.
- Inspired students to pursue further education and careers in STEM fields by sharing real-world applications and pathways related to scientific discovery.

Lead Learning Assistant Mentor, August 2023 - May 2025

University of Colorado Boulder, Learning Assistant Program

- Represented a community of 200 people when working with leaders across campus, working as a member of CU's Center for Leadership Leading EDGE council and speaking on multiple conference panels.
- Worked with advanced and experienced learning assistants in professional development sessions to further their educational skills.
- Helped develop and improve resources for instructors focusing on courses where students may have trouble accessing assistance as a member of CU's Center for Teaching and Learning Large Course Initiative.

Learning Assistant Mentor, August 2022 - May 2025

University of Colorado Boulder, Learning Assistant Program

- Provided ongoing support to new learning assistants, helping them overcome educational and professional challenges.
- Facilitated group discussions to promote collaboration and knowledge-sharing among learning assistants across 40 different courses, including computer science, german, psychology, astrophysics, and writing.
- Developed clear and detailed weekly lesson plans which facilitated learning for my mentees and self-reflection week to week.

Learning Assistant, January 2022 - December 2024

University of Colorado Boulder, Starting Computing

- Taught small groups of students and helped solidify understanding of programming concepts through practice problems.
- Taught and managed multiple exam reviews for 100+ students, communicating technical concepts through lecture style sessions.
- Collaborated with instructors to develop teaching strategies for over 3500 students across 6 semesters.

Coding Instructor, May - August 2019

RoboWizKids

- Developed lesson plans to communicate engineering concepts to primary school students.
 - Encouraged collaboration among young students, fostering a positive learning environment.
 - Adapted and implemented teaching approaches to meet the needs and skill levels of individual students.
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Additional Awards/Achievements

Center for Leadership: *Student Leader of the Year* (Spring 2025)

International Learning Assistant Conference: *Panel Participant* (Fall 2024)

American Chemical Society: Conference Poster Presenter (Summer 2024)

IGNITE Social Change and Leadership Conference: *Session Presenter* (Spring 2023)

The University Physics Competition: *Bronze Medal Rank* (Fall 2022)

Hack-CU Hackathon: *Best Beginner Track* (Winter 2022)