

JONAS CAREW

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EDUCATION

Oregon State University | GPA: 3.98

Sep 2023 - Jun 2027

B.S. | Mathematics

Corvallis, OR

B.S. | Computer Science - Computer Systems

B.S. | Electrical and Computer Engineering

Awards/Honors

MAA MathFest 2026 Outstanding Poster Award

2026 Joel Davis Student Award

Honor Roll (All terms)

OSU Honors Scholar

Organizations

(**Officer**) Mathematics Club at OSU

Association for Computing Machinery

Embedded Systems Design Club

Skate Club

RESEARCH

REU Researcher

June 2026 - August 2026

REU at Iowa State University

Ames, IA

- Worked with professor **Kristin Yvonne Rozier** and professor **Phillip Jones** to develop the notion of robustness in mission-time linear temporal logic (MLTL).
- Made rigorous existing notions of robustness and robust intervals for LTL-based logics, including disproving a published lemma and providing sufficient conditions for its validity.
- Constructed and proved algorithms to calculate robustness in real-time streaming scenarios and implemented these algorithms into R2U2, an existing tool for MLTL already used in NASA missions.
- Provided bi-weekly status reports to all REU participants, and presented our research at both the Iowa State summer poster session and the MAA MathFest in Boston, where we won an outstanding poster award.

Undergraduate Researcher

April 2026 - June 2026

Directed Reading Pilot Program

Corvallis, OR

- Worked with **Addison Day** to complete various readings on the representation theory of finite groups.
- Studied the classification of the representations of the symmetric groups using partitions and Young tableau, as well as the representation theory of Lie algebras under Schur-Weyl duality.
- Presented a slideshow on the representation theory and character theory of finite groups, building up intuition about results such as character tables and the decomposition of the regular representation.

Undergraduate Researcher

March 2025 - June 2025

URSA Engage

Corvallis, OR

- Worked with professor **Nick Marshall** to examine the benefits of different variations on the randomized Kaczmarz algorithm, an approach for solving overdetermined systems of linear equations.
- Applied techniques used throughout data science to find optimal values for a momentum-based variation on the Kaczmarz algorithm.

EXPERIENCE

Undergraduate Learning Assistant (Electronics)

Sept 2025 - Present

OSU College of Electrical Engineering and Computer Science

Corvallis, OR

- Taught a lab on integrated circuits and their applications, where students worked to practically implement the theoretical concepts they learned throughout the course.
- Worked to redesign a 20 year old lab, including rewriting all lab documents, recording instructional videos, and creating grading criteria, so that students could succeed in the lab.
- Assisted Students in an active learning environment, helping them design circuits built on protoboards.

Learning Assistant (Integral and Vector Calculus)

OSU College of Science

Sept 2024 - Dec 2024; Sept 2026 - Present

Corvallis, OR

- Participated in weekly meetings with the course instructor to help plan how to approach the next week's material in a way conducive to student learning.
- Succeeded in a weekly pedagogy training course that helps to advance teaching understanding and skill.
- Supported students with in-class work and provided detailed one-on-one and group instruction.

Resident Assistant

Oregon State University Housing and Dining Services

Sept 2024 - Present

Corvallis, OR

- Managed utilities around the residence halls and performed regular checks to ensure rigorous safety standards are being upheld throughout residence the halls.
- Attended weekly meetings with both the residence team and the resident director to assess issues facing the residence halls and continue working on problem assessment skills.
- Assisted students in the residence halls with becoming accustomed to university life and managing the new responsibilities they have.

PROJECTS

Personal Website with Blog

- Designed an open source static site template for use with the static site generator Cryogen by editing the source in Clojure to include features beyond default.
- Authored many pages using the AsciiDoc formatting to provide a succinct detailing of both my professional and personal interests.
- Authored several blog posts about both my experience designing the website and other topics, and published them to an active RSS feed.

DC Power Supply

- Designed and built both positive and negative voltage rectifiers and variable voltage regulators which generated DC voltage outputs of $\pm 5 - 18$ Volts, supporting a current output of 1 Amp.
- Developed documentation such that students taking a introductory course in electronic devices could follow the design to also construct a DC power supply over the course of a term.
- Developed additional heat dissipation and capacitor discharge circuits for the power supply to serve as extra credit assignments for the students taking the lab.

Website with Integrated Database

- Planned, developed, and deployed a website using the MERN development stack, using React and Node to create components which are responsive to both user inputs and updates in a MongoDB database.
- Created a simulated storefront on the website, allowing users to add different items to a cart and navigate through a simulated checkout process.
- Designed a readable and accessible user interface for the website such that it can be used effectively on desktop, laptop, and mobile devices.

SCARA Robot Arm

- Prototyped and constructed a robotic arm using the SCARA topology using two stepper motors and two linear actuators, all being controlled by an ESP32 microcontroller controlled by a Python GUI.
- Wrote an opcode-based interface between Python and a serial-to-USART bridge to control the robot arm through hand-crafted 8-byte opcodes which detail actions for the arm.
- Analytically solved the solutions for bounded inverse kinematics equations to allow the robot arm to respond to G-Code commands input into the Python interface.

SKILLS

Interpersonal Skills: Communication within a team, Strong work ethic, Problem solving and critical thinking

Technologies: PyTorch, KiCad, Linux, Data visualization, Software and hardware parallelism

Languages (8+ years): C, C++

Languages (4+ years): Java, Python, Rust

Other Languages: JavaScript, HTML, CSS, C#, Matlab, R, Zig, Clojure

COURSEWORK

GRADUATE

High Performance Computer Architecture	General (Point-Set) Topology
Mathematics of Data Science	Algebraic Topology
Real Analysis (<i>2 terms</i>)	Abstract Algebra (<i>2 terms</i>)
Complex Analysis	Module Theory

UNDERGRADUATE

<u>Mathematics</u>	<u>Computer Science</u>	<u>Electrical/Computer Engi.</u>
Introductory Calculus	Intro to Computer Science	Mechanics with Calculus (<i>2 terms</i>)
Vector Calculus (<i>2 terms</i>)	Data Structures	Electromagnetism with Calculus
Linear Algebra (<i>2 terms</i>)	Web Development	Circuit Analysis (<i>3 terms</i>)
Set Theory/Foundations	Analysis of Algorithms	Signals and Systems (<i>2 terms</i>)
Introductory Topology	Theory of Computation	Probability and Random Signals
Differential Equations	Computer Networks	Statistical Signal Processing
Discrete Mathematics	Assembly Programming	Electronics (<i>2 terms</i>)
Introductory Analysis (<i>2 terms</i>)	Computer Architecture	Digital Logic Design
Multivariable Analysis/Manifolds	Parallel Programming	Computer Org. and Assembly
Intro to Modern Algebra	Operating Systems (<i>2 terms</i>)	Transmission Lines
Intro to Statistics	Software Development (<i>2 terms</i>)	Junior Design (<i>2 terms</i>)