

JONAS CAREW

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EDUCATION

Oregon State University | *GPA: 3.99*

Sep 2023 - Jun 2027

B.S. | *Mathematics*

Corvallis, OR

B.S. | *Computer Science - Computer Systems*

B.S. | *Electrical and Computer Engineering*

State Honor Roll (All terms)

Putnam Exam Score: 11

Mathematics Club at OSU (Officer)

Association for Computing Machinery

Embedded Systems Design Club

Skate Club

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.

Resident Assistant

Sept 2024 - Present

Oregon State University Housing and Dining Services

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.

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.
- The randomized Kaczmarz algorithm is an alternative to methods such as gradient descent for solving overdetermined systems which is highly applicable to the real world.
- Applied techniques used throughout data science to find optimal values for a momentum-based variation on the Kaczmarz algorithm.

Learning Assistant (Vector Calculus)

Sept 2024 - Dec 2024

OSU College of Science

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.

PROJECTS

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

Mathematics of Data Science

Real Analysis (*2 terms*)

Complex Analysis

General (Point-Set) Topology

Algebraic Topology

Abstract Algebra (*2 terms*)

Module Theory

UNDERGRADUATE

Mathematics

Introductory Calculus

Vector Calculus (*2 terms*)

Linear Algebra (*2 terms*)

Set Theory/Foundations

Introductory Topology

Differential Equations

Discrete Mathematics

Introductory Analysis (*2 terms*)

Multivariable Analysis/Manifolds

Intro to Modern Algebra

Intro to Statistics

Computer Science

Intro to Computer Science

Data Structures

Web Development

Analysis of Algorithms

Theory of Computation

Computer Networks

Assembly Programming

Computer Architecture

Parallel Programming

Operating Systems (*2 terms*)

Software Development (*2 terms*)

Electrical/Computer Engi.

Mechanics with Calculus (*2 terms*)

Electromagnetism with Calculus

Circuit Analysis (*3 terms*)

Signals and Systems (*2 terms*)

Statistical Signal Processing

Probability and Random Signals

Electronics (*2 terms*)

Digital Logic Design

Computer Organization

and Assembly Programming

Transmission Lines

Junior Design (*2 terms*)