SEBASTIAN CRUZ

Middlebury, VT | (689) 254-8886 | scruzloaiza@middlebury.edu | GitHub | Portfolio

EDUCATION AND CERTIFICATIONS

Middlebury College | Middlebury, VT **Expected May 2027**

Bachelor of Arts in Computer Science | GPA: 3.82/4.00

Relevant Coursework: Software Development, Artificial Intelligence, Data Structures, Algorithms and Complexity, Embedded Systems

Honors & Awards: College Scholar's List (Highest Academic Honors) for 2 years in a row, QuestBridge Scholar

CodePath Intermediate Web Development **2025**

CodePath Intro to Web Development **2025**

Google Project Management Professional Certificate **2022**

EXPERIENCE

Research Assistant | *Middlebury College* | *Middlebury VT* **Summer 2025**

• Contributed to NPSV-deep, a machine learning project for structural variant genotyping using deep neural networks.

• Implemented InfoNCE and RINCE loss functions, improving embedding-based classification accuracy by 0.5–2.9% across 4 datasets and increasing non-reference concordance by up to 3%.

• Trained and evaluated deep learning models in PyTorch Lightning using TensorBoard, optimizing parameters such as temperature scalars and rank thresholds, and using version control to maintain working iterations.

Research Assistant | *Middlebury College* | *Middlebury VT* **Summer 2024**

• Collected, analyzed, and visualized records from Town Hall meetings across 204 Vermont towns.

• Developed an interactive R shiny web app as a public, searchable database for Selectboard meeting minutes.

• Analyzed meeting minutes and audio transcripts using TF-IDF, sentiment scoring, and word frequency to uncover discrepancies.

TECHNICAL PROJECTS

Scrum Master & Developer | MiddBin |Middlebury, VT **Fall 2025**

•Developed a full-stack marketplace web application using Next.js and Supabase, while collaborating via GitHub pull requests and serving as the Scrum Master.

•Designed and implemented a dynamic listing creation form with conditional inputs (categories, clothing sizes, gender, shoe sizing) and polished UI transitions to improve usability and data validation.

•Engineered a scalable image upload system using Supabase Storage, including multi-image previews, gallery views, and automatic cleanup on listing deletion and fully integrated it with listing grids and detail pages.

Embedded Systems Developer | MiddLaundryLive | Middlebury, VT ***Fall 2025***

•Designed and implemented a vibration-based state detection algorithm on an ESP32 board using accelerometer data, applying calibration, exponential moving averages, and tuned thresholds to reliably classify washer and dryer activity in noisy real-world environments.

•Integrated sensing logic with WiFi and MQTT communication, publishing real-time machine status updates as structured JSON payloads and ensuring data transmission from the microcontroller to the website.

•Built, styled, and deployed a React-based real-time web interface that subscribes to MQTT topics over WebSockets, visualizing machine availability instantly and enabling students to check laundry status remotely.

ADDITIONAL INFORMATION

Technical Skills: React, Git, HTML, CSS, JavaScript, C/C++, Java, R, Python, PyTorch
Other Skills: Leadership, Project Management, Event Planning, Adobe Premiere Pro
Languages: English (Fluent), Spanish (Native), Portuguese (Intermediate)
Interests: Visual Arts, Traveling, Video Games, Films