

SEBASTIAN CRUZ

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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 <i>Middlebury College Middlebury VT</i>	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 <i>Middlebury College Middlebury VT</i>	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