Caleb Curran-Velasco

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Education

Colorado School of Mines, Golden, CO - *M.S. Computer Science* — **May 2025**
- **Specialized in Machine Learning and Artificial Intelligence** — **GPA: 4.0**

Colorado School of Mines, Golden, CO - *B.S. Computer Science* — **August 2024**
- **Inaugural member of the Presidential Grewcock Scholarship Program** — **GPA: 3.66**
- **Areas of Interest:** Machine Learning | Computer Vision | Software Engineering | Data Science — **Cum Laude**

Experience

Cloud303, Lakewood, CO - *Software Engineering Intern* — **June 2024 - Present**
- Designed and implemented Docker Swarm solutions to containerize multiple services, utilizing Traefik as a reverse proxy on AWS EC2 instances.
- Designed and automated the deployment of CrowdSec into our system, an open-source security tool, to enhance real-time threat detection and mitigation against various cyber threats.
- Developed automated AWS EC2 deployments using TypeScript and AWS SDK, streamlining the deployment of Traefik and CrowdSec, improving client security and resilience, resulting in a 1000% increase in deployment efficiency for Cloud303 clients.

Northrop Grumman - *Field Session at Mines* — **May 2024 - June 2024**
- Collaborated with Northrop Grumman to develop an autonomous robbery detection, tracking, and interception system using machine learning and computer vision techniques while following Agile development practices.
- Built a detailed urban city simulation in Unity to model real-world environments to test the AI models.
- Designed and implemented a custom YOLOv8 model with real-time multi-object centroid tracking, leveraging predictive algorithms to calculate optimal intercept routes for cop vehicles, resulting in an 89.34% interception rate of robber vehicles in simulated scenarios.

Grewcock Presidential Scholars Leadership Program - *Scholar* — **August 2020 - May 2024**

Sponsor: Bruce Grewcock | former CEO of Kiewit Corporation
- One of 10 inaugural recipients of a full tuition and fees scholarship for outstanding leaders in STEM.
- Growing and developing leadership, communication, and other professional skills through weekly meetings with CEOs, advisors, and mentors.

Firm Foundations LLC, Colorado Springs, CO - *Owner and Manager* — **January 2015 - September 2019**
- Started a vending machine business and learned about accounting, inventory, and customer service.

Skills

Software - Python | C/C++ | Java | OpenCV | Amazon web services | Docker | Automation | Linux | Web Scraping | Agile
Bilingual / Soft - Fluent in both English and Spanish | Adaptable | Self-motivated | Positive | Problem Solving | Curious

Projects / Research - **Visit calebcurranvelasco.github.io or github.com/CalebCurranVelasco for more information**

Real-Time Stock Analysis Tool - *(Ongoing, Expected Completion: Oct 1st)*
- Analyzing the correlation between Twitter sentiment/news, and stock price movements to assess market impact.
- Building a dashboard that automatically tracks the 10 stocks with the largest price increases shortly after market open, scrapes relevant news from Yahoo Finance, determines current Twitter sentiment, and displays key financial metrics for each company to aid investors with real time tools.

Breast Cancer Prediction Web Application
- Developed a machine learning model using linear regression to predict breast mass benignity based on cell nuclei measurements to assist medical professionals in diagnosing breast cancer.
- Created a user-friendly interface for real-time model interaction and data visualization by allowing users to modify cell nuclei measurements.

Facial Recognition
- Developed a real-time facial recognition system using Python and OpenCV, integrated with a Raspberry Pi and webcam, allowing for accurate detection and identification of individuals.
- Implemented Haar Cascade-based face detection to locate faces in video frames and employed a Local Binary Pattern Histogram (LBPH) face recognizer to recognize and identify individuals with high precision.

Undergraduate Research Assistant - **Research Professor: Mike McGuirk | cmmcguirk@mines.edu**
- Contributed to research to develop synthetic alternatives to plastic recycling working as a research assistant for the McGuirk Group and co-authored the publication "The Overlooked Potential of Sulfated Zirconia: Reexamining Solid Superacidity Toward the Controlled Depolymerization of Polyolefins" (ACS Publications, March 2024).