Andres Valerio Montero

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EDUCATION

University of Virginia, School of Engineering and Applied Science — Charlottesville, VA

B.S. Computer Science – GPA: 4.0/4.0 — *May 2028*

- **Coursework:** Software Engineering, Data Structures & Algorithms I–II, Computer Systems, Mobile Development

EXPERIENCE

Undergraduate Research Assistant — Aug. 2026 – Present

Omni-Reality and Cognition Lab, University of Virginia — *Charlottesville, VA*

- Built a multi-sensor data acquisition pipeline on an NVIDIA Jetson for an e-scooter rider study, synchronizing GSR, HRV, and Tobii eye-tracking streams to within ∼50 ms using Unix-epoch timestamps
- Debugged critical data-integrity failures, correcting an eye-tracker clock offset by years and resolving burst-delivery dropouts in long GSR recordings
- Integrated Tobii eye tracking into the lab's Unity 6 VR riding simulator to pair gaze with physiological data
- Built an LLM classification pipeline (Llama, Qwen) validated on 200+ labeled samples, cutting analysis time 83%

Full-Stack Software Engineer (Freelance) — May 2026 – Present

Annie's Bakery — *Costa Rica (Remote)*

- Architected and deployed a full-stack inventory management system with React, FastAPI, and PostgreSQL, replacing paper-based tracking and reducing order handling time by 30%
- Designed RESTful APIs and relational database schemas to centralize inventory and order data, enabling real-time stock tracking across the bakery's product line

UI Team Leader & Software Mentor — Aug. 2025 – Present

Mechatronics and Robotics Society — *Charlottesville, VA*

- Won 1st of 47 teams at NASA's Lunabotics Competition; built the robot's web driving UI, streaming camera, telemetry, and autonomy status from an NVIDIA Jetson over WebSockets via a custom ROS node
- Engineered a real-time C++ ROS node that monitors IMU data and triggers a safety stop on unsafe tilt or impact
- Mentored 8 new members through C++ and ROS onboarding, raising year-over-year software retention by 10%

PROJECTS

Rust or Bust! – Corrosion Quantifier | *Python, OpenCV, Electron* — Jan. 2026 – Apr. 2026

- Delivered a desktop app to the UVA Materials Science Department that detects corrosion pitting with 99% accuracy against ground-truth images, built in Agile sprints with a 4-person team
- Built OpenCV image-processing pipelines that generate corrosion maps 25–30% faster than manual analysis

Grounds Access – Accessibility Barrier Tracker | *Django, PostgreSQL, AWS S3* — Aug. 2026 – Present

- Developing a Django app for UVA students to report, track, and validate campus accessibility barriers
- Implemented Google OAuth with role-based access, S3 media storage, and GitHub Actions CI/CD to Heroku

Lumen Images – AI Image Insights | *Next.js, Gemini API, AWS S3, Better Auth* — May 2026 – Aug. 2026

- Built and deployed a Next.js app with user accounts that batch-processes images through the Gemini API, parsing structured JSON output into image tags
- Designed a secure media pipeline: presigned URLs for direct-to-S3 uploads, a private bucket with least-privilege IAM roles, expiring access links, and server-only API keys

TECHNICAL SKILLS

Languages: Python, C/C++, Java, TypeScript/JavaScript, SQL, HTML/CSS
Frameworks & Libraries: React, Next.js, Django, FastAPI, Flask, Spring Boot, Angular, Electron, ROS, OpenCV, Unity
Tools & Infrastructure: Git, GitHub Actions, Docker, Linux, AWS (S3, IAM), PostgreSQL, NVIDIA Jetson, Heroku, JUnit
Other: Fluent in Spanish; interests in space exploration, film, and photography