CARLOS DAMIAN ROJAS

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EDUCATION

The University of Texas at Austin   **May 2027**
Bachelor of Science in Electrical and Computer Engineering, Minor in Robotics   *Austin, TX*
Relevant Coursework: Data Structures & Algorithms, Discrete Math, Software Design & Implementation, Embedded Systems, Digital Logic Design, Circuit Theory, Probability & Statistics, Linear Algebra

EXPERIENCE

Software Engineering Intern, Cybersecurity   **March 2025 – Present**
UT Regional Security Operations Center   *Austin, TX*
- Performed **30+ security triages** by **analyzing** Splunk SIEM logs and parsing 10k+ HTTP requests weekly.
- Engineered **Python CLI tools** and Linux **automation scripts** to analyze logs, cutting investigation prep time by 40%.
- Built and executed **workflows** for web-app vulnerability **analysis**, validating issues like SQL injection and parameter tampering.
- Enhanced security telemetry pipelines by **collaborating** with cybersecurity analysts and infrastructure engineers.

Machine Learning Research Intern   **January 2024 – August 2024**
UTSA Unmanned Systems Lab   *San Antonio, TX*
- Developed scalable **reinforcement learning** pipelines in PyTorch, running **50+ parallel experiments** daily.
- Improved model accuracy in MuJoCo physics environment by **30**% through infrastructure debugging and hyperparameter tuning.
- Performed large-scale data analysis with **NumPy/Matplotlib** for 5 novel AI algorithms in a **3-person research team**.
- **Collaborated** with research engineers to implement modular Python APIs for real-time RL performance evaluation.

PROJECTS

Space Invaders Embedded System Recreation | *C, Assembly, Code Composer Studio, Git*
- Programmed and implemented a bare-metal Space Invaders clone on the MSPM0 microcontroller using **C and ARM Assembly**.
- Implemented a **FSM architecture** with 20 distinct operational states to modularize gameplay and streamline debugging.
- Integrated UART-based **debugging** and **oscilloscope**-driven signal tracing to diagnose latency and timing failures.
- Designed a **custom PCB** in KiCad integrating 6+ input buttons and LED display, ensuring **real-time rendering**.

Custom Guitar Hero Controller | *C, USB HID, UART, ADC*
- Wrote C firmware for the **Raspberry Pi Pico** to scan mechanical switches with interrupt **debouncing** with sub 5 ms latency.
- Designed and 3D-printed a fully custom Guitar Hero controller with a fretboard **PCB** integrating I^2C/**SPI** components.
- Debugged electrical issues using **multimeters**, **logic analyzers**, and serial monitoring tools to ensure deterministic timing.
- Implemented a **modular input-mapping** layer enabling dynamic button remapping and **cross-platform** HID compatibility.

Real-Time Telemetry Pipeline | *React, TypeScript, Python, SQL/JSONB, VSCode, Git*
- Built and deployed a full-stack **real-time telemetry web app** that visualizes live and simulated sensor streams.
- Created an **interactive dashboard** with live device status, metric charts, and fault detection using lightweight rolling statistics.
- Implemented time-series **data storage and querying** using PostgreSQL, supporting real-time charting and historical playback.
- Designed a **modular ingestion API** supporting both simulated and real metric sources, enabling seamless extensibility.

Algorithms Visualizer Web App | *JavaScript (Node.JS, Next.JS, React), CSS, VSCode, Git*
- Built and deployed a **fullstack BFS/DFS visualizer** using Next.js/Node.js, processing **625+ nodes** in real time.
- Optimized data flow and rendering to sustain **100+ steps/sec** with minimal latency.
- Created **reusable UI components** and implemented **modular architecture** to improve performance and code readability.
- Deployed via **Vercel** with integrated **CI/CD workflows**, maintaining smooth **client-side rendering** and responsive layouts.

TECHNICAL SKILLS

Languages: Python, Java, C, C++, Assembly, bash, HTML/CSS, JavaScript, Typescript, SQL, Verilog, Matlab
Technologies: Linux/Unix, Git/GitHub, REST APIs, React, Next/Node.JS, Docker, Agile/Scrum, RTOS Concepts, Networking
AI/ML Technologies: PyTorch, Tensorboard, TensorFlow, pandas, NumPy, Matplotlib, CUDA

LEADERSHIP / EXTRACURRICULAR

Texas Club Rugby Team   **Fall 2024 – Present**
Team Captain, Vice President
- Led and represented **30+ teammates**, coordinating two weekly practices and travel logistics for **10+ away games**.
- Captained the team to **3 in-state tournament** victories and qualification for the **national tournament** in 2025.
- Represented team in university athletics meetings and state rugby committees, **advocating for funding** and opportunities.

Engineering Student Advisory Council   **Fall 2023 – Spring 2024**
Freshman Class Representative
- Represented **3,500+ students** as Freshman Representative, leading **5 engagement initiatives**.
- Organized **5 impactful events** with attendance numbers ranging from **70–100 people**.
- Fostered a sense of **community** within the College of Engineering and furthered students' **professional engagement**.

Association of Computing Machinery   **Fall 2023 – Spring 2024**
Associate Vice President
- Led the planning and execution of **5+ technical workshops** and speaker events for **100+ CS students**.
- Coordinated logistics for hackathons, speaker panels, and networking sessions, ensuring **efficient operation.**
- Directed **cross-team collaboration** with fellow officers to execute events smoothly and on schedule.