Eduardo Garcia

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Principal Electrical Engineer

Dynamic Leader with 10+ Years of Expertise in Electrical Design, Embedded Engineering, Product Development & Technical Lead

Principal Electrical Engineer with 10+ years of experience in electrical design, embedded systems, and technical leadership. Proven track record of designing and delivering complex mechatronic systems, including robotics, medical devices, and consumer goods. Expertise in custom electronics, PCB development, hardware architecture, embedded programming (C/C++), and cross-functional leadership. Passionate about advancing robotics technology through innovative systems integration.

CORE COMPETENCIES

- System Integration
- Robotics/Mechatronics Design
- PCB Design
- Part Selection
- Hardware Architecture
- Embedded Programming (C/C++)
- Design for Manufacturability
- Testing & System Validation
- Circuit Design
- Technical Leadership
- Documentation/Specifications
- Prototyping Electrical Systems

PROFESSIONAL EXPERIENCE

Robust AI ***2022 – Present***

Principal Electrical Firmware Engineer

- Led the design, integration, and development of electrical hardware and firmware for Carter, an Autonomous Mobile Robot (AMR) designed for warehouse fulfillment. Directed a multidisciplinary team of 6+ contractors, overseeing the integration of PCB subsystems, firmware architecture, and cable harnesses into a fully functional robotic solution.
- Managed the system-level integration and deployment of 16 functional prototypes of Carter, each costing ~$50K, directly contributing to a $20M Series A funding round. Debugged 25+ complex issues across hardware, firmware, and electromechanical systems to improve overall reliability
- Designed and integrated electrical hardware architecture for a robotic prototype to validate novel electromechanical concepts. Led the systems integration of hardware, firmware, and mechanical components, which became the foundation for patent applications and next-generation robotic systems.
- Co-designed the hardware and firmware for Carter Pro, Robust AI's next generation ARM. Reduced production costs by 80% and cable count by 60%, while enhancing functionality. Applied Design for Manufacturability principles to scale production to 200+ units in 2025 and 1,000+ in 2026. Currently being deployed in clients such as DHL.
- Performed system design, part selection, and integration for low-level control systems, including MCUs, motor controllers, and ICs. Collaborated closely with roboticists and computer vision engineers to design systems that meet the performance requirements of complex robotic systems based on NVIDIA computer solutions.
- Managed and collaborated with contract manufacturers to scale high-volume PCB manufacturing and testing, ensuring system integration quality through in-system tests for PCB validation and sub-assembly reliability.

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Delve (formerly Bresslergroup) ***2015 – 2022***

Principal Electrical Engineer (2020 – 2022), Senior Electrical Engineer (2015 – 2020)

Led electrical and firmware development for a range of embedded projects in medical devices and consumer goods. Managed projects from schematic design through board layout, firmware development, and testing. Examples include:

- Designed the Analog Front End (AFE) of a medical device for detecting head trauma injuries. Design integrates digital signal processing to obtain a signal in a noisy environment. Developed a secure bootloader for safe firmware updates as well as developed the circuit design and PCB design (6-layer rigid-flex board).

- Led the firmware architecture and integration for a proof-of-concept surgical device for gene therapy delivery (sub-retinal injection) for the treatment of macular degeneration. System achieves precise motor control for the delivery of micro-liter liquid payloads into a human eye. *Patent Pending.*

- Designed the electrical and firmware system architecture for a surgical device used in cardiac lead pacemaker replacement procedures. Implemented motor control and precision blade movement for safe cutting operation inside the human body. Firmware performs speed and position control of a DC motor that controls the cutting blade.

- Designed a compact and dense HDI PCB for a novel wearable watch able to non-invasive able to non-invasively monitor blood pressure using a novel laser sensor., with a manufacturing target of 10k/year. The device was used in medical tests to validate its novel sensor.

- Co-led the Co-Op/Internship program on the department, mentoring and interviewing co-ops and interns while designing their experience at the company. The program achieved an 80% conversion rate of co-ops to full-time hires.

University of Pennsylvania ***2019 – 2022***

Lecturer – Electrical Engineering

- Lecturer for graduate-level embedded engineering course ESE516 "Internet of Things" to 140+ students across five semesters. Revamped 60% of the curriculum with modern hardware and firmware content, achieving over 90% student satisfaction. Managed a team of 5+ teaching assistants per semester.

- Directed PCB manufacturing for 210+ boards per semester, optimizing costs by 30% through efficient vendor management and process improvements.

TECHNICAL SKILLS

Altium, Embedded Programming (C/C++), Logic Analyzer, LtSpice, Oscilloscope/General Lab Equip., Python, RTOS
MCU families – STM32, STM8, Atmel SAMD

EDUCATION & CERTIFICATIONS

Master of Science in Engineering, Robotics and Automation – *University of Pennsylvania*

Bachelor of Science in Electrical Engineering – *Universidad de Los Andes*

Bachelor of Science in Mechanical Engineering – *Universidad de Los Andes*