

Andres Estrada

ROBOTICS ENGINEER · EMBEDDED SOFTWARE ENGINEER

México

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Education

Tecnológico de Monterrey

Monterrey, México

B.S. IN ROBOTICS AND DIGITAL SYSTEMS ENGINEERING - 91.5/100

Aug. 2019 - Jul. 2023

- Relevant Coursework: Robotics and Intelligent Systems, Analysis of Control Systems, Design of Advanced Embedded Systems, Design of Electronic Circuits, System Design on Chip, Data Structures and Algorithms.

Centro de Capacitación para el Trabajo Industrial

Torreón, México

ELECTRICAL AND ELECTRONICS TECHNICIAN

Aug. 2024 - Present

- Relevant Coursework: Preventive Maintenance and Verification of Analog and Digital Electronic Cards, Builds Analog and Digital Electronic Circuits, Installs and Repairs Industrial and Communications Electrical Systems, Smart Home Electrical Systems.

Experience

Undergraduate Research, Human Centered Robotics Lab

Austin, United States

ROBOTICS ENGINEER

Aug. 2022 - Dec. 2022

- Designed a simulated one-legged robot in ROS and applied a Reinforcement Learning approach using Gym to balance itself.
- Implemented a massive parallel Deep Learning approach on a simulated quadruped robot to enable navigation on flat terrain.

RoboSub, VantTEC

Monterrey, México

EMBEDDED SOFTWARE DEVELOPER

Jan. 2022 - Aug. 2022

- Developed firmware for the submarine to interface with and record data from a barometer using FreeRTOS on a custom-built PCB.
- Support for troubleshooting submarine firmware issues, validate proper functionality of sensors and actuators, and proper configuration for boards interface (PCB/Jetson TX2).

Projects

Autonomous Mobile Robot, Manchester Robotics & NVIDIA

Monterrey, México

ROBOTICS ENGINEER

Feb. 2023 - Jun. 2023

- Implemented a vSLAM approach with a Kalman filter to enable navigation in uncertain environments on a differential drive robot, using ROS2 on a Jetson Nano, a LiDAR for 2D mapping and a camera for ArUco marker detection.
- Developed firmware to control a custom-designed 3D printed gripper for transporting objects, using FreeRTOS on an STM32 board.

Smart Linear Actuator, John Deere

Monterrey, México

EMBEDDED SOFTWARE DEVELOPER

Aug. 2021 - Dec. 2021

- Designed a closed-loop system prototype to emulate a remote-operated tractor hood, including system health monitoring.
- Developed firmware for a dual-core STM32 board (ARM Cortex) interfaced with an ESP32 via CAN Bus, to provide connectivity and enable remote control through the cloud dashboard.

Infotainment System, INTEL

Monterrey, México

EMBEDDED SOFTWARE DEVELOPER

Feb. 2021 - Jun. 2021

- Built an infotainment system prototype, using a Raspberry Pi as server and Arduino Mega (AVR) as client, with a monitor, LCD and keypad to replicate modern vehicle features like user input processing and media playback.
- Developed firmware for the client device using FreeRTOS, optimizing task management for real-time interaction with the server.

Skills & Coursework

Programming	C, C++, Python, Matlab, SQL, CMake, Scripting (Bash), Git/GitHub
Robotics	ROS/ROS2, OpenCV, Isaac Sim, Gym, Arduino, FPGA, Sensor Fusion
Software	Linux/GNU, Docker, Jenkins, Jira, AWS, STM32, FreeRTOS, KiCAD, SolidWorks, CAD Software
Systems	Cisco Packet Tracer, TCP/IP, LAN/WAN, IoT (MQTT, WiFi, Bluetooth), Serial (CAN, USB, I2C, SPI)
Languages	Spanish (Native), English (C1), German (A1)

Volunteering

Comité Ecológico Integral

BACK-END DEVELOPER

[Remote](#)

Jan. 2023 - Jun. 2023

- Support in the deployment of statistics and data provided by sensors for the air quality website in the state of Nuevo Leon, México.

Jóvenes Ayudando a Niños y Niñas

ACADEMIC MATHEMATICS TUTOR

[Remote](#)

Jan. 2022 - May. 2022

- Program in which I advised 10 middle school students in mathematics, a total of 70 hours of class taught.

Aprendamos Juntos

ACADEMIC MATHEMATICS AND SPANISH TUTOR

[Remote](#)

Jun. 2021 - Aug. 2021

- Program in which I advised 6 high school students in mathematics and Spanish, a total of 70 hours of class taught.

Certifications

Docker Foundations

DOCKER

[LinkedIn](#)

Oct 2024

Agile Project Management

ATLASSIAN

[LinkedIn](#)

Oct 2024

Career Essentials in GitHub

GITHUB

[LinkedIn](#)

Sep 2024

Python 3 Programming

UNIVERSITY OF MICHIGAN

[Coursera](#)

Apr 2024

Coding for Everyone: C and C++

UNIVERSITY OF CALIFORNIA SANTA CRUZ

[Coursera](#)

Mar 2024

Courses

Continuous Integration/Continuous Delivery (CI/CD) with Jenkins

LINKEDIN

[LinkedIn](#)

Nov 2024

Writing, Running, and Fixing Code in C

DUKE UNIVERSITY

[Coursera](#)

Aug 2024

Programming Fundamentals

DUKE UNIVERSITY

[Coursera](#)

May 2024

Mathematics for Machine Learning: Linear Algebra

IMPERIAL COLLEGE LONDON

[Coursera](#)

Apr 2024

Introduction to Aerospace Engineering: Astronautics and Human Spaceflight

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

[edX](#)

Aug 2024

Differential and Integral Calculus: Fundamental Theorem

TECNOLÓGICO DE MONTERREY

[Coursera](#)

Aug 2020