

Joseph Ignacio Guzman

PROFESSIONAL SUMMARY

Motivated Computer Engineering graduate from California State University, Long Beach, with experience in embedded systems, software development, and hardware-software integration. Passionate about middleware technologies, developing robust integration solutions that enable seamless software-hardware communication. Skilled in programming, system architecture, and cross-platform compatibility, combined with a proactive problem-solving mindset.

PROJECT EXPERIENCE

Dr. Pill | C, Python, STM32CubeIDE and Shapr3D

September 2024 - May 2025

- Designed and implemented an automated pill dispensing mechanism ensuring reliable medication delivery using STM32 and Raspberry Pi integration.
- Developed and calibrated motor systems for optimized performance and accuracy of the dispenser with embedded C and control theory.
- Engineered board-to-board communication protocols to enable real-time data exchange, resulting in seamless hardware integration between the STM32 and Raspberry Pi.
- Constructed detailed 3D models and managed 3D printing of custom components (dynamic and stationary structural elements) to support the mechanical design and functionality.
- Enhanced the Python-based GUI with quality-of-life improvements, increasing user experience and interface responsiveness.

I2C Network Communication | C and Keil uVision

November 2024

- Implemented multi-device I2C network as TM4C123 master coordinating color sensor, gyroscope, LCD, and PWM servo control for synchronized device communication.

Weather Quest | C and Keil uVision

October 2024

- Developed embedded weather station fetching live OpenWeather API data, parsing JSON and displaying temperature/humidity on ST7735 LCD and UART terminal.

Bluetooth Car | C and Keil uVision

September - October 2024

- Built a dual-mode robotic car with manual Bluetooth and autonomous controls using TM4C123, HC-05 Bluetooth, PWM motor drivers, sensor feedback, and LED indicators.

RESEARCH EXPERIENCE

Exoplanet Discovery | Ongoing Independent Research

August 2025 - Present

- Conducting independent research on exoplanet detection methods and transit pipelines using public NASA datasets.
- Investigating implementation options for real-time processing on embedded platforms (ESP32/STM32 microcontrollers).
- Gaining experience in astronomical data analysis, embedded control systems, and feasibility assessment for TinyML deployment.

Brain Computer Interface | Ongoing Independent Research

June 2025 - Present

- Researching user interface design and calibration strategies to streamline data acquisition
- Exploring alternative methods for acquiring EEG data, including open-source datasets and low-cost simulation tools, due to the high expense of commercial EEG hardware.
- Currently reading Change Your Brain, Change Your Life by Dr. Daniel Amen to enhance understanding of brain function and apply insights to brain-computer interface research.

WORK EXPERIENCE

Tastea | Team Lead Supervisor | Long Beach, CA

June 2020 - June 2022

- Supervised team operations and maintained product/service quality standards.
- Managed inventory and stock levels to optimize efficiency and reduce waste.
- Delivered performance evaluations and improvement suggestions to enhance staff productivity.

CONTACT INFO

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WEBSITES / PROFILES

- <https://jibguzman.github.io/>
- [linkedin.com/in/josephguzmani](https://www.linkedin.com/in/josephguzmani)

TECHNICAL SKILLS

- C
- C++
- Python
- MATLAB
- Verilog
- Java
- JavaScript
- SQL
- HTML
- Assembly
- STM32CubeIDE
- Vivado
- Keil uVision
- SolidWorks
- Shapr3D
- Git
- GitHub
- MySQL
- Linux
- VirtualBox
- Jupyter Notebook
- LTspice
- I2C
- UART
- SPI
- PWM
- Circuit Design
- Testing
- Calibration
- Troubleshooting
- Hardware Assembly
- Leadership
- Team Collaboration
- Project Coordination

EDUCATION

B.S. Computer Engineering
California State University,
Long Beach
May 2025