Joseph Ignacio Guzman

PROFESSIONAL SUMMARY

Motivated and detail-oriented Computer Engineering student at California State University, Long Beach, with hands-on experience designing embedded systems, developing software applications, and integrating hardware and software for real-world problem-solving. Skilled in C, C++, Python, Verilog, and MATLAB, with strong foundations in circuit design, microcontroller programming, and IoT systems. Proven ability to lead team projects, troubleshoot complex systems, and continuously learn and adapt to new technologies.

PROJECT EXPERIENCE

Exoplanet Discovery | C, C++, Python, and MATLAB August 2025 - Present

- Develop an end-to-end exoplanet transit detection pipeline using open astronomical datasets (NASA Kepler/TESS), combining traditional algorithms (Box Least Squares) and machine learning techniques for signal classification and anomaly detection.
- Implement data preprocessing, visualization, and transit search algorithms in Python to identify subtle periodic dips in stellar brightness indicative of exoplanet transits.
- Bridge software simulation and embedded systems by adapting transit detection algorithms for real-time processing on ESP32/STM32 microcontrollers using TinyML frameworks and sensor data emulation.
- Validate algorithm performance through comparisons with published exoplanet catalogs, synthetic signal injection, and hardware-in-the-loop testing to ensure robustness and practical applicability.
- Gain hands-on experience in astrophysical data analysis, embedded control systems, and machine learning deployment, preparing for advanced roles in space exploration and embedded engineering.

Brain Computer Interface | C, C++, Python, and MATLAB June 2025 - Present

- Design and implement a system enabling acquisition and storage of raw brain activity data (e.g., EEG) synchronized with computer user actions (application launches, mouse clicks).
- Develop robust data logging software that records unprocessed EEG signals with precise event timestamping.
- Creation of a user-friendly, script-based or GUI interface to streamline data acquisition and system calibration for individual users.
- Focus on creating an extensible, open-source framework to accelerate development and evaluation of BCI technologies.

Dr. Pill The Automated Pill Dispenser | C, Python, and Shapr3D September 2024 - May 2025

- Designed and implemented the pill dispensing mechanism, ensuring precise and reliable medication delivery.
- Developed and calibrated motor systems to optimize performance and accuracy of the dispenser.
- Engineered board-to-board communication protocols between STM32 microcontroller and Raspberry Pi for seamless hardware integration.
- Created detailed 3D designs and managed 3D printing processes to fabricate custom components for the device.
- Fine-tuned the Python-based GUI, implementing quality-of-life improvements to enhance user experience and interface responsiveness.

WORK EXPERIENCE

Tastea - Team Lead Supervisor

Long Beach Exchange Center June 2020 - June 2022

- Supervised team operations, maintained product quality, and ensured compliance with service standards
- Managed inventory and stock levels to optimize efficiency and reduce waste
- Delivered performance evaluations and suggestions to upper management to enhance staff productivity

CONTACT INFO

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Long Beach, CA

WEBSITES / PROFILES

- https://jibguzman.github.io/
- 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