Marcos De La Torre   **Software Engineer**

La Jolla, California | marcosdelatorreee@gmail.com | (323) 705 - 0959

Skills

Languages: C++, Python, Java, SystemVerilog, Bash
Embedded & Systems: RTOS Concepts, Memory Profiling, GDB, Valgrind, Sensor Integration
Tools & DevOps: Git, GitHub, Docker, CI/CD (CMake), VS Code
Platforms: Linux/Unix, OpenGL
Communication: English (Fluent), Spanish (Native)

Relevant Coursework

Operating Systems (RTOS, Memory Management, Multithreading, CPU Architecture, RISC-V) **Software Engineering** (Agile/Scrum, OOD, UML, Unit Testing, Design Patterns) **Embedded Systems & Control Machine Learning & Probabilistic Models** (HMMs, Viterbi)

Experience

UCSD Department of Computer Science
Tutor   December 2023 - March 2024
- Collaborated with Professor William Griswold to support the Software Engineering (CSE 110) curriculum.
- Supported 200+ students through tutoring, exam proctoring, and Q&A sessions; received **95%+ positive feedback** for clarity and support.
- Agile Development - Behavior Driven Design (OOD, UML, Design Patterns, Unit Testing). Development done in Android Studio.

Projects

PantryPal
Team Lead, Developer
- Integrated **ChatGPT** for recipe generation and **WhisperAPI** for hands-free ingredient transcription.
- Designed and implemented **MongoDB** to manage recipes and user profiles.
- Containerized the application using **Docker** for streamlined deployment.
- Scheduled meetings, hosted Discord services, and **managed development** workflow in **Jira**.
- Performed debugging with JUnit and implemented automated tests, including unit tests and integration tests, as part of **Agile** development practices to ensure code reliability and maintainability.

Smart Room Occupancy Classifier
- Trained a **probabilistic** AI system using a Hidden Markov Model (HMM) to infer room occupancy from **environmental sensor** data (light, CO_2, humidity, temperature).
- Achieved 96.2% classification accuracy, with 100% recall on occupied rooms, outperforming a Naïve Bayes baseline by nearly 30%.
- Modeled temporal dependencies using the Viterbi algorithm, reducing false negatives and improving robustness to sensor noise.

Embedded Systems Researcher - UC San Diego
TEC-based Autonomous Control System
- Developed a real-time microcontroller system for precise **thermal control** using H-bridge motor drivers and **sensor** feedback similar to **thermoregulation** in **medical** devices.
- Developed automation scripts in Python and shell to control test cycles and log system behavior, supporting performance characterization.
- Modeled thermal dynamics and validated hardware output using multimeters and oscilloscope readings for noise and delay analysis. LabView Software.