

# Marlon Martin

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## Experience

### Backend Engineer | Freelance – Remote

June 2024 – Present

- **Architected a high-concurrency lending backend infrastructure**, featuring a custom **idempotent middleware layer** to prevent duplicate transactions, implementing a Service-Repository pattern to **decouple business logic from data access**, ensuring a **modular, testable codebase** and a robust state-machine audit system that **ensures 100% data traceability** for loan lifecycles and automated interest calculations.
- **Engineered a secure, test-driven API infrastructure** utilizing atomic transactions and a **hybrid RBAC/PBAC security model**, ensuring granular access control and system reliability through an automated testing suite for complex financial logic.
- **Automated deployment and CI/CD pipelines using GitHub Actions**, streamlining the development workflow for a collaborative team and ensuring seamless, zero-downtime deployments to the Cloudflare Workers edge network.
- **Architected and deployed a specialized crochet e-commerce platform** using TypeScript, Next.js, and Supabase, migrating the business from fragmented social media sales to a centralized, high-performance web solution.
- **Built a disaster management system** for a local Barangay, featuring centralized incident logging and optimized data workflows to ensure high availability and rapid information dispatch during disaster scenarios.

## Projects

### Haribon | TypeScript, Agentic AI, Deep Agents, LangGraph, Google GenAI, MCP, RAG

December 2025

- Developed an **autonomous civic AI agent** for BetterGov.ph leveraging **RAG pipelines, Deep Agents, and multi-step agentic workflows** to automate data aggregation, content summarization, and civic information retrieval while orchestrating complex tool use, web retrieval, and multi-step reasoning to deliver timely and reliable civic insights.

### Binspire | TypeScript, Python, IoT, MCP, PostgreSQL, AWS, HiveMQ, Nginx, Hono – [Live URL](#)

October 2023 – Present

- **Engineered an IoT-enabled waste management system** for Arcovia City featuring real-time monitoring, GPS tracking, and object detection via Raspberry Pi; optimized collection routes and reduced operational costs using MQTT and WebSockets.
- **Reduced IoT module startup time by 90%** (from several minutes to <10 seconds) by restructuring the boot sequence with async/await and threaded execution, significantly improving system uptime and hardware reliability.
- **Architected a custom MCP (Model Context Protocol) Server** that exposes Binspire API data as executable tools for LLMs, enabling automated auditing, issue resolution, and historical tracking.
- **Integrated Binspire AI Agent** with multi-model orchestration capabilities, leveraging the MCP server to perform autonomous data analysis and data-driven decision-making for waste management logistics.
- **Implemented QR-code verification** for collection logs, ensuring 100% accountability in waste retrieval activities through a secure, sensor-driven validation pipeline.

### Hiraya | TypeScript, Lexical Analysis, AST, Syntax Parsing, Compiler Design

December 2024

- Designed and implemented a **Filipino-inspired programming language** to explore language design, syntax parsing, and compiler construction, demonstrating solid expertise in compiler architecture, abstract machine design, and programming language theory.

## Activities

### 14<sup>th</sup> IT Skills Olympics | Participant (Team Leader)

November 2025

- Led the Binspire project, an **IoT-enabled waste management system**, which won **1st Runner-Up** at the **14<sup>th</sup> IT Skills Olympics**, demonstrating real-time data monitoring, route optimization, and backend scalability.

### CCS Academic Competition | Participant

February 2023

- **Solved 3 out of 4** problem sets in my university Java programming contest during the first year.

### Open-Source | Developer & Contributor

January 2023 – Present

- Enhanced functionality, documentation, and accessibility for global and local projects, including [LangChain.js](#), [OSSPH](#), and [BetterGov.ph](#), by collaborating with community developers to scale and maintain mission-critical software.

## Skills

**Languages:** C++, Java, Python, SQL, JavaScript, TypeScript

**Libraries & Frameworks:** Express.js, Hono.js, Node.js, Bun, FastAPI, Flask, Drizzle ORM, Prisma, tRPC, MQTT

**DevOps & Cloud:** AWS, Docker, Nginx, Digital Ocean, Cloudflare Workers (Wrangler), Github Actions (CI/CD), Docker, Linux

**Databases & Messaging:** PostgreSQL, MySQL, SQLite, InfluxDB, HiveMQ, Firebase Cloud Messaging

**AI & Agentic Systems:** LangGraph, LangChain, MCP Server, RAG (Retrieval-Augmented Generation), OpenAI, Google GenAI, Ollama

## Education

### Pamantasan ng Lungsod ng Pasig

June 2022 – Present

Bachelor of Science in Information Technology

### Awards:

- President's List Academic Achievement Awardee
- Dean's List Academic Achievement Awardee

### Rizal High School

March 2020 – March 2022

ICT – Programming

### Awards (Case Study):

- Overall – Best System Presenter
- Overall – Best System Design
- Overall – Best System Functionality
- Overall – Best System