

Marlon Martin

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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, live GPS tracking, and object detection using Raspberry Pi and HC-SR04 sensors; optimized collection routes and reduced operational costs via MQTT and WebSocket.
 - **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.

Skills

Languages: TypeScript, SQL, JavaScript, Python, Java, C++
Libraries & Frameworks: Express.js, Hono.js, Node.js, Bun, FastAPI, Flask, Drizzle ORM, Prisma, tRPC
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

Experience

- Software Developer (Backend)** | *Freelance – Remote* June 2024 – Present
- **Architected a high-concurrency lending backend using Bun and Hono**, implementing a Service-Repository pattern 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 Drizzle ORM for 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 using native PHP, optimizing backend data processing, incident logging, and emergency response workflows.
- 14th 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 **14th 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
- Contributed to multiple community-driven projects on GitHub, enhancing open-source software.

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 Award
- 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