

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.

Predicting Carbon Monoxide Levels | *Python, UCI, Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn* July 2024

- Developed a **machine learning-powered CO prediction system** that analyzes environmental sensor data to forecast carbon monoxide levels with high accuracy, enabling **improved real-time air quality monitoring** and supporting **data-driven public health decision-making**.

ART | *Java, DSA, Time Complexity Analysis, Benchmarking, CLI* September 2023

- Implemented **execution time measurement, profiling and efficiency analysis** to **evaluate algorithmic complexity** in practice.

Skills

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

AI & Agentic Systems: LangGraph, LangChain, DeepAgents, MCP Server, RAG, OpenAI, Google GenAI, Ollama

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

Data Science: Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn

Tools & Platforms: AWS, Digital Ocean, Git, GitHub, Linux, Firebase, MySQL, PostgreSQL, HiveMQ, Docker, Raspberry Pi 4, Nginx

Experience

Software Developer | *Freelance – Remote* June 2024 – Present

- **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 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