Joseph Alan B. Vergara

Academic & Technical CV · Software · AI/ML · Embedded Systems

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Portfolio · GitHub · LinkedIn

Profile

Fourth-year BS Computer Applications student majoring in Embedded Systems at Mindanao State University – Iligan Institute of Technology (MSU-IIT), seeking a 700-hour OJT placement at 40 hours per week. Academic and independent work covers web application development, computer vision, microcontroller firmware, real-time systems, and IoT dashboards. Project status and validation limits are stated with each entry.

Education

BS Computer Applications, Major in Embedded Systems

Mindanao State University – Iligan Institute of Technology · Iligan City, Philippines · Aug 2023–Present · Fourth year

CGPA: 1.96. Relevant study areas: microcontroller programming, FreeRTOS, edge AI and computer vision, industrial PLC automation, IoT telemetry, and digital logic.

Senior High School Diploma, Accountancy, Business & Management

MSU-IIT Integrated Developmental School · 2021–2023 · Academic Honors

Technical Competencies

Programming: C, C++, Python, JavaScript, TypeScript, SQL, Bash, AVR Assembly, PLC ladder logic.

Web and data: React, Next.js, Vite, Node.js, PostgreSQL, Supabase, SQLite, REST APIs, WebSockets, CSV workflows.

AI and computer vision: Kivy, ONNX Runtime, OpenCV, NumPy, YOLOv8n, MediaPipe, Edge Impulse, Roboflow.

Embedded and real-time systems: STM32F407, STM32F103, ESP32/ESP32-P4, Renesas RA6M3, FreeRTOS, RT-Thread, CODESYS.

Interfaces and connectivity: I2C, SPI, UART, CAN, MQTT, HTTP/REST, WebSockets.

Languages: English, Filipino, Cebuano.

Research & Academic Project Work

MIOW — MSU-IIT IDS Online Workspace · Ongoing development

Full-Stack Developer · 2026–Present

Learning management system for Junior and Senior High School, built with TanStack Start, Vite, React, TypeScript, Tailwind CSS, and PostgreSQL/Supabase. Includes administrator, teacher, and student workflows for courses, worksheets, grades, attendance, announcements, and Google Docs import.

CMU Assessment Hub · Academic pilot

Vite/React/TypeScript instructor workflow for importing objective scores from CSV, reviewing rubric-based essay feedback, calculating weighted grades, and exporting approved results. Uses fictional sample records and versioned browser-local storage; it has no backend or accounts and does not submit grades automatically.

LabSentinel — BCA182 Project 2 · Simulator verified; hardware pending

Lab-station monitoring and indicator-control prototype documented for an STM32F407/FreeRTOS station, MQTT gateway, and browser dashboard. The simulator and public demo use fixture data; physical board, sensor, Wi-Fi/MQTT, and GPIO operation remain unverified.

Monitor — Smart Baby Monitoring System · Educational prototype; sample mode

Academic prototype with a sample browser dashboard and documented FastAPI/SQLite backend, optional YAMNet audio-classification path, Kotlin/Jetpack Compose Android app, and STM32/FreeRTOS firmware foundation. Backend hosting and board/peripheral verification remain pending. It is not a medical or safety-certified monitor.

Selected Software, AI/ML & Embedded Projects

UNICHAT — Anonymous Campus 1-on-1 Chat · Live campus PWA
Campus PWA with student-email access, matchmaking, real-time chat, and moderation (Next.js, Supabase).

MP-Detect — Microplastic Detection & Quantification GUI · Offline desktop application
Python/Kivy desktop interface using ONNX Runtime, OpenCV, and NumPy to process images and video, visualize detections, and export counts and annotated media under bright-light and UV workflows.

ParcelSense AI · Prototype; Field Desk live
Vite/React/TypeScript Field Desk for CSV review and evaluation, alongside an intended STM32F407/RT-Thread package-motion classifier. Physical inference and device performance have not been verified.

BCA182 Multisensor Room Monitor · Academic project; technical write-up published
STM32F103C8T6/FreeRTOS environmental monitor with five tasks, an SSD1306 OLED, rotary-encoder interface, serial logging, and sleep-state management. Validated with 33 unit tests; technical write-up published on Hackster.io.

Agap AI — Emergency Triage Platform · IEEE Sumpai Hackathon project
Hackathon project for structuring emergency voice reports into incident information for responder review; Top 5 finalist at IEEE Sumpai Hackathon 2026.

Barangay Connect · TechShowcase 2025 project
React/Supabase community portal for incident reports, document requests, polls, and notifications; 2nd Best Innovation and 3rd Best Pitch at MSU-IIT TechShowcase 2025.

Snake OS — Embedded Interactive HMI
Renesas RA6M3 academic project using RT-Thread and LVGL for a small graphical game interface.

Industrial Oven Simulation & Control
CODESYS ladder-logic simulation and HMI with heating control, safety interlocks, and threshold alarms.

Awards & Recognition

Top 5 Finalist — IEEE Sumpai Hackathon 2026; Agap AI project · September 14, 2026.

2nd Best Innovation and 3rd Best Pitch — MSU-IIT TechShowcase 2025; Barangay Connect · December 17, 2025.

Academic Honors — MSU-IIT Integrated Developmental School · 2022–2023.

Leadership

Undersecretary, Sports & Development Affairs — College of Computer Studies Executive Council, MSU-IIT · Aug 2025–May 2026; **Team Captain, Mobile Legends: Bang Bang** — Titans Esports · 2021–2023.

Training & Professional Development

2026: AI Career Readiness Training, MSU-IIT; Startup Basics 101, iDEYA MSU-IIT; Quantum Circuits as Pictures: An Introduction to ZX Calculus webinar.

2025: my.ComApps RT-Thread Technology Symposium, MSU-IIT; Seize Your Opportunity: Internships and OJTs Workshop, MSU-IIT; Permaculture webinar, “From Code to Crops.”

2023: Software Freedom Day, MSU-IIT; TUKISayod Research & Academic Symposium; DMS National Statistics Month webinar; Statistics: Bridging Gaps for Every Juan in the Digital Age, MSU-IIT.

2021: TEENPRENEUR Business & Innovation Bootcamp.