

Engr. Emmanuel L. Alcazar, Jr., ECE, ECT

Software & AI Solutions Engineer

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PROFESSIONAL OVERVIEW

Software and AI Solutions Engineer with a strong systems engineering background, specializing in full-stack web applications, serverless architectures, and multi-model LLM orchestration. Experienced in deploying production-grade systems with TypeScript, Python, Next.js 16, Cloudflare Workers, and leading LLM APIs (Gemini, Claude, DeepSeek). Proven track record architecting enterprise internal tools with role-based access control (RBAC), strict PII data protection (RA 10173 / GDPR), and automated network telemetry daemons. PRC Registered Electronics Engineer and DataCamp Certified AI Engineer Associate.

WORK EXPERIENCE

SOFTWARE & SYSTEMS SOLUTIONS ENGINEER | Reybin Inc., Metro Manila, Philippines 2026 – PRESENT

- OmniSight PM (Internal ERP): Architected and deployed an executive project management ERP using Next.js 16, TypeScript, React 19, Tailwind CSS, and Prisma ORM with SQLite, integrating a 6-phase milestone scheduler, equipment BOM ledger, and 12-quarter preventive maintenance system.
- RBAC & Data Privacy: Engineered a 3-tier Role-Based Access Control subsystem with automated PII masking and field-record redaction in compliance with RA 10173 and GDPR principles.
- Telemetry Automation: Developed automated Python diagnostic scripts to poll real-time industrial switch port telemetry and optical link budgets, reducing manual diagnostics time by >40%.
- ReybinEye Platform: Built the official company showcase platform using Astro, Tailwind CSS, and Cloudflare Workers, enabling low-latency video streaming and sub-second page loads.
- Operator Onboarding Portal: Designed an interactive React 18 + Vite portal to train and onboard operations staff on AI video analytics, motion search, and incident triage workflows, accelerating team ramp-up by 35%.
- Enterprise Infrastructure Delivery: Led the technical commissioning of 28 AI-powered surveillance feeds, a 128TB RAID-6 server, and an armored 12-core fiber backbone across 31 commercial aircraft parking bays at NAIA Terminal 3, sustaining 99.99% network uptime under high-EMI conditions.

ENGINEERING INTERN, POWER & DEVELOPMENT | JG Summit Olefins Corporation, Batangas, Philippines 2024

- Maintained operational continuity of industrial high/medium-voltage substations through systematic preventive maintenance logging and thermal diagnostic inspections across critical units.
- Evaluated high-voltage insulation integrity using Megger testing, analyzing dielectric absorption ratios and polarization indices to mitigate transformer breakdown risks.

FEATURED PROJECTS

EMMAN.PI — INTERACTIVE 3D RASPBERRY PI 5 PORTFOLIO | pi.emmanalcazarjr.com

React 19, Three.js, React Three Fiber, TypeScript, Vite, Cloudflare Pages Functions & KV, Google Gemini API

- Built a fully procedural 3D digital twin of a Raspberry Pi 5 board in React Three Fiber, rendering at 60 FPS in WebGL with no imported models.
- Integrated a Gemini-powered AI butler through Cloudflare Pages Functions with multi-tier prompt-injection guards and Cloudflare KV persistence served in under 0.4ms from the edge cache.
- Wired bearer-authenticated webhooks from Telegram and n8n to publish blog posts and status updates to the live site.

SPECULA — MULTIMODAL VISION INSPECTION ENGINE | specula.emmanalcazarjr.com

Gemini Multimodal API, Cloudflare Workers, Cloudflare D1, TypeScript, JSON Schema

- Engineered an edge inspection engine that reads equipment nameplates, utility meters, receipts, and component labels from a photo and returns strongly typed JSON in 320ms.
- Enforced 100% schema compliance across 5 extraction schemas with strict JSON Schema validation, eliminating manual inspection data entry.
- Settled every extraction run as an immutable audit record in Cloudflare D1 on a zero cold-start Workers deployment.

- APPLIED RAG ASSISTANT — RETRIEVAL & EVALUATION BENCHMARK | emmanalcazarjr.com
Python, FAISS, OpenAI Embeddings, Gemini / Claude / DeepSeek Evaluation
- Architected an end-to-end vector retrieval pipeline with semantic document chunking, dense vector embeddings, and FAISS cosine similarity search.
 - Achieved 99.4% citation faithfulness across 15 benchmark suites by implementing top-k reranking, strict citation grounding, and graceful no-answer fallbacks.

EDUCATION

Bachelor of Science in Electronics Engineering (BSECE) | University of Santo Tomas – Legazpi

Graduated: 2025

CERTIFICATIONS

Registered Electronics Engineer (ECE Lic. #83920) Professional Regulation Commission	2025
Registered Electronics Technician (ECT Lic. #31662) Professional Regulation Commission	2025
AI Engineer for Developers Associate DataCamp	2026
Data Analyst Associate DataCamp	2026
Project Management Professional (PMP) Exam Prep, 35 Contact Hours PMI ATP	2026

SKILLS

TypeScript / JavaScript	Python	SQL, C, C++
Next.js 16 (App Router, Server Actions)	React 19	Tailwind CSS v4, Astro, Vite
Three.js / React Three Fiber	Node.js & RESTful APIs	Prisma ORM 6.x
Cloudflare Workers	Cloudflare D1 (Serverless SQLite)	Supabase Edge Functions (Deno)
Multi-Model LLM Orchestration	Gemini, Claude & DeepSeek APIs	RAG Architectures
Vector Embeddings	FAISS Similarity Search	Top-k Reranking
Prompt Evaluation & Benchmarking	Recall@k & Citation Faithfulness	Linux / PowerShell
Git / GitHub	GitHub Actions CI/CD	Vitest
Raspberry Pi Edge AI	Vosk STT & Piper Neural TTS	openWakeWord
3-Tier RBAC	PII Sanitization & Masking	Data Privacy (RA 10173 / GDPR)