

NOOR MOHAMMAD SOWAN

Software Engineer – AI & Full-Stack Systems

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SUMMARY

Graduate software engineer specializing in AI-enabled workflow automation and full-stack applications. Independently built BahasaBot, a RAG-based language learning platform awarded Silver among 249 competing final-year students at PIXEL 2026, and Virtual Zara, an internal AI automation agent in use at ECTrons. Experienced in retrieval pipelines, async backends, vector databases, authentication, and Docker deployment.

SKILLS

Primary: Python, FastAPI, PostgreSQL, pgvector, LangChain, RAG, LLM integration (Google Gemini API, OpenAI API), SQL, JWT and OAuth authentication, Docker, REST APIs, Git

Working knowledge: TypeScript, JavaScript, Next.js, React, Tailwind CSS, Prisma, Zod, Redis, SQLite, SQLAlchemy, WebSocket, SSE streaming, local LLMs (Ollama), n8n workflow automation, REST integrations (Google Workspace, Microsoft Graph, GitLab, Telegram), API testing (Postman), Linux CLI, Vercel, Render, i18n (EN/BM)

EXPERIENCE

Firmware / Embedded Software Development Engineer (Trainee) — ECTrons Sdn. Bhd., Bayan Lepas, Penang

March 2025 – September 2025 (24 weeks). Assigned to internal AI automation and workflow projects, Engineering Support and Services (ESS) department.

- Designed and implemented Virtual Zara, an internal AI automation agent built on modular n8n workflows for automated PDF and document generation and resume-screening support.
- Enabled multimodal input across text, voice, and document parsing; the system remained in use at the company after the internship ended.
- Integrated five external systems (GitLab, Google Workspace, Microsoft Graph, Telegram Bot, OpenAI) across three business domains: HR, finance, and project management.

Administrative Assistant (Part-time) — Museum Hotel, George Town, Penang

June 2022 – Present

- Managed front-desk operations, maintained guest records, and supported daily administrative processes alongside full-time study.

PROJECTS

BahasaBot — Full-stack AI language learning platform (Final Year Project)

Silver Award, PIXEL 2026 (USM final-year showcase, 249 competing students) | Live demo: bahasa-bot.vercel.app | github.com/Sowan3k/BahasaBot

- Independently designed and developed a RAG chatbot tutor with LangChain over a pgvector store, streaming responses over Server-Sent Events; evaluated by 30 users during assessment.
- Designed a dynamic course generator that turns any topic into modules, classes, and quizzes with concurrent Google Gemini API calls under a rate limit.
- Built an adaptive quiz engine that personalizes questions from tracked weak points and recalculates CEFR proficiency (A1 to B2) from recent attempts.
- Implemented bcrypt, JWT authentication, and Google OAuth over a 13-table PostgreSQL schema.
- Added Redis caching, rate limiting, input sanitization, and an LLM-based prompt-injection classifier; deployed Next.js on Vercel, FastAPI on Render, PostgreSQL on Neon.

USM Evently — Full-stack campus events platform

Open source: github.com/Sowan3k/usm_evently

- Built a campus events platform with Next.js 15, TypeScript, PostgreSQL, and Prisma: event browsing and search, RSVP with capacity limits, simulated ticketed payments, and automatic MyCSD (university co-curricular development points) tracking.
- Implemented role-based access control across student, organizer, and admin roles, with server-side auth guards and an organizer moderation queue requiring admin approval before events go live.
- Designed a QR-code check-in system awarding MyCSD points on scan, and an admin dashboard with approval queues and Recharts analytics for registrations, categories, and revenue.

EDUCATION

Universiti Sains Malaysia (USM) — Bachelor of Software Engineering, 2020 – 2026

Final exams completed July 2026; graduating August 2026. Final Year Project: BahasaBot.

LEADERSHIP & ACTIVITIES

Director of Content and Public Relations, USM International Club (April 2024 – April 2025).

Represented Bangladesh at iFUTURE 2024.