

MAMATHA EPILI

Full-Stack Engineer & Engineering Lead — Angular, Node.js / TypeScript, Microservices, Agentic AI & Multi-Agent Systems · EdTech & LMS Platforms

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PROFESSIONAL SUMMARY

Full-stack engineer and engineering lead with 12+ years shipping production EdTech platforms — the last seven also leading delivery, and still in the codebase every week. Hands-on across Angular (v9 to v22) and TypeScript front ends, Node.js, Express and NestJS services deployed per platform, Python and Go, and PostgreSQL, MySQL, MongoDB, Supabase and Firebase data layers, with Docker and GitHub Actions for build and deploy. Integrated Zoom Meeting SDK live classes, LTI, payments and transactional email across certification platforms serving 100K+ learners. Design and hand-build retrieval and agent systems — RAG pipelines, multi-agent assessment, MCP servers, guardrails enforced in code — and author of seven published npm packages.

CORE SKILLS

- **Frontend:** Angular (v9 to v22, standalone components, Signals), TypeScript, React, Next.js, RxJS, Tailwind CSS, Angular Material, SCSS design tokens, Vite, pnpm
- **Backend & APIs:** Node.js, Express, NestJS, REST API design, SDK & package design, TypeORM, Sequelize, Go
- **Data & storage:** PostgreSQL, MySQL, MongoDB, Supabase, Firebase, Redis, pgvector, Google Cloud Storage, AWS S3
- **DevOps & tooling:** Docker, Docker Compose, Git & GitHub, GitHub Actions CI/CD, GitHub Pages
- **Integrations:** Zoom Meeting SDK, LTI, SendGrid, Puppeteer & PDF generation
- **AI engineering:** Generative AI, Agentic AI, LLM integration (Gemini, OpenAI, Anthropic SDKs), RAG pipelines, Embeddings & chunking, Guardrails & injection defence, MCP servers, Multi-agent pipelines, Prompt engineering
- **Architecture & security:** Layered data access, Multi-repo contracts, Row-level security, Server-side key custody, Least-privilege tooling
- **Delivery & tools:** Jira, Excel (project timelines), Requirement analysis, Business-to-technical translation, Agile (Scrum, Kanban), Sprint planning & release management, Code & design reviews, Stakeholder communication, Hiring & mentoring
- **Exploring:** Python (FastAPI, Django), PHP (Moodle)

PROFESSIONAL EXPERIENCE

Assistant Vice President – Engineering · Miles Education *Jul 2014 - Present*

12 yrs 2 mos | Mumbai, India

Lead engineering delivery across the EdTech and LMS platforms — architecture, code review, development and shipping alongside the team, with hiring and mentoring; twelve years at one company from developer to AVP.

- **Milesverse (current):** Rebuilt the React 18 / Vite prototype as an Angular 22 standalone application on pnpm with Tailwind and GitHub Actions CI — admin, faculty, student and super-admin shells; ported the same platform to Moodle (PHP) and built a Supabase-backed Simulation Hub.
- **Miles Masterclass:** Angular 22 on pnpm with Express and Supabase; Zoom Meeting SDK for live sessions; admin dashboard for users, seat allocation and analytics; AI Labs module. Earlier CPE edition in Angular 19 and Angular Material over a Python / Docker backend.
- **CAIRA Learning Platform:** Angular 14 on Supabase and Firebase — chapter video player and quizzes, course exams, progress and QR login; three-tier Bronze / Silver / Gold certification with attendance-backed NASBA CPE credit via Zoom SDK lectures. 10K+ learners.
- **CPA & CMA Learning Platforms:** Owned from scoping to release and still maintained — Angular LMS taken from v12 to v17 with Angular Material, CKEditor content, Firebase and Chart.js; admin panels (Angular 9 to 16, Material, Tailwind) for batches, recordings, activities, book orders, analytics and feedback; NestJS / TypeORM APIs on MySQL and PostgreSQL with Firebase, Google Cloud Storage and SendGrid; the shared test-bank API (Express, Sequelize, MySQL and MongoDB, Redis) deployed with Docker and GitHub Actions. Live since 2019 and 2021.
- **Review My Hostel:** Next.js 16 / React 19 student app and an Angular admin panel, both on Supabase — Postgres, Auth, and Edge Functions for admin login, analytics and FAQ APIs behind an OpenAPI spec — with Tailwind and Zod, plus an MCP server over the same data. Live in production; first product shipped end to end through agent-assisted development.
- **Edu-Streak:** Go / MongoDB API with an Angular 17 admin panel and a React 18 / Vite learner client, plus a generator that reads the Go handlers and emits typed Angular services and interfaces so the two repos cannot drift.
- **Websites & admin:** Miles Education public sites and internal admin on Angular 12–13 with an Express / MongoDB / MySQL API on AWS; the certification brands' web properties and the online test bank — multiple-choice questions, simulations and result reporting — built first in PHP, then rebuilt on Angular and Node.js.

OPEN-SOURCE & INDEPENDENT PROJECTS

- **GuardRAG** — **@guardrag/core, /embed, /react (npm)**: Framework-agnostic RAG SDK in TypeScript with zero runtime dependencies: pluggable vector stores, dense / keyword / hybrid retrieval, guardrails enforced in code; runs on Node, Deno, Bun, edge and browsers.
- **image-to-toon** — **3 npm packages**: Canvas 2D engine with Kuwahara smoothing and a segmentation driver, published with React and Angular bindings; everything client-side, Vite.
- **tarot-spread-sdk (npm)**: Zero-dependency TypeScript SDK — FNV-1a into Mulberry32 for deterministic daily draws, offline narrator, measured bundle budget in CI, Angular demo.
- **Gita Guidance**: Angular 22 over FastAPI and PyTorch; bge-m3 multilingual dense retrieval with speaker-aware ranking and a rule-based router ahead of embedding; a character-level transformer written from scratch.
- **SkillForge & DevSkill Arena**: Rubric-grounded code assessment: Go / Gin API on Supabase Postgres with pgvector, Angular 18 admin console, Next.js 14 playground; three-agent grading pipeline. The Arena prototype runs the same pipeline with a committed vector corpus and no database.
- **Agentic AI Research Agent**: Next.js / React 18 front end streaming over server-sent events, Node 20 / Express, Supabase Postgres; reason-and-act loop with a recursive-descent calculator and a deterministic mock provider for offline runs.
- **Grounded** — **grounded-rag-demo**: React 18 / Vite RAG reader and admin: chunking and embedding into a vector knowledge base, answers that cite every passage, ungrounded output structurally impossible.
- **Agent Tooling & MCP Servers** — **angular-mcp-bridge**: Read-only MCP server in TypeScript wrapping an existing REST API as typed, Zod-validated tools; output sanitisation as a hard boundary.

AI-NATIVE PRACTICE

- **api-binder subagent**: Discovers Go endpoints and structs across a sibling repo and generates matching TypeScript interfaces and Angular services.
- **design-guardian skill**: Enforces the design system on generated components: shared components before new ones, theme tokens before hex values, surrounding control-flow style matched — and a Design Audit header stating what was reused.
- **mcp-bridge-tools skill**: Codified conventions for wrapping a REST endpoint as an MCP tool, so adding `get_orders` is a repeatable ten-minute job instead of a design debate.

KEY ACHIEVEMENTS

- Cut the discovery-to-plan phase of a new project — stack selection, Business Requirements Document (BRD) and Product Requirements Document (PRD), theme and structure — from about a month to a week or less with an AI-driven architecture workflow, reducing manual and operational effort by an estimated 60–80%.
- Run three to four projects in parallel in a working day at the same effort, with every generated line reviewed before it ships: agents as the development engine, human architecture and review as the quality gate.
- Certification platforms serving 100K+ learners, in production since 2019; CAIRA at 10K+ learners.
- Seven npm packages published under MIT, each with a live browser demo that needs no key and no backend.

EDUCATION

Master of Computer Applications (MCA) — Bharati Vidyapeeth (BVIMIT), 2011 - 2014

Bachelor of Computer Applications (BCA) — Dr. B.M.N. College of Home Science, 2008 - 2011