

PONSUBASH RAJ R

Chennai, Tamil Nadu, India

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SUMMARY

Software Engineer focused on agentic AI, system design, and cloud-native AI applications. Experienced in building RAG systems, async AI pipelines, vector search, background workers, and deployed AI products with attention to rate limits, durable state, user isolation, retrieval quality, and observability.

EDUCATION

Sri Sivasubramaniya Nadar College of Engineering 2023 – Present
M.Tech Computer Science and Engineering, 5 Years Integrated – CGPA: 9.11 Chennai, Tamil Nadu
Jaigopal Garodia Matriculation Higher Secondary School 2022 – 2023
12th Grade – 98.33% Chennai, Tamil Nadu

EXPERIENCE

Research and Development Intern Jan 2025 – Apr 2025
StudAI Edutech Private Limited Chennai, Tamil Nadu

- Benchmarked ChatGPT and DeepSeek for education-focused LLM workflows across quality, cost, latency, and integration feasibility.
- Recommended LLM integration patterns, including retrieval, evaluation, and guardrails for learning products.

PROJECTS

CourseFlow: AI Course Generation Platform | [FastAPI](#), [PostgreSQL](#), [pgvector](#), [Redis](#), [Celery](#), [AWS](#), [MCP](#)

- Built a self-hosted AI learning platform that converts YouTube playlists into searchable courses with transcripts, notes, quizzes, spaced repetition, exports, and diagrams.
- Designed durable Celery/Redis workflows with PostgreSQL state, pgvector retrieval, LLM quota scheduling, S3 storage, AWS deployment, CloudWatch, and a local MCP server.

Docflow: Multi-User Document Q&A System | [FastAPI](#), [Celery](#), [Redis](#), [Qdrant](#), [PostgreSQL](#), [AWS](#)

- Developed a multi-user document Q&A system with authentication, file management, chat history, and source-grounded answers.
- Built async ingestion with Celery/Redis, parent-child chunking, Qdrant indexing, BM25 + vector retrieval, RRF ranking, S3 storage, and user isolation.

Pulse: Personal AI Intelligence Reader | [FastAPI](#), [PostgreSQL](#), [pgvector](#), [LangGraph](#), [Supabase](#)

- Created a personal AI intelligence reader that ingests RSS, GitHub, arXiv, and Gmail newsletters into a personalized mobile feed.
- Implemented LLM enrichment, PostgreSQL + pgvector search, LangGraph quizzes, grounded Ask mode, digests, trends, Docker, and Supabase deployment.

TECHNICAL SKILLS

Languages: Python, SQL

AI Systems: RAG, Agentic Workflows, MCP, LangGraph, LangChain, prompt design, grounded generation

Backend & Data: FastAPI, Celery, Redis, PostgreSQL, pgvector, Qdrant, SQLite, REST APIs

Cloud & DevOps: AWS EC2, S3, IAM, CloudWatch, Docker, GitHub Actions, Supabase, MinIO

Core Strengths: System design, asynchronous workflows, vector search, retrieval pipelines, API design, debugging

PUBLICATIONS

- Automatic Generation of Medical Imaging Diagnostic Report using BLIP Model** – ICCIDS 2026
- ML and DL Approaches for Code-Mixed Tamil and Tulu Sentiment Analysis** – DravidianLangTech 2025
- Word-Level Language Identification in Dravidian Code-Mixed Text** – FIRE 2024

ACHIEVEMENTS & ACTIVITIES

- Problem Solving:** Solved 250+ LeetCode problems, strengthening data structures, algorithms, and debugging fundamentals.
- Conference Presentations:** Presented research at FIRE 2024 and ICCIDS 2026.
- Interests:** Agentic AI systems, backend architecture, cloud deployments, retrieval infrastructure, chess, and Rubik's cube solving.