

SREEJA C B

Software Engineer | AI & Backend Specialist

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PROFESSIONAL SUMMARY

Results-driven Software Engineer with **2+ years** of experience building production-grade AI systems, backend frameworks, and data pipelines. Specialized in LLM integration, RAG architectures, and scalable FastAPI backends. Published IEEE researcher with hands-on expertise in GenAI, computer vision, and multi-database systems.

PROFESSIONAL EXPERIENCE

Software Engineer | Thinking Code Technologies Pvt. Ltd., India Feb 2024 – Present

- Developed an autonomous **Agentic framework** supporting two execution modes — deterministic (ReAct) and AI-driven (LLM) — with real-time **SSE** streaming, session state management, and **Kafka**-based background job processing.
- Architected and developed an AI-powered chatbot backend for insurance claim document analysis, processing PDFs, DOCX, and image-based documents at scale using **OCR** (docTR) and a **RAG** pipeline backed by **Qdrant vector** store.
- Integrated **DeepSeek-R1 LLM** hosted on **NVIDIA SGLang** to generate document summaries via streaming **FastAPI** endpoints, enabling real-time red-flag detection, duplicate identification, and freeform Q&A over insurance claims.
- Built a configuration-driven widget application framework (**FastAPI**) serving as a generic platform to create, manage, and secure multi-database dashboards — eliminating the need for custom backends per application.
- Integrated multi-database connectivity (PostgreSQL, Oracle, ClickHouse, Supabase, MySQL) across multiple production systems with OAuth-based authentication and encrypted URL parameters for security compliance.
- Trained a **YOLOv7** computer vision model to detect checkboxes and handwritten text in dense document images, achieving 70% accuracy on custom-labeled datasets.

Research Fellow | India Innovation Center for Graphene, DUK, Thiruvananthapuram Oct 2022 – Aug 2023

- Developed a Python framework implementing 4 memristor simulation models with configurable variability conditions, used by researchers for circuit behavior analysis.
- Built and deployed GUI on AWS EC2 providing interactive deep learning architecture experiments (ANN, CNN, RNN, SNN) integrated with the memristor models; available publicly on GitHub.
- Published research at IEEE ISCAS 2023, the flagship conference of the IEEE Circuits and Systems Society.

TECHNICAL SKILLS

Languages: Python, SQL

AI / ML / LLM: LLM Integration (DeepSeek-R1, Gemini, Llama2), RAG Pipelines, LangChain, Hugging Face, TensorFlow, PyTorch, YOLOv7, OCR (docTR), NLP

Frameworks & APIs: FastAPI

Databases & Vector Stores: Qdrant, PostgreSQL, ClickHouse, Oracle, MySQL, MongoDB, Supabase

Infrastructure & DevOps: Linux, AWS EC2, GCP, Docker, Kafka, NVIDIA SGLang, OAuth, Server-Sent Events (SSE)

Tools & Methods: Git, SVN, Agile, REST APIs, Vector Search, Streaming APIs, Decorator-based Plugin Systems

KEY PROJECTS

Agent Framework — Thinking Code Technologies

- Built a plug-and-play FastAPI agent framework supporting React (rule-based) and LLM-driven (DeepSeek-R1) execution modes with real-time streaming and interactive pause/resume workflows..

Tech Stack: **Python, FastAPI, LLM, Qdrant, Kafka, PostgreSQL, Oracle, ClickHouse, Supabase, SSE**

Prompt-to-Explainer-Video Generator

- Built an AI-powered system that automatically creates fully narrated, visually supported explainer videos from simple user prompts, generating auto-generated scripts, AI voiceover narration, visual slides, and final MP4 videos ready for sharing.
- Integrated multiple AI services (DeepSeek, OpenAI, ElevenLabs) with multi-AI fallback strategies for reliability, using Docker for simplified deployment and implementing real-time UX for video generation progress tracking.

Tech Stack: **React, FastAPI, Docker, DeepSeek, OpenAI, ElevenLabs**

AI-Powered Insurance Claim Chatbot — Thinking Code Technologies

- Designed a multi-format document processing pipeline (PDF, DOCX, images) using **OCR** (docTR) and regular expression-based medical keyword extraction.
- Built streaming FastAPI endpoints for real-time summarization, red-flag detection, duplicate identification, and Q&A over claim documents using RAG + DeepSeek-R1.

Tech Stack: **Python, FastAPI, DeepSeek-R1, NVIDIA SGLang, Qdrant, docTR, RAG, SSE**

Widget Application Framework — Thinking Code Technologies

- Created a configuration-driven platform enabling teams to build and manage dashboards, bots, and data views without writing custom backend logic per application.
- Supported 5+ database types (PostgreSQL, ClickHouse, Oracle, MySQL) with OAuth authentication, access control, ClickHouse caching, and encrypted URL parameters.

Tech Stack: **Python, FastAPI, PostgreSQL, ClickHouse, Oracle, MySQL, OAuth**

Vision Model for Document Analysis — Thinking Code Technologies

- Trained YOLOv7 on custom-labeled datasets to detect checkboxes and handwritten text in information-dense documents, achieving 70% detection accuracy.

Tech Stack: **YOLOv7, Python, Computer Vision, Custom Dataset Annotation**

PUBLICATION

Aswani R, Sreeja Babu, and A. P. James, "Python based Memristor Model Library for Variability Analysis," 2023 IEEE International Symposium on Circuits and Systems (ISCAS), Monterey, CA, USA, 2023, pp. 1–5.

DOI: 10.1109/ISCAS46773.2023.10181939

ACHIEVEMENTS & AWARDS

- First Prize — **Smart India Hackathon 2022**
- Third Prize — Internal **AI Competition at Thinking Code Technologies**: Built an AI-Powered Prompt-to-Explainer-Video Generator that automatically creates a fully narrated, visually supported explainer video from a simple user prompt.
- **Best Employee Award** — 2024 & 2025, Thinking Code Technologies Pvt. Ltd. — recognized two consecutive years for outstanding performance and contribution.

EDUCATION

M.Sc. Computer Science (Specialization: Data Analytics)

2021 – 2023

Kerala University of Digital Sciences, Innovation and Technology (DUK / Formerly IIITM-K), Thiruvananthapuram

B.Sc. Mathematics

2018 – 2021

St. Teresa's College, Ernakulam