

SANDEEP KUMAR BOLLAVARAM

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Profile

Full-stack and platform engineer building production software across Kubernetes operators, LLM infrastructure, agentic developer tooling, real-time computer vision, native desktop applications, and autonomous robotics. Designs local-first AI systems using MCP agent memory and vector retrieval; architects cloud-native platforms using Go, Kubebuilder, gRPC, and modern full-stack technologies.

Education

SCSVMV University

B.Tech in Computer Science and Engineering

2024 – 2028

Kanchipuram, Tamil Nadu

Experience

Flexdee Technologies

Jan 2025 – Present

Software Engineer

Remote

- Architected and deployed a self-hosted AI platform with custom LLM inference via Ollama, enabling private zero-cloud model serving and low-latency response architecture.
- Built the full product stack including FastAPI backend, Next.js frontend, multi-tenant authentication, PostgreSQL schema, Docker deployment, and GitHub Actions CI/CD pipeline.

Projects

Shukra Operator | Go, Kubernetes, Kubebuilder, Helm OCI, gRPC, CRDs, Webhooks

Open Source

- Built a production Kubernetes operator that reconciles full-stack app environments including Deployment, Service, Ingress, HPA, migration Jobs, backup CronJobs, and NetworkPolicy from a single AppEnvironment CRD.
- Implemented mutating, validating, and conversion webhooks, finalizer-driven safe deletion, Prometheus metrics, leader election, and gRPC bridge integration; shipped 8 public releases with OCI Helm distribution.

Kairo | MCP Protocol, TypeScript, Vector Memory, RAG, Agent Systems, Local-First AI

Open Source

- Built an MCP-based engineering memory platform with 40+ tools enabling persistent context, repository intelligence, checkpoint recovery, and agent continuity across AI coding workflows.
- Designed local-first vector retrieval and semantic memory systems that surface relevant engineering decisions, architecture context, and code knowledge without cloud dependency.

Vayu | WinUI 3, .NET, C#, Ollama, Voice STT, AI Agents, Permission-Aware Automation

Open Source

- Built an offline-first Windows AI operating layer with voice input, local LLM inference, and permission-scoped OS automation without requiring cloud API calls.
- Designed an intent-to-action agent pipeline that maps natural language to system operations within user-defined permission boundaries.

University ERP Ecosystem | Next.js 15, Flutter, Firebase, TypeScript, Riverpod, CI/CD

Deployed

- Shipped a production university management system with role-based web platform and Flutter mobile app for admin, faculty, student, and parent workflows.
- Implemented QR live attendance, marks management, leave workflows, timetable tools, automated parent alerts, Firebase deployment, and GitHub Actions CI/CD.

Weapon Detection Platform | YOLOv8, OpenCV, Python, Flask, SQLite, Multithreading

AI / Computer Vision

- Built a real-time computer vision security system detecting weapons from live camera feeds, triggering Email/SMS/Telegram alerts, recording evidence clips, and streaming a live Flask dashboard.

Vibrance | C#, .NET, Desktop Applications, Image Processing, CI/CD

Released

- Built and released a desktop photo editing application featuring image enhancement, compression, batch-processing workflows, and automated release pipelines.

Technical Skills

Languages: Go, Python, TypeScript, C#, JavaScript, Dart, SQL, C++, R

Platform Engineering: Kubernetes, Helm, Kubebuilder, controller-runtime, CRDs, Webhooks, gRPC, Docker, GitHub Actions, CI/CD, Linux

AI / LLM Engineering: LLM Applications, AI Agents, RAG, MCP Protocol, Vector Databases, Embeddings, LangChain, Ollama, Whisper, AI Memory Systems

Backend / Full Stack: FastAPI, Node.js, Express, REST APIs, WebSockets, Authentication Systems, Next.js, React, Flutter, Tailwind CSS, Three.js

Databases / Desktop / Hardware: PostgreSQL, SQLite, Firestore, Supabase, ChromaDB, .NET, WinUI 3, PyQt6, Raspberry Pi, ESP32, LiDAR, SLAM, IoT

Certifications

- AWS AI Practitioner Challenge – Udacity, Apr 2026

Achievements

- 1st Place – Apogee 2026 Technical Symposium, Neuromorphic Computing, SCSVMV University
- Built 20+ projects across AI systems, platform infrastructure, full-stack development, desktop software, and robotics.
- Open-source maintainer across AI tooling, Kubernetes operators, and developer tools.

Languages

- Telugu: Native English: Professional Hindi: Conversational Tamil: Basic