Gourishankar Mahadeo Bansode

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Summary

Software Engineer with 2+ years of professional Python/C++ experience and applied AI research at Arizona State University. Builds self-hosted LLM applications, document-processing pipelines and retrieval systems using Ollama, FastAPI and PostgreSQL. Combines model evaluation with production experience in automation, telemetry and diagnostics.

Technical Skills

AI & Retrieval: Ollama, Qwen, RAG, BM25, embeddings, pgvector, reranking, Tesseract OCR, agents, evaluation
Backend & Data: Python, C/C++, FastAPI, REST APIs, SQL, PostgreSQL, SQLAlchemy, Alembic, Celery, Redis
Applications & Delivery: TypeScript, React, Next.js, Kotlin, Docker, Linux, Git, CI/CD, pytest, Playwright
ML & Analytics: PyTorch, TensorFlow, scikit-learn, OpenCV, NumPy, pandas

Selected AI Engineering Projects

OwnerPilot — RFQ Processing & Procurement Intelligence | FastAPI, Celery, pgvector, Next.js

- Built an RFQ processing workflow for PDFs, scanned documents, CSV and Excel using Tesseract, local Ollama models and FastAPI; preserved source evidence, reviewer corrections and auditable approval.
- Implemented catalog search with BM25, Nomic embeddings, pgvector and compatibility-aware reranking; achieved **97.43% Recall@10** across 35 answerable held-out synthetic queries.
- Developed tool-using procurement agents with authorized source reads, citation verification and human-reviewed quote preparation; measured **86.7% verified completion** on 60 held-out synthetic RFQs.
- Engineered PostgreSQL schemas/migrations and Celery/Redis workers with retry-safe processing, duplicate-delivery protection and crash recovery; validated 473 backend tests and 21 browser scenarios.

Adaptive Digital Assistant (ADA) — Self-Hosted LLM Application | Ollama, FastAPI, PostgreSQL

- Built a private Android/web assistant with self-hosted Ollama inference, authenticated FastAPI endpoints and PostgreSQL-backed scoped memory, keeping model and data services on a personal workstation.
- Implemented token budgets, inference timeouts, concurrency controls and streaming cancellation; added an admin interface for model readiness, token usage and sanitized request telemetry.
- Developed source-grounded retrieval, Docker-isolated PDF parsing and replay-safe requests; tested permissions, recovery and source provenance through backend and Android regression suites.

Experience

Research Assistant Jan. 2026 – Present
Arizona State University – Prof. Dr. Suren Jayasuriya; NASA project with Alphacore Inc. *Tempe, AZ*

- Built and evaluated speed-aware measurement-correction and attitude-estimation pipelines for spacecraft star tracking, validating **8.7M+ events across 372 batches**.
- Compared brightness-only and speed-aware models; authored NASA Phase I evidence and Phase II experiment plans to explain results, limitations and next steps.

Software Engineer Dec. 2021 – June 2024
Tata Advanced Systems Limited *Mumbai, India*

- Led a six-engineer team delivering C/C++ and Python backend services, data pipelines and control-plane APIs for mission-critical electronic warfare systems.
- Designed a reusable Health Monitor SDK standardizing telemetry, diagnostics and monitoring across multiple Navy programs.
- Reduced manual intervention by **75%** through workflow automation and log-driven validation; improved ballistic-range data-processing efficiency by **60%** with cataloging and data-quality checks.

Software Engineering Intern Jan. 2021 – June 2021
Softnautics LLP *Pune, India*

- Achieved **92% gesture-recognition accuracy** for an automotive AI interface using OpenCV and TensorFlow; debugged latency-sensitive visualization components.

Education

M.S. Robotics and Autonomous Systems (Artificial Intelligence) Aug. 2024 – May 2026
Arizona State University GPA: 3.84/4.00

B.Tech. Computer Science, Intelligent Systems Aug. 2017 – July 2021
MIT-ADT University, Pune GPA: 7.96/10.00

Publications & Achievements

IEEE Publication: A Transfer Learning Approach for Descriptive Question Answering System, IEEE Pune Section International Conference (2021).
Smart India Hackathon Winner – MHRD, Government of India; National Innovation Contest Finalist (2019–2021).