# Dasari Sandhya Rani

**AI Engineer**
Leoforce

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Portfolio | Linkedin | Github
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## ACCOLADES & ACHIEVEMENTS

- Winner of the **ANZ GENAI Hackfest** and awarded **2k Australian dollars** in prize money. ['23]
- Awarded **100%** Scholarship in National Means cum Merit Scholarship Exam-**NMMS** ['21]
- Secured State **1st Rank** in Intermediate Board Examination and honored with **30k** cash prize. ['16]
- **Centum** holder in all subjects in State Board Examination 2015. ['15]

## PROFESSIONAL EXPERIENCE

**Leoforce** | ***AI Research Engineer*** [Oct'25-present]

*Shipped hybrid search RAG agentic system end-to-end from ideation to production deployment at billion-record scale.*

- Architected **hybrid search engine** combining **BM25** lexical matching with **dense vector retrieval** (HNSW algorithm) across **1.6+ billion** candidate records, implementing **reciprocal rank fusion (RRF)** for result merging and achieving **40%** improvement in candidate matching precision.
- Designed comprehensive **RAG evaluation pipeline** using **DeepEval** with metrics including **faithfulness**, **answer relevancy**, **contextual precision/recall**, and **RAGAS scores**.
- Developed **NLP preprocessing pipeline** for resume parsing including **named entity recognition (NER)**, skill extraction, and text normalization. Implemented **semantic chunking strategies** and experimented with **dimension reduction techniques** for embedding optimization at scale.
- Built production **multi-agent systems** using **LangGraph** state machines with **LiteLLM** for unified LLM access, implementing **tool-calling agents**, **supervisor patterns**, and conditional routing. Integrated **Langfuse** for prompt tracking and **OpenTelemetry** for distributed tracing across microservices.
- Led **OpenSearch 1.3 → 3.0** migration, implementing **k-NN vector search** with **FAISS** and **Lucene** engines, optimizing **index mappings**, query DSL performance, and infrastructure costs. Engineered async **ETL pipelines** for embedding generation using **batch processing** and **parallel workers**.
- Developed **FastAPI microservices** with async operations, implementing **connection pooling**, **request batching**, and **response streaming**. Built comprehensive observability stack with custom metrics, alerting, and performance profiling for ML inference endpoints handling **10k+ QPS**.

**ANZ Operations and Technology** | ***AI Engineer*** [Jun'23-Sept'25]

*Acknowledged as a high-achieving team member from a team of 40; received the highest appraisal among graduates in my cohort.*

- **Architected** and **deployed** KnowHow Assist **RAG Application** - Enterprise-scale knowledge management system processing 60k+ documents (PDFs, images, multi-format files) using **Google Cloud Vertex AI**. Built complete ML pipeline with **document ingestion**, **multi-modal embeddings**, and vector search achieving 200ms query response time.
- Developed a full-stack **RAG solution** with React.js/TypeScript front end and **FastAPI** back end, implementing a **real-time streaming chat interface**. Leveraged Vertex AI's foundation models for **document analysis** and **semantic search** across diverse enterprise content.
- **Spearheaded** a team to develop an **automation solution** that significantly reduced business workload by **10x**.
- Established and managed CI/CD pipelines with **Codefresh**, **GitLab CI**, and **Azure DevOps**, while orchestrating **Docker** and **Kubernetes** for scalable and efficient application deployment.
- Applied deep learning techniques for **document analysis**, achieving **95% accuracy** in automated data extraction from various document formats.

**THOUGHTWORKS.PVT.LTD** | ***ML & Big Data Analytics Internship*** [Dec'21-May'22]

*Awarded full-time internship (1 out of 5 IITB students) acknowledging exemplary performance and sincerity in project work*

- Extracted **medical data** from documents and converted it through **OCR** using the **docTR** deep learning model for healthcare data processing.
- Recorded observations and indicators against the patient's medical history using **spaCy** and **medCAT** libraries.
- Developed a **Label Studio API** with the **docTR** deep learning model to extract text for **multiple data reports** and medical analysis.
- Implemented **semi-supervised learning** showing accuracy improvements of **3-5%** compared to **supervised learning** with small labeled data.

**BAHMNI Open Source EMR, in collab. with KCDH** | *Data Engineer, Prof.Ganesh Ramakrishnan* [Jun'22-Nov'22]

- Enhanced **layoutLM** deep learning model with **FUNSD dataset** achieving **80% accuracy** in document understanding.
- Developed tool for **key entity recognition** from documents using **SimpleDLM** as pre-trained model, improving **F1 score by 14.4%**.
- Designed and maintained **data pipelines** supporting data transformation processes, increasing efficiency by **25%**.
- Implemented data quality checks and monitoring systems resulting in **15%** reduction in data errors.
- Developed interactive dashboards by transforming data from multiple sources, improving data-driven decision-making.

## PUBLICATIONS

- A. Mohammed, S. R. Dasari, Y. M. Desai, "SCF Prediction using the Finite Element Method Coupled with Sobol Sampling and Bayesian Optimization", on Soft Computing, Machine Learning and Optimisation, Civil-Comp, UK
- A. Mohammed, S. R. Dasari, Y. M. Desai, "Mesh Sensitivity Study of Steel Tubular T-joints for the Computation of Stress Concentration Factors", on AIJR Proceedings

## KEY PROJECTS

**Neural Network based approach for SCFs, MTech Thesis** | *DL Project, Prof. Yogesh M Desai* [Jun'22-Jun'23]

- Implemented efficient algorithm in **ANSYS-APDL** achieving **90% reduction** in time complexity using numpy and pandas libraries.
- Trained deep learning models with **Bayesian Optimization** for material property analysis and geometric parameter dependency insights.
- Used **Sobol sampling** and neural networks for structural engineering applications.

**Automated 3D Reconstruction from Satellite Images** | *Digital Image Processing, Course Project* [May'21-Jun'21]

- Developed a **stereo pipeline** including **pushbroom** sensor modeling, **geographic** coordinate systems projection and **localization functions** with error of **0.096 pixels** for **Epipolar Rectification** and **Stereo Matching**.
- Implemented **point cloud** by triangulating correspondences and projecting them on **UTM** reference system.
- Explored clustering algorithms like **K-Means** and **DBSCAN** to convert LiDAR points into optimal building clusters.

***YPredict - Real-time Analytics Pipeline*** | **Big Data Solutions, Self Project** [Nov'21-Dec'21]

- Built scalable real-time data pipeline using **Confluent Kafka** for streaming **50,000+** daily transactions from Python Flask website achieving **99.9% uptime**.
- Implemented **parallel consumer** processes achieving sub-**200ms** processing speeds for efficient **MySQL** data storage.
- Developed comprehensive **Power BI** dashboard for analyzing **10+ metrics**, and hosted **MySQL database** on **aiven.io** for seamless accessibility.
- Leveraged parallel consumer processes for near-real-time data processing with automated backups and **24/7 monitoring**.

## EDUCATIONAL QUALIFICATIONS

**Post Graduation:** M.Tech, IIT BOMBAY, CPI: **9.49** [2021-2023]
**Graduation:** B.Tech, IIT TIRUPATI, CPI: **8.62** [2017-2021]

## TECHNICAL SKILLS

- **Languages:** Python, JavaScript, TypeScript, C, C++, R, SQL, HTML, LaTeX
- **Technologies and Frameworks:** React.js, Node.js, FastAPI, RESTful APIs, Kafka, Hadoop, MongoDB, SQLite, PostgreSQL, GCP, OpenSearch, ElasticSearch, FAISS, HNSW, BM25, spaCy,Sentence Transformers
- **AI/ML Tools:** Google Cloud Vertex AI, OpenAI API, TensorFlow, PyTorch, scikit-learn, spaCy, medCAT, docTR, layoutLM, LangGraph, LangChain, LiteLLM, Langfuse, OpenAI API, Google Gemini
- **Analytics:** Machine Learning, Deep Learning, RAG Systems, Multi-Agent Architectures, A/B Testing, Data Modeling
- **DevOps:** Docker, Kubernetes, Jenkins, GitLab CI, Azure DevOps, CI/CD Pipelines