Karan Sai Goud Katam

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SKILLS

Programming Languages: Python, SQL, R, C++
Certifications: Generative AI with Large Language Models (AWS, DeepLearning.ai), Natural Language Processing Specialization (DeepLearning.ai), Deep Learning Specialization (DeepLearning.ai), AI Agents with Langgraph (DeepLearning.ai)
Cloud Services: Amazon Web Services (AWS): EC2, S3, Lambda
Tools: Tableau, Excel, Git, PySpark, Pandas, NumPy, Matplotlib, LangChain, Chroma, HuggingFace Transformers, TinyLlama, Ollama, AlexNet, Stable Diffusion
ML & AI Skills & Concepts: Deep Learning, CNNs, Neural Architecture Design, Natural Language Processing (NLP), Computer Vision, Image Processing, Large Language Models, RAG, Generative AI, Model Fine-tuning, Multi-agent Systems, Agent Orchestration, Supervised Learning, Model Optimization, Data Pipeline Development, MLOps, Distributed Systems, Parallel Processing
Development & Industry Experience: CI/CD Pipeline Implementation, Performance Optimization, System Architecture Design, Data-driven Solutions
Soft Skills: Project Leadership, Research & Publication Writing, Problem-solving, Analytical Thinking, Team Collaboration, Technical Documentation, Cross-functional Communication

EDUCATION

George Mason University *July 2023 – May 2025*
Master's in Data Analytics Engineering

Jawaharlal Nehru Technological University, India *July 2018 – July 2022*
Bachelor of Technology, Computer Science Engineering

EXPERIENCE

Data Scientist - Puerto Rico Science, Technology & Research Trust (Research) *Jan 2025 – Present*

- Led post-storm flood detection using satellite imagery and **ML models (U-Net, CNNs)**, improving accuracy and response time.
- Automated geospatial workflows using **Python, GDAL, QGIS, and ArcGIS** for scalable data processing.

Lab Instructor, George Mason University, IST Department *Aug 2024 – Present*
Introduction to Computing (IT-104 Undergraduate Course)

- Delivered hands-on coding labs in **Python, HTML, and CSS**, emphasizing problem-solving and student engagement.

Jr. Data Scientist - Exceed Management (Softpath System LLC Subsidiary) *Jun 2022 – Jun 2023*

- Contributed to the development of **OPTEVUS**, an AI/ML-powered hiring platform , including resume parsing, real-time NLP chatbot, and emotion detection for interviews.
- Developed and deployed ML models for prediction, automation, and semantic skill matching, improving accuracy and recruiter efficiency.
- Used **Python**, **scikit-learn**, **spaCy**, **NLTK**, **TensorFlow**, and **OpenCV** across the platform's full AI/ML pipeline.

PROJECTS

CapIntel – AI-Powered VC Deal Sourcing & Due Diligence Platform
Python, Streamlit, LangChain, OpenAI (Ollama), Matplotlib, Seaborn, Markdown, JSON, Git

- Built a multi-agent VC intelligence system that automates industry research, investment thesis generation, startup sourcing, and due diligence report synthesis.
- Developed a modular Streamlit frontend for dynamic report generation with customizable depth (Concise/Standard/Detailed), industry type, and investment stage.
- Engineered agents for:
    - **Industry Research**: Extracting market data, trends, VC activity, and regulations via web search and LLM-based summarization.

    - **Thesis Development**: Generating strategic investment theses using economic, technological, and market signals.
    - **Company Sourcing**: Identifying high-potential startups based on alignment with thesis and market trends.
    - **Report Synthesizer**: Composing structured markdown/PDF reports with charts for allocation and growth trends.
- Integrated data visualization and markdown-to-PDF export with time-stamped report history and version tracking.

GovSearch AI

Python, Azure OpenAI, LangChain, PostgreSQL, Streamlit

- Developed an AI-powered chatbot for querying U.S. government contract data using natural language, leveraging LangChain and Azure OpenAI.
- Enabled intelligent SQL query generation from user prompts using dynamic context retention with ConversationBufferMemory.
- Built modular backend components for NER-based entity recognition, question classification, and summarization of retrieved contract records.
- Integrated a PostgreSQL database for structured storage and fast query execution, and deployed a clean Streamlit UI for real-time exploration.

Universal Summa Script

Python, Flask, OpenAI Whisper API, HTML5, CSS3, Bootstrap 5, concurrent.futures

- Engineered a Flask-based multimedia transcription and summarization app supporting YouTube, Vimeo, and local uploads.
- Utilized OpenAI Whisper API to perform multilingual transcription, real-time summarization, and translation of audio/video content.
- Integrated yt-dlp, pydub, and concurrent.futures for seamless media download, audio extraction, and concurrent job execution.
- Built a responsive Bootstrap frontend with secure upload handling and robust error management for various media formats.

BARE – AI-powered (Business Analyst Reverse Engineering) Platform

Python, Streamlit, Ollama, CodeLLaMA, WizardCoder, AST Parsing, LLM Reasoning, Prompt Engineering

- Designed and built **BARE**, an AI-powered reverse engineering platform that automatically extracts business requirements, user stories, and BRD documents directly from legacy codebases.
- Integrated multi-model LLMs (CodeLLaMA, StarCoder, WizardCoder) with advanced code parsing (AST) to analyze function-level business intent and generate stakeholder-facing documentation.
- Reduced manual requirement gathering and system documentation effort by **80%**, enabling faster modernization, compliance audits, and technical debt analysis.
- Architected full-stack solution with potential for full repository scanning, multi-language support, compliance traceability, and process flow generation for enterprise modernization projects.