SHANMUKHA JWALITH KRISTAM

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WORK EXPERIENCE

AI Engineer (Contract) — Jul 2025 – Present
Schizophrenia & Psychosis Action Alliance — Alexandria, Virginia

- Engineered a distributed pipeline using **Playwright**, **Celery** and **Redis** to scrape and normalize mental health housing data across 50 U.S. states, creating a unified dataset for patient resource discovery.
- Built an agentic **RAG** chatbot using **LangChain** and **OpenAI** with **HITL validation** to connect patients with treatment facilities, utilizing **FAISS** vector indexing to accurately retrieve location-specific care details
- Optimized RAG retrieval using adaptive chunking and **MMR re-ranking**, improving precision by 40% for sensitive health queries

Data Science Intern — May 2024 – Aug 2024
Welspot — Miami, Florida

- Architected and deployed the **client's first** predictive financial risk engine on **AWS SageMaker**, executing a rigorous comparative study benchmarking **XGBoost** and PyTorch **RNN**s to balance latency with 91% predictive accuracy.
- **Led R&D initiative** using Causal Inference and statistical testing (ANOVA) to validate predictors, authoring a whitepaper that shaped credit strategy.
- Engineered a reproducible MLOps workflow using **Bayesian Optimization** and time-series features, leveraging **SHAP** to translate model predictions into actionable **Tableau** insights for executive strategy.

Software Engineer — Oct 2020 – Jun 2023
Tata Consultancy Services — Bengaluru, India

- **Architected** scalable banking solutions using **React-Redux** and **ASP.NET Core**, establishing secure **Azure DevOps CI/CD** pipelines to automate delivery and ensure regulatory compliance.
- Engineered high-frequency financial dashboards using SignalR (WebSockets) and **Azure Redis** distributed caching, slashing page load latency by **85%** (10s to 1.5s) to enable live market decision-making.
- **Led a data-driven performance strategy** by synthesizing A/B testing insights, Lighthouse metrics, and Azure App Insights telemetry, implementing code-splitting and lazy loading to boost **Core Web Vitals (57 to 92)** and drive UI optimizations.
- Collaborated with Product & QA teams to translate business requirements into technical specifications, implementing **unit tests (Jest/NUnit)** with **90%** coverage to ensure robust delivery.

Machine Learning Engineer Intern — Mar 2019 – Jun 2019
SmartBridge — Hyderabad, India

- Developed a real-time computer vision pipeline using **TensorFlow**, **OpenCV**, and **YOLO**, integrated with **Kafka** for live video ingestion, achieving 96% accuracy in **anomaly detection** for an IoT-enabled smart pet bowl.
- Deployed on **IBM Watson Studio** and integrated with Node-RED, enabling automated workflows for real-time inference.

PROJECTS

Personalized Mental Health AI Coach

- Fine-tuned **DeepSeek-7B** using **LoRA adapters** (Q, V layers) on mental health conversations to enhance empathy and contextual accuracy, integrating the model into a RAG pipeline with Gemini as an **LLM judge** for response reranking and quality evaluation.

Voice-to-SQL Analytics Engine

- Architected a real-time BI platform using **TypeScript**, **React**, **gRPC**, and **Gemini 2.5** Function Calling to accurately translate natural language speech into complex executable **SQL queries**, with 100% syntax accuracy on test datasets.

Autonomous Deep Research Agent

- Built an autonomous **LangGraph** and **ChromaDB** system that orchestrates multi-step research plans and **self-corrects hallucinations**, delivering verified insights to automate manual data analysis.

TECHNICAL SKILLS

- **Programming & Databases**: Python, R, C#, React, TypeScript, JavaScript, SQL, PostgreSQL, MongoDB, Redis
- **Data Science & Machine Learning**: A/B Testing, Statistical Analysis, Time Series Forecasting, Causal Inference, Supervised & Unsupervised Learning, Feature Engineering, Model Evaluation, Interpretability, Dimensionality Reduction, Tableau
- **Cloud & MLOps**: Azure DevOps, GCP, AWS (SageMaker, Bedrock), Docker, Airflow, Kafka, PySpark, Weights & Biases (W&B)
- **Generative AI**: RAG, PEFT Fine Tuning, DeepSpeed, Langchain, CLIP, Stable Diffusion, GANs, Hugging Face, FAISS
- **Distributed & Backend Systems**: ASP.NET Core, FastAPI, Flask, React, Redux, Celery, GraphQL, gRPC, SignalR, CI/CD

EDUCATION

Master of Science in Data Science, Stony Brook University, New York (GPA: 3.6/4) — Aug 2023 – May 2025
Bachelor of Technology in Computer Science, GITAM University, India (GPA: 3.7/4) — Jun 2016 – Apr 2020