VARUN KURRI

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EDUCATION

SUNY Stony Brook University   *August 2022 – May 2024*
Master of Science in Computer Engineering   Stony Brook, NY
Coursework: Practical Machine Learning (ML) and Artificial Intelligence (AI), Distributed Computation, Digital Image Processing

Vellore Institute of Technology   *July 2017 – June 2021*
Bachelor of Technology in Computer Science   Vellore, India
Coursework: Data Structures, Database Management Systems, Software Engineering, Parallel and Distributed Computing

EXPERIENCE

Elevance Health (Anthem Inc.)   *June 2023 – August 2023*
Intern Info Technology II - [JavaScript, Node.js, MongoDB, Tendermint]   New York, NY
- Engineered a robust BigchainDB network to facilitate **decentralized data storage** using Docker Compose for optimal service management and orchestration, ensuring seamless and efficient interaction between MongoDB, Tendermint, and BigchainDB nodes.
- Designed and implemented a Node.js script to distribute more than **300,000** records across **multiple MongoDB instances**, leveraging Tendermint's **Byzantine Fault Tolerance (BFT)** algorithm to uphold data integrity, consensus, and transparency across the network.
- Set up a Hyperledger Fabric Test Network to simulate a permissioned blockchain and researched Decentralized Oracle Networks (DON) and Chainlink to **integrate tamper-proof data** from off-chain sources into a private blockchain network.

IDFC FIRST Bank   *July 2021 – June 2022*
Software Engineer - [Python, Java, Docker, Kafka]   Bangalore, Karnataka, India
- Developed an **Operational Data Store (ODS) application using Micronaut** framework to seamlessly integrate data from multiple sources, leveraging Kafka Producer and Consumer to reduce processing and query response times by **60%**.
- Implemented real-time loan application processing by integrating **FinnOne APIs**, automated workflows and significantly increased the decision-making speed by **40%**, resulting in an improved customer experience through quicker loan approvals.
- Designed and implemented **functional logic in smart contracts** using the **Vault Core API** by Thought Machine in Python, including advanced hooks that automatically trigger specific functions based on pre-defined events for a "Buy Now, Pay Later" product.
- Performed extensive simulations using Postman for **end-to-end testing**, covering all edge cases to ensure the product's reliability.

PUBLICATIONS

Cellular Traffic Prediction on Blockchain-based Mobile Networks using LSTM Model in 4G LTE Network   *January 2021*
Peer-to-Peer Networking and Applications, Springer Journals (Published Research Paper Link)
- Developed a multi-layer Recurrent Neural Network (RNN) with Long Short-Term Memory (LSTM) in Python to predict traffic in blockchain-enabled 4G LTE networks, achieving a 17.7% improvement over the ARIMA baseline.

Roaming Fraud Prevention using Blockchain-based Secure Data Storage   *July 2021*
ICOIACT 2021 – an IEEE Conference (Paper Accepted)
- Engineered a blockchain-based solution for roaming fraud by developing a decentralized application (DApp) with React and Truffle, utilizing IPFS for secure data storage and web3.js for Ethereum network integration.

PROJECTS

Proactive Issue Resolver: [Python, FastAPI, React, Tailwind CSS, Neo4j, OpenAI GPT-4]
- Built a full-stack application leveraging FastAPI for the backend and React with Tailwind CSS for the frontend to identify and resolve technical issues proactively, achieving a **40% reduction in mean time to resolution (MTTR)** and enhancing system efficiency.
- Integrated a **Graph-based Retrieval Augmented Generation (RAG)** model powered by Neo4j for mapping relationships between issues and resolutions, combined with **OpenAI GPT-4** for generating personalized and actionable insights in real-time.

AI Chatbot Conversational Text2SQL: [Python, OpenAI, LangChain, Streamlit, SQLite]
- Designed and implemented a **conversational Text2SQL chatbot** leveraging LLMs (Generative AI) to automate SQL query generation, reducing analytics retrieval time by 50% and improving stakeholder efficiency in data access by 40%.
- Fine-tuned the **text-davinci-002** model for domain-specific use cases, optimizing the chatbot's accuracy in generating queries from natural language inputs. Utilized LangChain to develop robust AI agents and integrated Streamlit to create an intuitive user interface.

EComm App: [Next.js, TypeScript, React, Tailwind CSS]
- Developed a **comprehensive full-stack e-commerce application** utilizing Next.js, React, and TypeScript, integrating features like product listings, shopping carts, and user authentication to deliver a seamless shopping experience.
- Integrated **Stripe for payments**, Prisma with MongoDB for efficient database management, and enhanced the UI with Tailwind CSS.

SKILLS

Programming Languages/Tools:	Python, Java, JavaScript, TypeScript, HTML, CSS, Docker, Postman, Git, SQL, NoSQL
Technologies/Frameworks:	Node.js, React, Next.js, Express, Micronaut Framework, RESTful API, Flask, MongoDB, Kafka, Debezium, Tailwind CSS, Gradle, Mongoose, MySQL, SQLite, Neo4j, FastAPI
AI/ML Technologies	Large Language Models (LLMs), RAG, OpenAI, LangChain, LSTM, RNN, Tensorflow, Streamlit