Kirubaraj Manimathavan

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EXPERIENCE

Troutwood   January 2024 – December 2024
AI Software Engineer – Contract
- **Led** a 4-member team to build **Langchain LLM Agents** which reduced research time for Financial Advisors by **50%**.
- Designed and implemented an AI Agent leveraging multimodal LLMs, embedding models, and vector databases for **RAG**. Orchestrated deployment via **Terraform**, adopting a **microservices** architecture on **Kubernetes**.
- Built a real-time data pipeline with **DynamoDB** Streams and **Lambdas** to extract insights from **1000+ users** at a time.
- Developed **API** based Tools and **Parallel Tool Calling** for Langchain Bedrock increasing chat **performance** by **8X**.

Oracle   November 2022 – July 2023
Senior Software Engineer
- **Led** a cross-functional team of 3 in **technical design, development**, and **deployment** (CI/CD Pipeline) of multiple full-stack enterprise software projects for Oracle ERP, resulting in successful onboarding of **3** enterprise customers.
- Spearheaded architecture design and end-to-end development of **ELK Stack** with real-time data ingestion, search, and auto-complete features for general ledger accounts, boosting search result click rate by **75%** for end users.
- Transformed Monolith/JSF architecture of Flexfield component to independently deployable **ReactJS** component with backend **NodeJS microservices** deployed on Kubernetes, enabling portability and **scalability** across **12** teams.

Software Engineer   August 2020 – November 2022
- Unified multiple custom **PL/SQL** Packages and Data Models into seeded parametrized offerings avoiding code redundancy and increasing **maintainability**, resulting in decrease of inbound bugs by **27%** in the reporting product.
- Reconstructed the report visualization engine by parallelizing **SOA** service calls, redesigning ReactJS renderer and tuning the underlying **SQL queries** by optimizing their joins, indexes and query hints reducing rendering time by **70%**.
- Resolved **77** customer issues, enhancing **performance** and **availability** of business-critical reports, with **30%** Sev-1 escalations. Worked and communicated with customers during on-call rotation with average turnaround of **8 hours**.
- Optimized and added new **JUnit** automated regression tests decreasing failure rate by **18%** across **8** products.

Eat From Home (TOVO Technologies Private Limited) *[GitHub]*   August 2018 – August 2020
Co-Founder and CTO
- Designed and developed an **Android** Mobile app for on-demand e-commerce with **45,000+** installs and **3,000+** DAUs.
- Built and managed a **NodeJS REST API** server for integration of user, rider and chef apps using Shopify **GraphQL** APIs, Razorpay **webhooks**, Firebase database for efficient order management ensuring real-time order tracking.
- Built a streaming big data pipeline of concurrent order locations and rider locations. Optimized order allocation system by implementing order batching algorithm leveraging **Kafka** and **Samza** bringing down delivery cost by **35%**.
- Built and deployed a Multi-Input Multi-Output Machine Learning model for last-mile prediction. Used model with real-time order data to predict delivery time, reducing app load time by **40%** and eliminating Google Maps cost.
- **Led** and **mentored** 5 engineers/designers in development of rider/chef apps and ensured on-time delivery.

EDUCATION

Carnegie Mellon University   **Pittsburgh, PA**
Master of Software Engineering   December 2024
Coursework - Deep Learning, Cloud Computing, Distributed Systems, Data Structures, Algorithms, Software Architecture

National Institute of Technology, Tiruchirappalli (NIT Trichy)   **Tiruchirappalli, India**
Bachelor of Technology – Electronics and Communication Engineering   July 2020

SKILLS

Backend/Data – Java, NodeJS, Golang, C | MySQL, MongoDB, Redis, Elasticsearch, Spark, Kafka, Hadoop, JUnit, Jest
Web/Mobile Dev – Javascript, Typescript, ReactJS, Android | REST API, SOA, TCP/IP, gRPC, GraphQL | CSS3, HTML5
AI/Infra – Python | Pytorch, Numpy, LangChain, RAG, NLP | AWS, Azure, Terraform | Docker, Kubernetes, CI/CD, Linux, Git

PROJECTS

Concurrent Bitcoin Miner with Custom Live Sequence Protocol Implementation in Go   May 2024 – July 2024
- Implemented Live Sequence Protocol and distributed concurrent Bitcoin miner with optimized workload distribution.

Integrating Short-Term News Sentiment To Stock Prediction *[Code, Thesis, Demo]*   January 2024 – May 2024
- A short-term stock prediction model using **attention techniques** to integrate news sentiment to historical stock data.
- Implemented **3** variations of **Transformer** Architecture on baseline **CNN-LSTM** model, improving MSE loss by **94.8%**.

Determining Human Body Measurements Using Deep Learning *[Code, Thesis, Demo]*   December 2019 – May 2020
- A **full-stack** web application powered by **ResNet** based deep learning model to measure human body with 2 images.