JYOTHESH KARNAM

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SUMMARY

A recent **MSc Computer Science** graduate from the **University of Keele** with a **Distinction** and the Best Performance Award. I am actively seeking opportunities in Software Development Engineering roles**. I have the right to work in the UK.**

SKILLS

Programming Languages: HTML, CSS, JavaScript, SQL, Python

Frameworks: React.js, Next.js, Tailwind CSS, Flask, PyTorch, TensorFlow, Nvidia CUDA

AWS Skills: EC2, S3, CodeBuild, CodeArtifact, IAM, Lambda, API Gateway, CloudFront, DynamoDB, Bedrock

EDUCATION

MSc (Hons) Computer Science

Grade: Distinction | **University of Keele, United Kingdom** **2023 – 2024**

- **Course Modules:** System Design & Programming**,** Computer Networks**,** Mathematics for AI & Data Science**,** Advance Programming in Python**,** Data Analytics & Databases**,** Software Engineering**,** Collaborative Application Development**,** Web Technologies & Security**.**
- **Dissertation:** "Time-Series Neural Network Software Suite & App development for Dairy Herd Monitoring".
- **Awards:** Received the **Best Performance Award in MSc Computer Science** from the School of Mathematics and Computer Science at the University of Keele.

BSc Electronics and Communication Engineering

Grade: First Class | **City Engineering College, India** **2017 – 2022**

- **Course Modules:** Electromagnetic Waves, Power Electronics, Python, Programming in C & Data Structures, Computer Networks, Information Theory & Coding, VLSI, VHDL, Digital Signal Processing.

EXPERIENCE

Web Developer | Thrive & Shine | September 2024 – December 2024 | Internship | Keele, United Kingdom

- Developed the company website using React.js and Next.js delivering a visually appealing and mobile responsive platform aligned **with client needs, boosting potential product sales.**
- Built an **AI-powered quiz with a Reinforcement Learning agent** that selected the best next question using **NLP embeddings, KMeans clustering, and Deep Q-Networks.**

Associate Web Developer | Flione Innovations & Technologies | October 2022 – July 2023 | Full time | Bangalore, India

- **Worked in a startup environment,** closely collaborating with a senior developer to manage and successfully deliver client projects, ensuring client satisfaction and enhancing company value.

Recreational Assistant | Edu-Lettings | April 2024 – Present | Part time | Stoke-On-Trent, United Kingdom

- **Handling multiple venues and engaging with participants and clients** by organizing and facilitating recreational activities, managing facility bookings to ensure smooth operations and a positive experience for everyone involved.

PROJECTS

Retrieval-Augmented Generation (RAG) Based AI Chatbot with AWS Bedrock | Personal Project | March 2025

- Developed a RAG chatbot using **Amazon Bedrock**, **S3**, and **OpenSearch Serverless** for intelligent, document-based Question and Answers.
- Created a **Knowledge Base** by uploading documents to S3, configuring chunking and embeddings (Titan Text Embeddings v2), and syncing it with OpenSearch.
- Integrated **Llama 3.3 70B** model for real-time, contextual text generation and fine-tuned system behaviour using custom prompts and response generation logic.
- Enhanced chatbot accuracy by modifying **source chunk size** and prompt context to enrich responses with relevant skill-based insights.
- Overcame model provisioning challenges by understanding AWS's on-demand vs pre-provisioned inference settings.
- **AWS Architecture and Project Documentation:** https://github.com/jyotheshkar/jyotheshkar-RAG-Based-AI-Chatbot-with-AWS-Bedrock/tree/main

Built a Generative Pre-Trained Transformer (GPT) from Scratch | Personal Project | October 2024 – January 2025

- **Developed a GPT Transformer** in PyTorch with custom tokenization and embeddings enhanced by positional encodings.
- Implemented multi-head self-attention with causal masking for autoregressive text generation, ensuring sequence flow.
- Designed a scalable decoder architecture featuring n layers (4 layers for this project), each with **feed-forward networks**, residual connections, layer normalization, and dropout regularization.
- **Optimized training using backpropagation** with the AdamW optimizer and cross-entropy loss, fine-tuning hyperparameters to reach a good validation loss.
- Utilized **Nvidia CUDA for GPU-accelerated training**, significantly improving model throughput and reducing training time on large-scale text data.
- **GPT Architecture and Code**: https://github.com/jyotheshkar/Creating-a-Large-Language-Model-from-Scratch/blob/main/gpt%20architecture.png

AWS Three-Tier Web Application | Personal Project | March 2025

- Designed the **presentation tier** using Amazon S3 to host static website files and Amazon CloudFront for global content delivery, implementing Origin Access Control (OAC) to enhance security.
- Developed the **logic tier** by building RESTful APIs with AWS Lambda and API Gateway, enabling users to fetch data dynamically by triggering serverless backend logic.
- Constructed the **data tier** by setting up DynamoDB with userId as the partition key, storing flexible user data and retrieving it using AWS SDK within Lambda.
- Resolved **CORS** and access permission issues by updating Lambda function headers and customizing inline IAM policies for fine-grained control over DynamoDB access.
- **Validated the complete three-tier architecture** by testing user requests from the presentation tier, successfully retrieving backend data and rendering it in the frontend.
- **All Project Documentations:** https://github.com/jyotheshkar/AWS-Three-Tier-Web-Application-

Time Series Neural Network Software Suite & App Development for Dairy Herd Monitoring Project | University of Keele

- Engineered a **full-stack AI-powered application**, integrating **frontend, backend, and ML models** for real-time dairy herd monitoring as my Masters Project
- Developed a **scalable backend architecture** with **efficient data handling**, **model execution**, and **error management**.
- Built an **interactive GUI (Tkinter)** allowing users to **upload, process, visualize data**, and interact with AI models.
- Implemented **LSTM-based time-series models** for **health forecasting**, with features for **training, saving, and reloading models**.
- Designed **dynamic data visualization** and integrated **robust validation mechanisms** to ensure accurate predictions.
- Applied **Agile (SCRUM), modular software design, and structured testing** for **maintainability and scalability**.
- **Project Documentation:** https://github.com/jyotheshkar/Time-series-Neural-network-software-application/tree/main