AKILESH JAYAKUMAR

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Education

University of Wollongong (SIM Campus)   Oct 2022 – Sep 2025 (Expected)
Bachelor of Computer Science in Cyber Security

Singapore Institute of Management (SIM Campus)   Oct 2021 – Sep 2022
Diploma in Information Technology

Experience

Singapore Department of Statistics   Jan 2025 – Present
AI Engineer Intern
- Building Generative AI chatbot solutions by fine-tuning LLMs and preparing training datasets.
- Deploying fine-tuned LLMs on Government Commercial Cloud for secure and scalable integration.
- Automating data concierge workflows using Generative AI tools to enhance operational efficiency.

Home Team Science & Technology Agency   Apr 2024 – Sep 2024
AI Engineer Intern
- Engineered containerised Retrieval-Augmented Generation (RAG) pipelines using Docker, open-source LLMs from Hugging Face, and the RAGAS evaluation framework, optimising pipeline performance and deployment.
- Refactored system architecture and codebase to support custom prompts and few-shot examples, enabling more nuanced and context-aware outputs from LLMs tailored to specific applications.
- Designed and configured scalable microservices with Docker Compose, integrating core Generative AI components and reducing deployment time by 30%.

Central Provident Fund Board   Nov 2023 – Apr 2024
AI Engineer Intern
- Developed a Generative AI application for sentiment analysis of employee feedback, leveraging LangChain and GPT models to achieve 95% accuracy in classifying over 10,000 comments and reviews.
- Enhanced application performance by researching and fine-tuning prompt templates with GPT models, incorporating zero-shot and few-shot prompting techniques to optimise sentiment analysis accuracy and improve contextual relevance.
- Automated engagement report generation using LangChain, reducing delivery time by 50% and streamlining actionable insights derived from sentiment analysis results.

Projects

NES CatalystX Hackathon 2024 | *source code* | *live site*   Oct 2024
- Developed a multimodal GenAI tutor with Text-to-Speech (TTS), Speech-to-Text (STT) and Speech-to-Speech (STS) features alongside my team to improve dyslexic accessibility.
- Collaborated with a five-person team on UI design and dyslexia-focused research to deliver a user-centric solution.
- Leveraged Python, LlamaIndex, NVIDIA NIM Microservices, and Streamlit to build and deploy the solution.

LangGraph Agentic Chatbot | *source code* | *live site*   Oct 2024
- Developed an agentic chatbot capable of retrieving real-time information from the web, enabling users to interact with queries ranging from general knowledge to specific topics like news and media content.
- Utilised Python, Gradio, LangGraph, Tavily, and Hugging Face Spaces to build and deploy the chatbot.

Certifications

GitHub Foundations: GitHub (Jan 2025) — view credential
Neo4j Certified Professional: Neo4j (Sep 2024) — view credential

Skills

GenAI: Python, Hugging Face, LangChain (LangGraph, LangSmith), Gradio, ChromaDB, Qdrant
Data Science: SQL, Pandas, Apache Spark, Hadoop, MongoDB, Matplotlib, Neo4j, Scala, HQL
Software Engineering: Git, Docker, GitHub/GitLab, JavaScript/TypeScript, HTML/CSS