Vignesh Kumar Karthikeyan

720-655-0376 | vika2375@colorado.edu | linkedin.com/in/k-vignesh-kumar | github.com/ivky03 | vignesh-kumar-portfolio.vercel.app
Boulder, CO, USA

Education

University of Colorado Boulder — **Boulder, USA**
Master's in Computer Science with Specialization in **Artificial Intelligence (CGPA : 3.96/4.00)** — **Aug 2023 – May 2025**

College of Engineering Guindy, Anna University — **Chennai, India**
B.E in Computer Science and Engineering - **First Class with Distinction (CGPA : 3.45/4.00)** — **Aug 2019 – Apr 2023**

Skills

Technical Expertise: Machine Learning & AI, LLM, NLP, RAG, Data Science & Analysis, Software Engineering & Deployment
Programming Languages: Python, Java, Go, R, C/C++, Shell Script, JavaScript, TypeScript, SQL
AI & Machine Learning: Azure AI Services, IBM WatsonX, AWS Bedrock, SageMaker, Google Cloud AI Platform, Vertex AI
Cloud Computing, Storage & Big Data: Azure, AWS, Google Cloud Platform, IBM Cloud, Hadoop, Apache Spark
Databases, ETL & Data Engineering: MySQL, Firebase, Neo4j, IBM DB2, Azure Synapse, PostgreSQL, Vector Databases(FAISS, Pinecone), Tableau, Power BI
Virtualization & Containerization: Docker, Kubernetes, Terraform, Hyper-V
Developer Tools: Prompt Engineering, Jupyter, VS Code, PyCharm, IntelliJ, GitHub, Git, Jira, Agile (Scrum, Kanban)
Certifications: Microsoft Azure AI Engineer Associate, IBM Enterprise Design Thinking-AI, ToastMasters Presentation Mastery

Experience

AI/ML Engineer - Professional Master's Capstone Project — **Sep 2024 – Present**
Alliant National Title Insurance Co. - University of Colorado Boulder — **Boulder, USA**

- **Implementing an Azure based AI-driven Named Entity Recognition (NER) system**, automating **data extraction from legal documents** within a structured **SDLC framework**. **Collaborating in a cross-functional team**, contributing to **weekly sprint meetings**, resolving technical blockers, and designing a **responsive query interface** to improve **document retrieval efficiency**

MSCS Course Facilitator — **Apr 2024 – Present**
University of Colorado Boulder - Coursera — **Boulder, USA**

- Served as the **primary point of contact for 120 students**, conducting regular online office hours to resolve course-related questions and manage course support by ensuring timely responses via **Salesforce**. Facilitating courses covering **Data Mining, Machine Learning, and Deep Learning**, providing guidance on key concepts and technical problem-solving

Data Automation and Entry Technician — **Oct 2023 – Apr 2024**
University of Colorado Boulder - Facilities Management — **Boulder, USA**

- **Built a Python-based automation** solution to extract data from HVAC related documents, reducing manual data entry. **Integrated Selenium for web-based automation**, reducing processing time by **95%** and saving approx. **$1,000 weekly**. Maintaining timely data management of records on Excel and Sheets

Undergraduate Technical Intern — **Jan 2023 – Jun 2023**
Intel Corporation — **Bangalore, India**

- **Developed a Python-based automation system** to extract **JSON data from 70,000 devices via REST APIs**, reducing **processing time by 90%** and enhancing **pipeline efficiency, stability, and reliability**. **Currently in use with Intel Employee devices in the United States, Israel, Malaysia, and India. Collaborated in an Agile Scrum team**, participating in **sprint planning, daily stand-ups, and retrospectives** while developing **automation and data extraction pipelines**, ensuring smooth integration and continuous improvements

Projects

Smart Recipe Recommender: Go, Python, Neo4j, GANs, Docker, AWS

- Developed a **Smart Recipe Recommender** using **Neo4j** for building a **Knowledge Graph** of recipes and ingredients, incorporating **GAN models** for recipe variations. Implemented a **Go-based API Gateway (Gin)** to manage microservices, including recipe search and LLM-powered responses with **LangChain**. Deployed on **AWS EC2** using **Docker**, with efficient search via **vector databases (FAISS)** and knowledge-driven recommendations.

AI-Powered Financial Research Chatbot: Python, RAG, FastAPI, Next.js, Google Cloud

- Developed and deployed an AI-driven financial research chatbot using **FastAPI (Python)** and **Google Gemini API** with **Retrieval-Augmented Generation (RAG)** to provide intelligent answers from financial reports and market data. Built a **Next.js (TypeScript)** frontend hosted on **Vercel**, and deployed the backend on **Google Cloud Run** with **Docker & Artifact Registry**. Integrated **PostgreSQL (Cloud SQL)** to store chat history, optimized retrieval using **FAISS/Pinecone**, and implemented **Google Cloud Build CI/CD** for automated deployment

Wind Power Prediction using Ensemble Learning: Python, Deep Learning

- **Developed an Ensemble Model** (Transformer, LSTM, GBDT) for **time-series wind power forecasting**, improving **accuracy by 60%** over traditional models and reducing **MAE by 58%** and **RMSE by 56%**, significantly enhancing **prediction reliability**

Leadership & Extracurricular activities

- **Director of Cultural Events** at **American Association of Engineers of Indian Origin (AAEIO) - CU Boulder Chapter**, hosting cultural events like Diwali 2024, New Year Festival 2024 for **1000** students at the university
- Awarded **2nd place** at **2017 International Teenage Design and Art Award** held in Busan, South Korea