Vignesh Kumar Karthikeyan

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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, NLP, RAG, Data Science & Analysis, Software Engineering & Deployment
Programming Languages: Python, Java, 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, 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, ToastMasters Presentation Mastery 1

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**

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

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

Customer Churn Prediction & Revenue Estimation: Python, Machine Learning, IBM Cloud
- **Built an ML pipeline** to **predict customer churn (96.1% accuracy) and estimate revenue**, using **Logistic Regression, Random Forest, XGBoost (classification)** and **Linear Regression, Random Forest Regressor, XGBoost Regressor (regression)**. Optimized performance via **feature engineering, hyperparameter tuning (GridSearchCV, RandomizedSearchCV)**, and deployed a **Flask API on IBM Cloud**, integrating **IBM WatsonX for training** and **IBM COS for model storage**, enabling real-time predictions

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