KIRAN RAJKUMAR KANNAN

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EDUCATION

Northeastern University, Boston, MA   May 2025
Candidate for Master of Science in Engineering Management
Selected Coursework: Economic Decision Making, Product Development, Project Management

Sri Sivasubramaniya Nadar College of Engineering, Chennai, India   May 2023
Bachelor of Engineering in Computer Science and Engineering
Selected Coursework: C Programming, Data Science, Machine Learning, Programming in Python, OOPS and Data Structures

TECHNICAL KNOWLEDGE

Languages:	Python, R, Java, SQL, C++, MATLAB.
Skills:	Data Analysis & Visualization, Business Intelligence, Stakeholder Communication, Requirements Gathering, Machine Learning, Dashboard Development, Data Cleaning & Validation, Database Management, Statistical Analysis, A/B Testing, Data Mining, Financial & Operational Analysis, Root Cause Analysis, Process Improvement, Agile & Scrum Methodologies, KPI Tracking, Risk Assessment, Predictive Modeling, Cross-Functional Collaboration, Documentation & Report Automation, API integration.
Libraries and Tools:	Power BI, Tableau, Looker, Minitab, Google Data Studio, Microsoft Project, Trello, JIRA, SQL Server, Snowflake, BigQuery, Microsoft applications (Advanced Excel, VBA, PowerPoint, Word, Visio, Outlook, Access, SharePoint, Teams), Scikit-learn, Pandas, NumPy, Seaborn, Matplotlib, Adobe Analytics, Flask, FastAPI, TensorFlow, Keras, XGboost.

WORK EXPERIENCE

The Judge Group, Philadelphia, PA

Data Science Coop   Aug 2024- Dec 2024
- Deployed **SIMCA Online model**, streamlining and enhancing predictive monitoring for manufacturing processes.
- Developed and deployed an **end-to-end bioreactor simulation system** for Pfizer, hosted on an **AWS EC2 instance**, enabling scalable and secure cloud execution.
- Engineered a **dynamic simulation model** in Python to replicate bioreactor parameters and operational thresholds.
- Integrated **InfluxDB** for real-time time-series data storage, automated logging of sensor data, pump activity and control decisions.
- Designed and implemented an **anomaly detection pipeline** based on glucose thresholds, triggering alerts and dynamic control logic for pump flow adjustments and ran agile sprints with **JIRA** for backlog management and iterative task delivery.
- Visualized bioprocess KPIs, anomaly trends, and operational outputs using **Grafana** and **Matplotlib**, enabling real-time monitoring and decision support for predictive maintenance.

Caterpillar, Chennai, India

Research Intern   June 2023- Aug 2023
- Designed and implemented a **Tableau** portal to streamline attendance registration for the team.
- Utilized a combination of **Kalman Filters** for sensor noise reduction and **Long Short-Term Memory (LSTM)** networks for fuel consumption prediction based on real-time engine data.

PROJECTS

VideoMind – AI-Powered Video Analysis Engine, Northeastern University   Jan 2025- June 2025
- Built an asynchronous **FastAPI** backend that ingests YouTube links and delivers end-to-end insights transcripts, multilingual summaries, sentiment graphs, and keyword clouds in < 30 s per video.
- Engineered a **multi-provider LLM layer** (GPT-3.5/4, Claude 3 Opus, Gemini 1.5 Flash) with smart fallback routing and caching, boosting long-form summary accuracy by 26 % while cutting token costs 40 %.
- Added **multilingual translation support (12+ languages)** by auto-detecting source language and regenerating all outputs in the user's preferred language and developed a **JavaScript-based UI** with modular components for display.
- Delivered a real-time **chat interface** that lets users ask context-aware questions about the video; routed queries to the most suitable LLM and implemented a four-stage **content-extraction pipeline** (Whisper, alternate captions, metadata synthesis, frame sampling) achieving 95 % transcript coverage across 200+ public videos.

Housing Solutions for Graduate Students, Northeastern University   Dec 2023- Mar 2024
- Led a project to develop affordable, student-focused housing for graduate students, integrating strategic location planning, risk assessment, and financial analysis using **Microsoft Project, Trello, Excel, and Word.**
- Analyzed cost structures and rental pricing through **break-even and ROI models** in **Excel** to support data-driven housing strategy decisions.