Karthikeyan Lakshmanan

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Portfolio

Profile

Computer Science graduate currently pursuing an M.Sc. in Aerospace Informatics at Julius-Maximilians-Universitat Wuerzburg. Experienced in data analysis, reporting automation, Python-based workflow development, and Power BI dashboard maintenance. At Sutherland, automated recurring reporting and log-processing tasks to reduce manual effort and improve data consistency. Interested in applying data analytics, process automation, and programming skills to data-driven technical and business operations.

Education

Julius-Maximilians-Universitat Wurzburg *Oct 2026 – Present*
M.Sc. Aerospace Informatics Wurzburg, Germany

VIT-AP University *Sep 2022 – May 2026*
B.Tech. Computer Science and Engineering (Data Analytics) GPA: 8.32/10.0

Professional Experience

Research and Development Intern Aug 2025 – Oct 2025
Intrain Tech

- Developed an **AI-powered interview preparation platform** using Python, Flask, Groq LLM, and Model Context Protocol (MCP) to generate personalized interview questions and preparation plans based on resume content and target job roles.
- Implemented **resume parsing and semantic retrieval** using PDF text extraction and ChromaDB vector storage to retrieve relevant candidate experience for personalized recommendations.
- Integrated **real-time web search with parallel processing** to gather role-specific technical, behavioral, and coding interview resources.
- Built **streaming responses and live progress tracking**, delivering structured interview preparation plans, practice exercises, and company insights.
- Designed a **modular architecture** integrating Flask, MCP client/server components, vector database management, and LLM-powered content generation.

Technologies: Python, Flask, Groq API, Llama 3, MCP, ChromaDB, Vector Search, REST APIs, HTML, CSS, JavaScript

Data Analyst Intern *Jun 2025 – Jul 2025*
Sutherland Global Services Chennai, India

- **Automated daily reporting workflows** using Python, Pandas, PyWin32, and XLWings, reducing manual data preparation from 4–5 hours to 1–2 hours per day.
- Developed a **Flask-based automation pipeline** for document uploads and downloads, standardizing data exchange through JSON and CSV formats.
- Built an automated **log-processing and alerting workflow** to parse Outlook email attachments, convert logs into CSV files, detect anomalies, and trigger email notifications.
- Maintained **9 Power BI dashboards** across client accounts, using SQL, SQL Server Management Studio (SSMS), DAX, and data transformations.
- Performed data validation and reconciliation to identify discrepancies in reporting inputs and outputs and support accurate, timely client reporting.
- Documented automated procedures and supported knowledge transfer to make recurring workflows easier to maintain.

Technologies: Python, Pandas, PyWin32, XLWings, Flask, SQL, SQL Server Management Studio (SSMS), Power BI, DAX, Microsoft Excel, Outlook, SharePoint, OpenPyXL

Research and Development Intern *Jun 2024 – Jul 2024*
Indira Gandhi Centre for Atomic Research (IGCAR)

- Supported data cleaning and analysis for a binary anomaly-detection and classification task.
- Used Python-based data-processing routines to prepare datasets and benchmark classification algorithms.
- Compared model outputs to support evaluation of classification performance.

Selected Projects

AI-Powered Credit Appraisal Memorandum (CAM) Generator GitHub

- Built a document-processing system to extract and consolidate financial information from ITR, GST, bank statements, and MCA records for structured credit appraisal.
- Designed a 10-section reporting workflow with automated 5 Cs credit assessment and early-warning monitoring across 18+ risk parameters.
- *Technologies: Python, Pandas, PDFPlumber, Groq API, ReportLab*

F1 Australian Grand Prix 2026 – Race Strategy Analytics GitHub

- Built a race analytics dashboard to compare Ferrari and Mercedes strategy using lap times, tyre degradation, and ERS-related proxy data.
- Analysed middle-stint tyre degradation and investigated the safety-car pit-window decision using telemetry data and interactive visualisations.
- *Technologies: Python, Pandas, FastF1, scikit-learn, Streamlit, Plotly, SciPy*

PDF Extraction and Table Parsing Tool GitHub

- Developed a Python application to extract text and tables from uploaded PDFs and organise the extracted information into downloadable JSON output.
- Built a Streamlit interface for document uploads, content extraction, and structured data export.
- *Technologies: Python, Streamlit, PDF processing, table extraction, JSON*

Publications

Evaluating Data Augmentation Strategies for Fine-Tuned Large Language Models
15th International Conference on Recent Challenges in Engineering and Technology (ICRCET-2026), Bangalore, India, April 2026

- Evaluated data augmentation strategies for fine-tuned language models using classification, calibration, and ranking metrics.
- Compared approaches using Accuracy, Precision, Recall, F1, ROC-AUC, Brier Score, ECE, MRR, and nDCG@5.

Automating Nutritional Claim Verification: The Role of OCR and Machine Learning in Enhancing Food Label Transparency
IEEE publication view

- Developed an OCR and machine-learning approach to extract food-label information and classify nutritional claims.
- Evaluated Support Vector Machine and Decision Tree classifiers for nutritional claim verification.
- Read publication on IEEE Xplore

Technical Skills

Programming and Data: Python, SQL, Pandas, data cleaning, data validation, data analysis, CSV/JSON processing
Automation and Development: PyWin32, XLWings, Flask, REST APIs, workflow automation, log processing, email alerting
Business Intelligence: Power BI, DAX, dashboard maintenance, data transformations, SQL Server Management Studio (SSMS)
Machine Learning: Classification, anomaly detection, model evaluation, data augmentation, OCR
Tools: Microsoft Excel, Outlook, Git

Awards and Achievements

- **1st Place** – Byte The Mole Hackathon, Sep 2025.
- **2nd Place** – AIGNITE 2.0, Jan 2026.
- **3rd Place** – Datathon, VIT-AP, Mar 2025.
- **Consolation Award** – ABHISARGA, Mar 2026.

Languages

English (Proficient) German (A1 – Beginner) Tamil (Native)