JELIN RAPHAEL AKKARA

Summary: Master's student in Physics of Data with experience in Computer Vision, NLP, and Embodied AI, specifically in Vision-Language Models. Interested in dynamic, large-scale projects with real-world impact.

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Portfolio: https://jelinr.github.io/
LinkedIn: linkedin.com/in/jelin-raphael-akkara
GitHub: https://github.com/JelinR

CERTIFICATIONS

Google Data Analytics Professional Certificate (2022)
Analyzing data with SQL, R and Tableau

Language Proficiency in English (2022)
IELTS Band 8, CEFR Level C1

SKILLS

Programming Languages
Python, R, SQL

Programming Frameworks
Dask, PySpark, Docker, LangChain, HuggingFace

Programming Libraries
TensorFlow, Keras, PyTorch, Scikit-Learn, NLTK, spaCy, OpenCV, YOLO, Detectron2

Languages
English (native), Malayalam (native), Hindi (intermediate), Italian (beginner)

INITIATIVES

Venice International Workshop, 'Physics of Data', Co-Organizer
Held on 23-24 May, 2024

TEDxCalicut Co-Organizer (2019)
Manged guest logistics and communication.

RESEARCH EXPERIENCE

Research Intern (Ongoing): Visual Intelligence and Machine Perception (VIMP), University of Padova
Designing a modular framework for efficient Visual SLAM mapping (2D Semantic Maps, Vision-Language Frontier Mapping) and developing an novel method using multi-modal spaces to enhance navigation efficiency.

PROJECTS

Lightweight CNN for Speech Keyword Spotting
Designed a novel lightweight CNN (32k parameters) achieving 89% accuracy, and 37ms inference, rivaling SoTA models like TDNN (250k parameters, 94% accuracy).

YOLOv8n Object Detection using Blob Enhancers
Enhanced YOLOv8n for small human detection (far away or occluded persons) by 1.1%, with a minor preprocessing speed increase of 2 ms (7 ms to 9 ms).

Anomaly Detection in Big Data using Dask
Using Dask on a 3-node virtual cluster, developed an efficient map-reduce algorithm for anomaly detection in a 5GB industrial dataset and identified correlated variables.

Learning Immanuel Kant using LLM and RAG
Tested RAG with Llama-2, FAISS, and HuggingFace for semantic understanding of philosophical texts by optimizing prompt engineering.

Audio Generation using Variational Autoencoders
Collaborated with 2 peers to generate speech keyword samples with VAE, while testing architectures, and ensuring a smooth latent space.

EDUCATION

Masters in Physics of Data — GPA (Tentative) : 28.3 / 30 — 2022 - 2025
University of Padua, Italy

Relevant Coursework: Natural Language Processing, Vision and Cognitive Systems (Computer Vision), Human Data Analytics, Machine Learning, Reinforcement Learning

B.Tech in Engineering Physics — GPA : 8.43 / 10 — 2018 - 2022
National Institute of Technology, Calicut, India
First Class with Distinction