

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/>

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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

Computer Vision Research Intern (Ongoing):

Fondazione Bruno Kessler (FBK) / 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 90% 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