

# JELIN RAPHAEL AKKARA

## MASTERS IN PHYSICS OF DATA

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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

#### Research Intern (Ongoing): Visual Intelligence and Machine Perception (VIMP), University of Padova

Designing a modular framework for efficient Visual SLAM mapping (2D Semantic Maps, Topological Maps) and developing an novel mapping method to enhance navigation efficiency.

### PROJECTS

#### Lightweight CNN for Speech Keyword Spotting

Designed a 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).

#### Efficient Fake News Recognition with Naive Bayes

Developed a fake news classifier with Multinomial Naive Bayes, leveraging SQL for efficient term-context matrix handling, training 20,800 rows in under 30 seconds.

#### Learning Immanuel Kant using LLM and RAG

Tested RAG with Llama-2, FAISS, and HuggingFace on Kant's works, optimizing prompts and parameters.

#### 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 University of Padua, Italy

GPA (Tentative) : 28.3 / 30      2022 - 2025

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

#### B.Tech in Engineering Physics National Institute of Technology, Calicut, India

GPA : 8.43 / 10      2018 - 2022

First Class with Distinction