RITHVIKA TIRUVEEDHULA

Ph: 9538232897   **Email:** rithvika.tiruvee@gmail.com   **Linkedin:** linkedin.com/in/rithvikat   **GitHub:** rithvika7495   **MyWebsite**: shorturl.at/wG4NN

SUMMARY

Motivated and Enthusiastic graduate with hands-on experience in AI/ML, Data Science, and Software Engineering through Internship at TCS, Summer Internship, Research Capstone Projects & Academic projects. Seeking a **Jr AI ML Enggr / Jr Data Science Engr/ Jr Data Analyst / Jr Software Enggr / Jr Business Analyst** where I can apply my technical skills and contribute effectively to the organization.

EDUCATION

- **B.Tech**   **Computer Science & Engineering**   **Vellore Institute of Technology (VIT), Chennai, India**   2021 - '25   7.7/10
- **Class 12**   **MPC, PU Board**   **ALLEN/GRV PU College, Bangalore, India**   2019 - '21   93.0 %
- **Class 10**   **CBSE Board**   **Sri Chaitanya Techno School, Bangalore, India**   2018 - '19   88.2 %

SKILLS

Languages: Python, SQL, R, Java | HTML/CSS/JS

Frameworks: Pandas, Numpy, Scikit-Learn, Matplotlib, NER, OpenCV, Gen AI, CNNs, Transformers, LLMs, LangChain, TensorFLow, Keras, PyTorch, PySpark

Tools: MySQL, Excel, PowerBI, Postman

Platforms: Kaggle, Visual Studio Code, PyCharm, Jupyter Notebook, Databricks

WORK EXPERIENCE

AI/ML Intern | Tata Consultancy Services (TCS), Bangalore | *6 months Industry Internship*   **Dec 2024 - Jun 2025**

- **Project & Thesis Title :** *"Fine Grain Image Similarity (FGIS) Techniques for the Application of Retail Apparel Similarity Matching Requirement in the TCS Optumera Product Suite"*
- **Built** a **Hybrid Deep Learning Model** (Using: **ResNet50 + Attention Mechanism + Attention Erasure**) that **improved Image Similarity Matching Precision** by **20%** over the existed **TCS Optumera** models.
- **Achieved 90% retrieval accuracy**, with **98% similarity** across top-5 image matches, enabling near-duplicate apparel detection in a dataset of **32,190 images**.
- **Applied offline augmentation techniques** to increase **dataset size** by **99%** (from **16,170** to **32,190**), and **designed custom L2-Normalized embedding heads** for scalable deployment.
- **Delivered** a **production-ready** deployable **AI solution** similarity-matching **solution** to the **TCS Optumera** team, **boosting catalogue uniqueness** and **reducing manual** review **workload** by an estimated **30-40%**
- **Tools & Technologies:** Python, TensorFlow, Keras, OpenCV, Grad-CAM, CNNs, Ensemble Learning, Transfer Learning

AI/ML Summer Intern | IOTA Analytics Pvt Ltd, Chandigarh | *2 months Summer Internship*   **Nov 2023 - Jan 2024**

- **Project Title :** *"Personal Identifiable Information (PII) Recognizer & Named Entity Recognition (NER) in Natural Language Processing (NLP)"*
- Built a **PII recognition engine** using **Named Entity Recognition (NER)** and custom **Regex patterns**, achieving **98% precision** in redacting sensitive fields (e.g., names, emails, IDs) across **10K+ enterprise documents**.
- Developed a **privacy-preserving NLP pipeline** to sanitize unstructured text, reducing manual compliance efforts by **~60%**.
- Integrated a **Retrieval-Augmented Generation (RAG)** system using **Hugging Face LLMs**, enabling accurate domain-specific question answering with **<2s average response time**.
- Engineered modules for **semantic embedding**, **dynamic chunking**, and **prompt templating**, **improving LLM output** relevance by **~35%** in evaluation benchmarks.
- Deployed scalable **RESTful** APIs using **Flask**, with endpoint testing and validation in **Postman**, ensuring **100% functional coverage** before integration.
- **Tools & Technologies:** Python, Natural Language Toolkit (NLTK), Transformers, Hugging Face LLMs

Project Intern | Chakralayaa Analytics Pvt Ltd, VIT Chennai Startup | *2 months Internship*   **Jun 2023 - Aug 2023**

- **Project Title :** *Supply Market Intelligence System (SMIS)* **:** Built analytics modules for the **Supply Market Intelligence System (SMIS)** to support real-time business intelligence for buyers and executives.
- Analyzed purchasing **KPIs** and buyer trends using **Python**-based **ML** techniques to improve decision-making insights.

RESEARCH EXPERIENCE

Research Student | *Capstone Project-2* | *4 months*   **Dec 2024 - Apr 2025**

- **Project Title :** *"ChestVision-Lung Disease Classification using Ensemble Transfer Learning (Ensemble CNNs) & Grad-CAM for Visualization"*

- **Developed a deep learning ensemble** of **5 CNN** models **(**InceptionResNetV2, MobileNet, DenseNet121, EfficientNetB2, InceptionV3**)** in **TensorFlow/Keras**, achieving **89.7% multi-label accuracy** and **79.1% AUC-ROC** on the **NIH CXR dataset**.
- Applied preprocessing and augmentation (Resizing, RGB Conversion, Rotation, Flip, Contrast) across **1,12,120 X-rays**, improving minority-class representation and boosting recall by **14%**
- Integrated **Grad-CAM** with **OpenCV** to generate interpretability heatmaps, enhancing model transparency and supporting radiologist validation across **14** lung diseases, including Pneumonia and Fibrosis etc.,
- *This work has been presented for Publication at: IEEE International Conference on Intelligent Signal Processing & Effective Communication Technologies, INSPECT-2025.*

Research Student | *Capstone Project-1* | *4 months*   **Aug 2024 - Dec 2024**

- **Project Title :** *"Ship Detection using SAR (Synthetic Aperture Radar) Images for Maritime Vigilance"*
- Applied SAR-specific preprocessing using OpenCV (Median, Sobel, pseudo-RGB), improving image clarity and reducing speckle noise by **31.5%.**
- **Built** a **ResNet-FPN detection model** with **Swish+TanH** activations and PSO-optimized features, improving small/occluded vessel detection by **28%** and overall accuracy by **22.3%** over Faster **R-CNN**.
- Delivered superior results on **SSDD**, surpassing **YOLOv4** and **SSD** with **+9.2%** Precision, **+11.4%** Recall, and **+13.7%** F1-Score, proving **strong robustness** for **real-world SAR** maritime **surveillance**.
- *This work has been Published at: International Conference on Data Science, Agents and Artificial Intelligence (ICDSAAI) 2025*

ACADEMIC PROJECTS EXPERIENCE

Project-1 Title : "Arrhythmia Detection Using ECG Signals"

- Developed a **1D-CNN** for **classifying 5 arrhythmia types**, achieving **95.2% accuracy**, **93.8% F1-score**, and **0.96 ROC-AUC** on **109K ECG signals**. The model utilized **Z-score normalization** and **R-peak segmentation**, with validation performed using per-class metrics for both rare and common conditions.

Project-2 Title : "RAG + AES: Secure AI Chatbot for Confidential Documents"

- Developed a secure **RAG pipeline** utilizing **quantized Hugging Face models, llama-index**, and **AES (Fernet) encryption**. This enabled **document-aware Q&A** with **87% top-1 accuracy**. Semantic retrieval was enhanced by approximately **32%** through **SBERT**, **chunking**, and **prompt tuning**, with the solution **deployed via Flask API** achieving **less than 2-second latency**.

Project-3 Title : "Building a Chatbot using PyTorch and Natural Language Processing (NLP)"

- This project builds a **PyTorch-based chatbot** that uses **NLP** for **interactive**, **personalized** user engagement. It's applicable in various settings, including **customer service**, **online support**, or **personal assistance**.

RESEARCH PAPER PUBLICATIONS / CONFERENCE PRESENTATIONS

- **Rithvika T**, Monish P, *"Ship Detection using SAR Images for Maritime Vigilance"*, **IEEE International Conference on Data Science, Agents & Artificial Intelligence (ICDSAAI)**, Chennai, India, 2025. *(Prof. Poonkodi M. contributed as a co-author)* DOI: 10.1109/ICDSAAI65575.2025.11011861.
- **Rithvika T**, Monish P, Poonkodi M, *"Lung Disease Classification using Ensemble Transfer Learning and Grad-CAM for Visualization"*, presented at **IEEE International Conference on Intelligent Signal Processing and Effective Communication Technologies, INSPECT-2025**.

CERTIFICATIONS

- Introduction to Big Data | University of California at San Diego through Coursera
- Python for Data Science and Machine Learning Bootcamp | Udemy
- The Data Science Course 2023: Complete Data Science Bootcamp | Udemy
- SQL – MySQL for Data Analytics and Business Intelligence | Udemy

SCHOLASTIC THINGS

- Selected for Smart India Hackathon (SIH)'23 for VITC :   Team Lead & Finished 11th among 35 final teams out of 276 total teams from VITC Campus.
- Academic Topper during 9th Std   • Vice- Captain, Viking House, in 8th std

NON-ACADEMIC AFFILIATIONS

- Treasurer, Board Member at IEEE Robotics & Automation Society, VIT Chennai
- Social Media Team Member, IEEE Women in Engg (WiE),VIT Chennai
- Management Team Member, IEEE Photonics Society Student Chapter, VIT Chennai
- Startup & Ideas Team Member, at Entrepreneur Cell (E-Cell),VIT Chennai
- Social Media Coordinator, PAN IIT Alumni Leadership Series(PALS),VIT Chennai

LANGUAGES KNOWN

- English   • Hindi   • Telugu (Mother Tongue)   • German (A-Level)

Sd/- (Rithvika Tiruveedhula)