Hemasree G R

+91 8825648906 | saihemagr49@gmail.com |

https://www.linkedin.com/in/hemasree-g-r-7490b5249/

SUMMARY

Enthusiastic Data Scientist with a strong foundation in Machine Learning, Optimization, and Natural Language Processing. Hands-on experience applying Operations Research techniques to real-world problems like object placement and resource optimization. Eager to solve forecasting, logistics, and business intelligence challenges by combining OR, ML, and deep learning methods.

EDUCATION

Integrated MSc - Data Science 2020 - 2025

Amrita Vishwa Vidyapeetham, Coimbatore | CGPA: 7.5

Higher Secondary Education (State Board) 2019 - 2020

Vairams Matriculation Higher Secondary School, Pudukkottai | Percentage: 83%

Secondary Education (State Board) 2018 - 2019

Vairams Matriculation Higher Secondary School, Pudukkottai | Percentage: 92%

EXPERIENCE

Data Science Intern – Onsite **Aug 2024 - Present**

IIT Madras, Chennai, Tamil Nadu

- Solved an object placement optimization problem using Operations Research principles and heuristics.
- Developed image processing workflows and integrated them with a front-end interface.
- Built a domain-specific chatbot using NLP and Langchain, integrated to the fastapi based website

Python Developer Intern - Remote **Sep 2023 - Feb 2024**

Rivan Solutions, Secunderabad, Telangana

Learned web scraping with Beautiful Soup and Requests in Python, extracting and storing data in both SQL and NoSQL databases.

SKILLS

Programming languages: Python

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Libraries/Frameworks: Numpy, Pandas, TensorFlow, Keras, Scikit-learn, Matplotlib, Pulp, OpenCV, Langchain

Concepts: Machine Learning, Deep Learning, NLP, Time Series Forecasting, Operations Research, Optimization

Soft Skills: Communication, Problem-solving

PROJECTS

Forest Fire Prediction using Deep Learning and Machine Learning (Image classification)

Tools used: Python-Streamlit, Matplotlib, Scikit-learn, OpenCV, Tensorflow, Keras. Used machine learning, transfer learning using deep learning models.

An application, that allows the user to upload any image and classify the image as Fire image, non-fire image and Smoke image allowing the user to quickly predict the fire in forest and take any action if needed.

A RAG powered chatbot to chat with multiple pdfs

Tools used: Python-Streamlit, Langchain, Mistral

An application, that allows the user to chat with the streamlit app which can answer questions from the three annual report pdfs of Tesla, Uber and Google.

A comparative analysis among OCC models for anomaly detection in smart contracts

Tools used: Python-Scikit-learn, Pandas, Numpy. Used machine learning models like One Class SVM, Isolation Forest, Elliptic Envelope, and ensemble learning to flag a particular data as anomaly or normal.

RESEARCH AND PUBLICATIONS

Title: *" Computer Vision and Machine Learning based Segmentation for Fungus Determination in Areca Plates"*
***Status**:* Ongoing
***Affiliation**:* Indian Institute of Technology Madras
***Summary**:* Proposes a novel unsupervised pipeline for detecting fungal infections in arecanut sheath plates. The approach uses DBSCAN clustering to generate initial pseudo-labels, which are refined using a UNet-based segmentation model. This eliminates the need for manual annotation and enables efficient training of segmentation models on unlabeled image datasets. The work is aimed at improving fungal detection accuracy while reducing human effort in annotation.

Title: *"A Comparative Analysis of Anomaly Detection Techniques in Smart Contracts"*
***Status**:* Ongoing
***Affiliation**:* Amrita Vishwa Vidyapeetham
***Summary**:* Explores the effectiveness of various unsupervised machine learning models in identifying anomalies within smart contract transactions. The study evaluates methods such as One-Class SVM, Isolation Forest, and Elliptic Envelope to detect irregularities that may indicate fraud, bugs, or security vulnerabilities. The goal is to provide insights into the strengths and limitations of these techniques in the context of blockchain-based smart contracts, contributing to more secure and reliable decentralized applications.

ADDITIONAL INFORMATION

Hobbies: Reading

Languages Known: Tamil (Native Proficiency), English (Professional working proficiency), Hindi (Elementary Proficiency)