Rajalakshmi Engineering College

Department of Artificial Intelligence & Machine Learning

III Year (2025 – 2026) - AI23521: Build and Deployment of ML app

Mini Project - Abstract

Title	Sentiment Analysis using Flask REST API and Docker	
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ABSTRACT

The project **"Sentiment Analysis using Flask REST API and Docker"** aims to design, develop, and deploy an intelligent machine learning system capable of automatically analyzing and classifying human sentiments expressed in textual data. Sentiment analysis, an important subfield of **Natural Language Processing (NLP)**, helps machines understand human emotions and opinions by analyzing written text. This technology is widely used in customer feedback analysis, social media monitoring, and product review evaluation.

In this project, a dataset containing text reviews is preprocessed to remove noise such as stopwords and special characters. The cleaned text is then transformed into numerical form using the **TF-IDF (Term Frequency–Inverse Document Frequency)** technique, and a **Logistic Regression** model is trained to classify sentiments as *positive*, *negative*, or *neutral*. The trained model is serialized and used for real-time predictions.

A **RESTful API** is developed using the **Flask** framework to make the model accessible through HTTP requests, returning predictions in JSON format. To ensure portability and scalability, the entire system including the model and API—is **containerized using Docker**, allowing deployment across multiple platforms without dependency issues.

This project demonstrates the complete lifecycle of a machine learning system—from data preprocessing and model training to deployment—highlighting how AI models can be transformed into practical, real-world applications that provide meaningful insights from textual data.

SUPERVISOR **REVIEWER**