PEPPER SUPPLYCHAIN MANAGEMENT

Introduction

The Pepper Supply Chain Management System is an AI-driven solution designed to analyze disruptions in pepper production using advanced natural language processing models like T5. By classifying the severity of news events, it addresses key challenges in agricultural supply chain management, ensuring timely interventions and better decision-making. It provides :

- Real time notifications
- Inventory management system

Problem Statement

Pepper is a key commodity in India, particularly in Kerala, where its production is highly vulnerable to natural disasters such as landslides, floods, and droughts.However, current systems lack the ability to:

- Automatically monitor news and classify the severity of disruptions.
- Provide real-time alerts to stakeholders for better decision-making.
- Analyze regional variations, especially for core areas like Idukki and Wayanad

Objectives

Disruption Monitoring and Classification:
Develop a system to monitor and classify news related to natural disasters affecting pepper production, with a focus on core areas like Idukki and Wayanad.

Severity Analysis:
Automatically analyze and label disruptions (e.g., high, moderate, low severity) based on location and type of disaster.

Real-Time Notifications:
Send timely alerts to stakeholders via Slack to enable proactive decision-making.

Architecture

This system consists of :

- An inventory management system with a graphical user interface .
- A fine-tuned T5 model which analyzes and makes predictions.
- A notifications module that sends notifications via slack.

Technology Stack

T5-small :

This is the transformer model that analyzes news and classify the sentiment.

SerpAPI :

This API is used to fetch news articles for analysis.

Tkinter :

This is used to create the GUI for inventory management system.

SQLite :

The database to store news articles and other data.

Features

Real-Time Inventory Management

- Tracks inventory levels across different locations.
- Prevents negative inventory levels by validating export quantities against current stock.

Severity Analysis

- Classifies the severity of disruptions (High, Moderate, Low) based on the type of disaster and the affected region (core or non-core areas).

Disruption Notification System

- Automated alerts for disruptions like landslides, heavy rains, or droughts.
- Integration with Slack to notify stakeholders about supply chain issues.

Future Improvements

Advanced AI Models

• Incorporate more powerful and domain-specific models to improve the accuracy of disruption predictions and severity classifications.

Support for Additional Crops

• Extend the system to support other agricultural commodities beyond pepper, offering a broader supply chain management platform.

Queries related to the system

• Incorporating LLMs like Meta Llama to answer queries related to the platform.

THANK YOU