1. Introduction

The Fire Weather Index (FWI) is used to predict the risk of fire based on environmental conditions. During my internship, I worked on developing a system that connects a frontend application with a backend server to predict FWI values. The main goal of this project is to provide real-time FWI prediction through a user-friendly web interface.

2. Objective of the Project

- To design a frontend interface for user input

- To connect the frontend with the backend using APIs

- To predict Fire Weather Index using a trained model

- To display the predicted FWI result on the frontend

3. System Architecture

The system follows a client–server architecture.

- Frontend acts as the client where users enter input data

- Backend processes the data and performs prediction

- Communication happens through FLASK API

4.Output

The Fire Weather Index (FWI) Prediction System successfully predicts the fire risk level based on meteorological data and fire weather sub-indices. The system takes user inputs such as temperature, relative humidity, wind speed, rainfall, FFMC, DMC, DC, ISI, and BUI through a web interface.

After submitting the inputs, the trained machine learning model processes the data and generates a Fire Weather Index (FWI) value. The predicted FWI is always non-negative and is classified into one of the three fire risk categories.

- **Low Risk**: Indicates safe weather conditions with minimal fire chance

- **Medium Risk**: Indicates moderate fire possibility

- **High Risk**: Indicates high fire danger requiring immediate attention

The output is displayed instantly on the web application along with the corresponding fire risk level, making the system user-friendly and easy to understand.