

# **Weather Forecasting**

## **Abstract**

Accurate weather prediction is essential for agriculture, transportation, disaster management, and daily planning. This project aims to develop a machine learning model to predict weather conditions such as temperature, humidity, and rainfall using historical meteorological data.

The dataset consists of past weather records, atmospheric pressure, wind speed, and precipitation levels. The machine learning models used in this project include Decision Trees, Random Forest, and LSTMs for time-series forecasting. The data preprocessing steps involve handling missing values, normalizing numerical features, and feature extraction.

The model is evaluated using metrics such as Mean Absolute Percentage Error (MAPE) and Root Mean Squared Error (RMSE). The results of this project will be beneficial for farmers, businesses, and individuals who rely on weather predictions for decision-making. Future enhancements may include integrating real-time satellite imagery and weather station data for improved accuracy.