

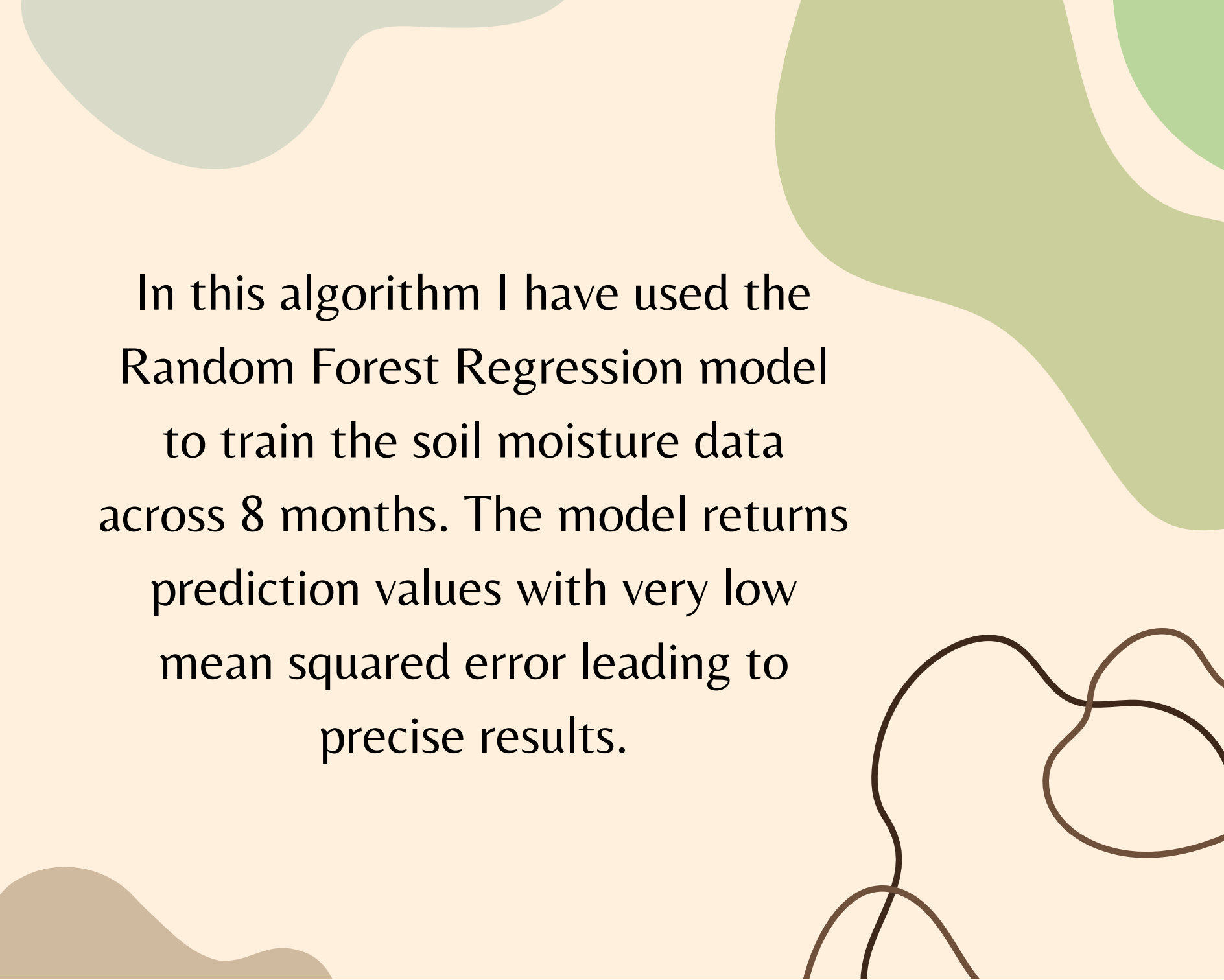
Soil Moisture Predictor



Team mllogy
Geetam Talluri

Introduction

Prediction of soil moisture in advance is useful to the farmers in the field of agriculture. This can help with water-saving irrigation and drought control. However, due to the complexity of soil moisture and meteorological factors, creating an ideal mathematical model for prediction is challenging.



In this algorithm I have used the Random Forest Regression model to train the soil moisture data across 8 months. The model returns prediction values with very low mean squared error leading to precise results.

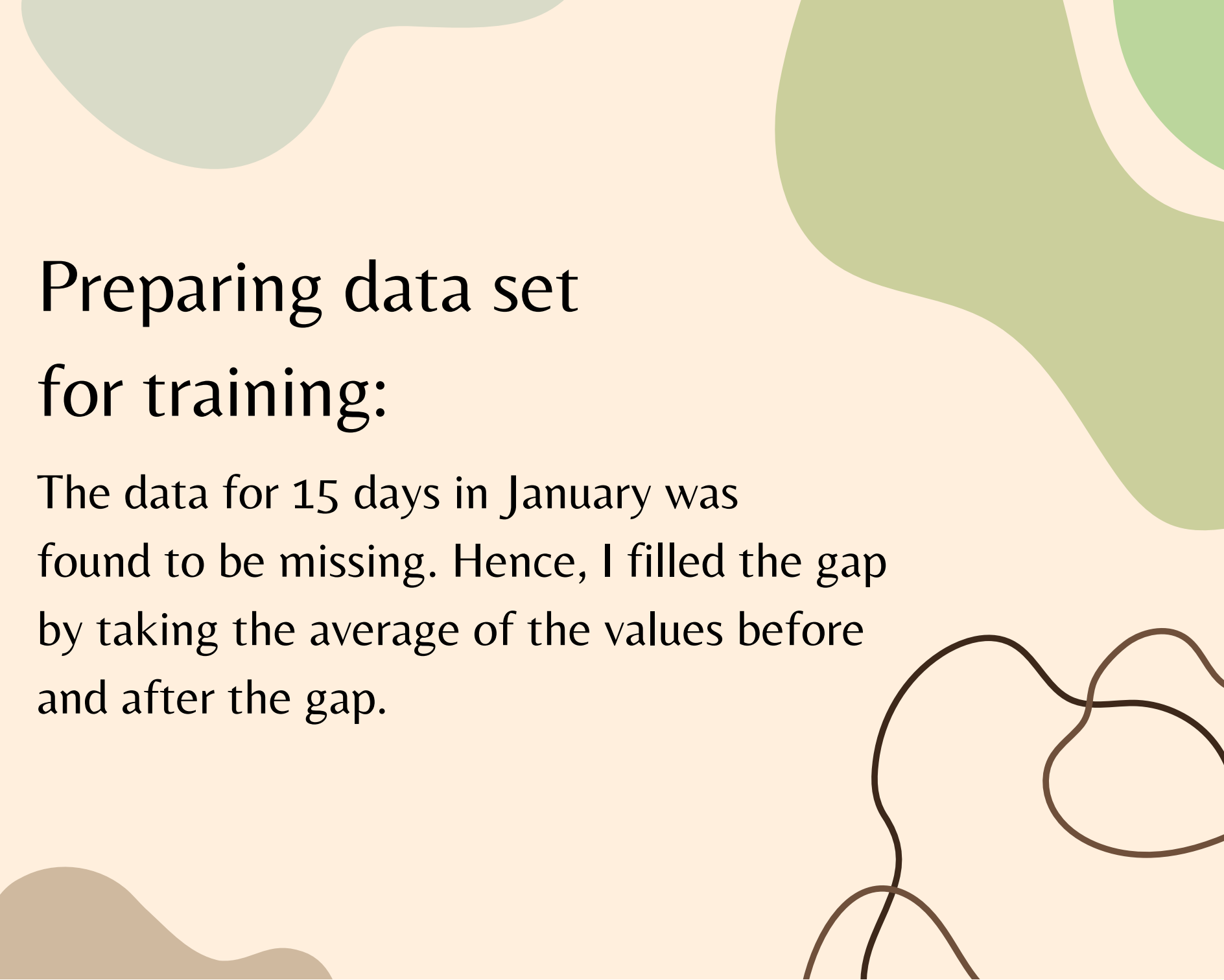
Tools used

- Google colab
- Python
- Flask(for server)
- HTML(for UI)
- CSS

About the Model

Input Data:

The soil moisture readings for 8 months were taken as the input data. The readings of a single day were taken and averaged out. Since the samples are not varying much we can take the average of the total daily values.



Preparing data set for training:

The data for 15 days in January was found to be missing. Hence, I filled the gap by taking the average of the values before and after the gap.

Training the dataset:

I have used the Random Forest Regression model to train the data.

Random forest regression is a machine learning algorithm used for regression tasks. It is an ensemble learning method that builds multiple decision trees and combines their predictions to obtain a more accurate and stable result.

Results:

I have found the mean squared error in back testing to be nearly 70 units, which is 3% of mean soil moisture. The mean squared error for the months of January and February were found to be 0.5%.

These results have shown that the model is quite precise in its predictions.



THANK YOU