MOISTURE MINDS

PROJECT REPORT

-by MOIST COMRADES

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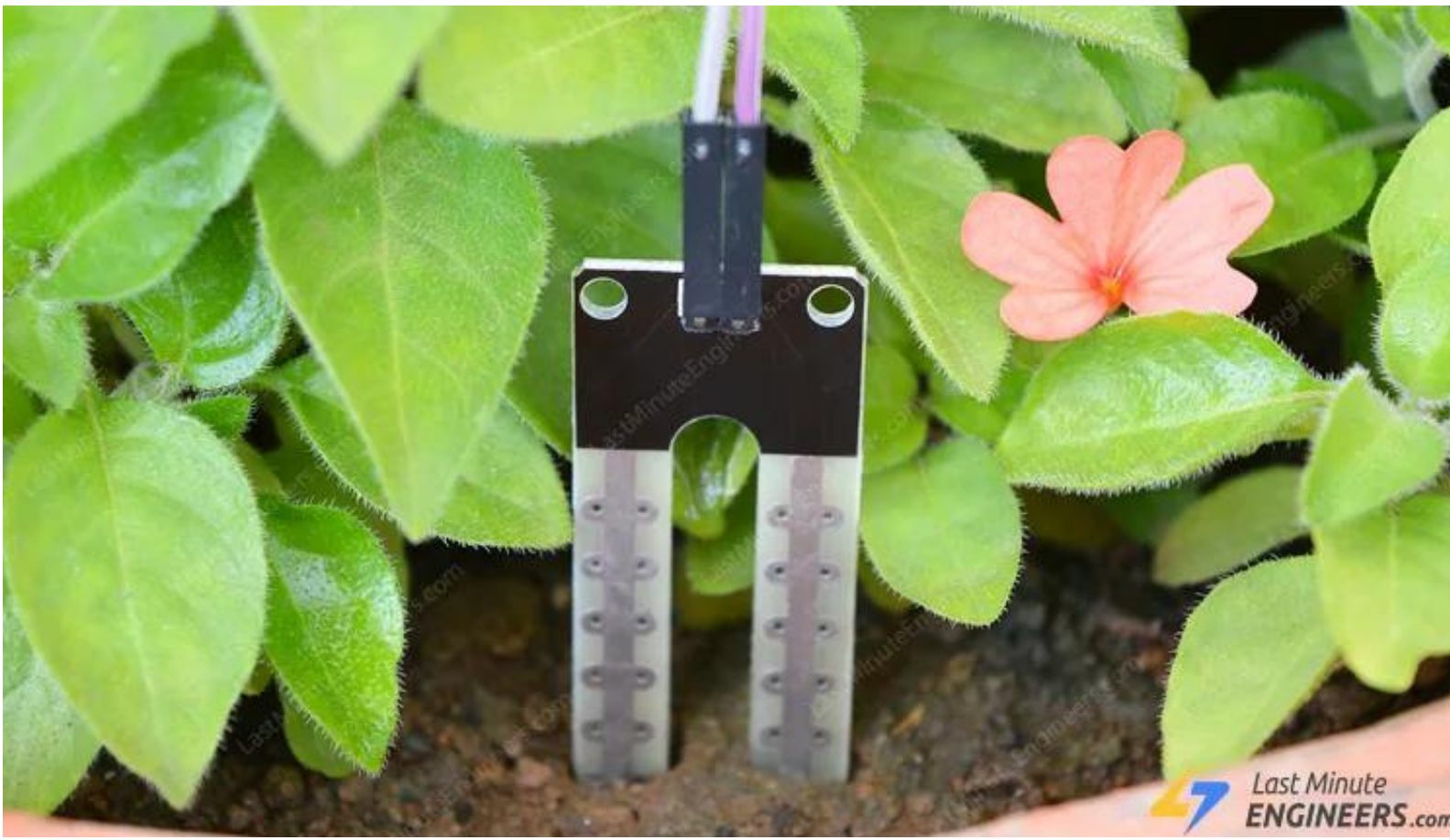
PROJECT INTRO

TASK:

Build a machine learning based model that can predict soil moisture levels at a specific location based on the previous 8 months of soil moisture data along with temperature, and humidity values at the location.

DATA:

Provided daily soil moisture measurements from July2022 to march10, 2023.(two data sets with some missing sensors are:user1_data.csv,user_data.csv)



PROCEDURE TO PREDICT :

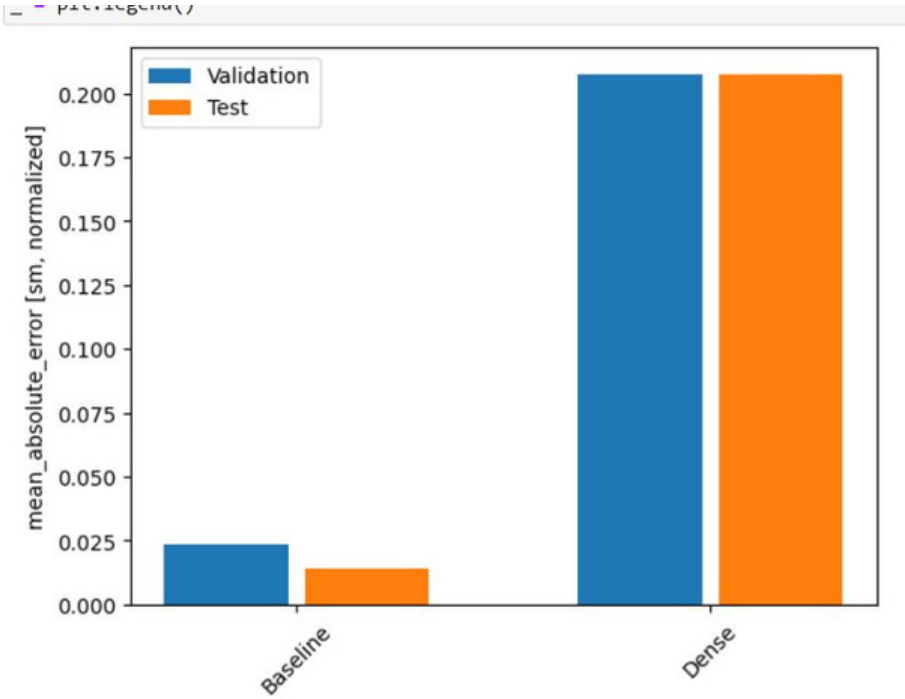
- The data in user1 were affected by the malfunction of sensor 1. There are no restrictions on csv for temperature, humidity, or pressure.
- The data in user2 data do not contain any variables related to soil temperature.
- We combined the two csv files and sorted them by time using pandas. Using the previously collected data from the other sensor at the same time period, we then interpolated for the unknown data.

TRIAL METHODS:

- We initially used linear regression to approach the issue, but this method revealed some abnormalities, so we switched to a polynomial approach, which will only fit for the trend but not for seasonality, cyclical behaviour, or irregularities, which may be addressed using time series analysis.

RESULT:

We eliminated irregularities by employing the time series analysis method, which also matches with seasonality and cyclical behaviour. As a result, we determined that time series analysis is the best approach for this one. As a result, we obtained the following results:



```
_ = plot_features.plot(subplots=True)
```