Machine Learning CA Part 1 Write-up

Introduction

Two models are deployed to the server: Logistic Regression ('model 1' in server.py) and Time Series ('model 2' in server.py).

The logistic regression model is trained and tested using the iris data set. It will predict the type of iris given the following inputs:

- Sepal length
- Sepal width
- Petal length
- Petal width

The time series model is based on daily Amazon stock prices, from 18 October 2018 to 17 October 2019. It will forecast the next day's stock price, based on a 50-day moving average.

Testing the models

Starting the server:

1. Start the Python server by running server.py.
2. The server address is as follows, based on the default localhost IP.
    a. http://127.0.0.1:5000/

Using Postman:

Logistic Regression Model

1. Enter the following GET request URL: http://127.0.0.1:5000/model1
2. Add the following as keys: x1, x2, y1, y2
3. Input values and send the GET request
    a. If any of the values is blank, a string, or '0', the server will return "Invalid input".
    b. If any of the values is negative, the server will return "Input only positive values."
    c. Else, the server will return the predicted iris type.
4. The server can also accept a POST request.
5. Input the keys: x1, x2, y1, y2 and their respective values in the Body, form-data. The server will return the same result as the GET request

Time Series Model

1. Enter the following GET request URL: http://127.0.0.1:5000/model2
2. Add the following as the key: x, which represent that day's forecast based on previous 50-day average.
3. Input the value and send the GET request
    a. If any of the values is blank, less than 50 or more than 250, the server will return "Invalid input! Please enter a number between 50 to 250".

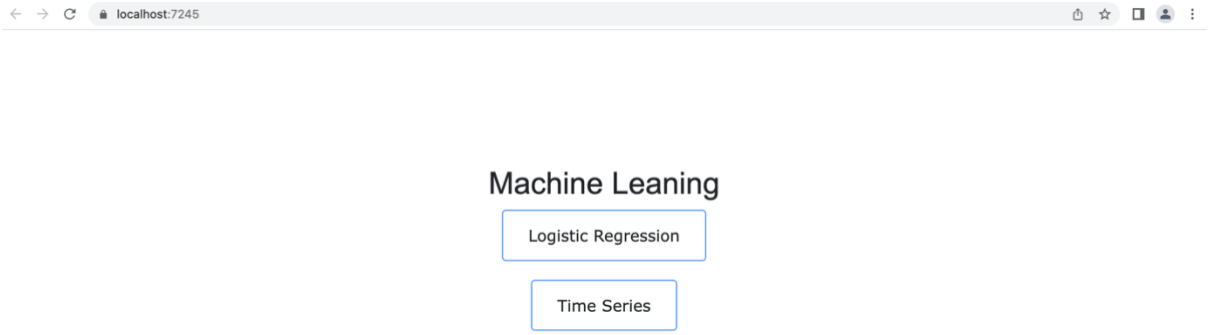
The input must be at least 50 because we need data from 50 days to predict the next day. It cannot exceed 250 because there is insufficient data to predict after 250.

b. Else, the server will return the predicted stock price.

4. The server can also accept a POST request.
5. Input the key: x and its respective value in the Body, form-data. The server will return the same result as the GET request.

Using .NET Web App

1. Open the ML_View folder, and open ML_View.sln using Visual Studio.
2. Add Newtonsoft.Json NuGet Package.
3. Run the solution. After compiling, the home page will be shown:



4. Click on any of the models to test. The valid inputs are as follows:
    - Logistic Regression:
        i. All fields must be filled.
        ii. Fields only accept positive numbers excluding zero. Else, an invalid input message will be displayed.
    - Time Series:
        i. The field must be filled.
        ii. It will only accept integers from 50 to 250. Else, an invalid input message will be displayed.