Model Deployment using Flask

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Submission date: 11/04/2023

Submitted to: Data Glacier

Abstract

This project has been written for the beginners of model deployment. With a simple linear regression example, a model was created on IntelliJ using Flask.

Table of Contents:

Installing Flask on your Device

```
# If you are using pip
$ pip install flask

# For Linux
$ sudo apt-get install python3-flask
```

Setting up the Project WorkFlow

- Model Building
- Save the model and setup app
- Webpage Template
- Predict weight and send results

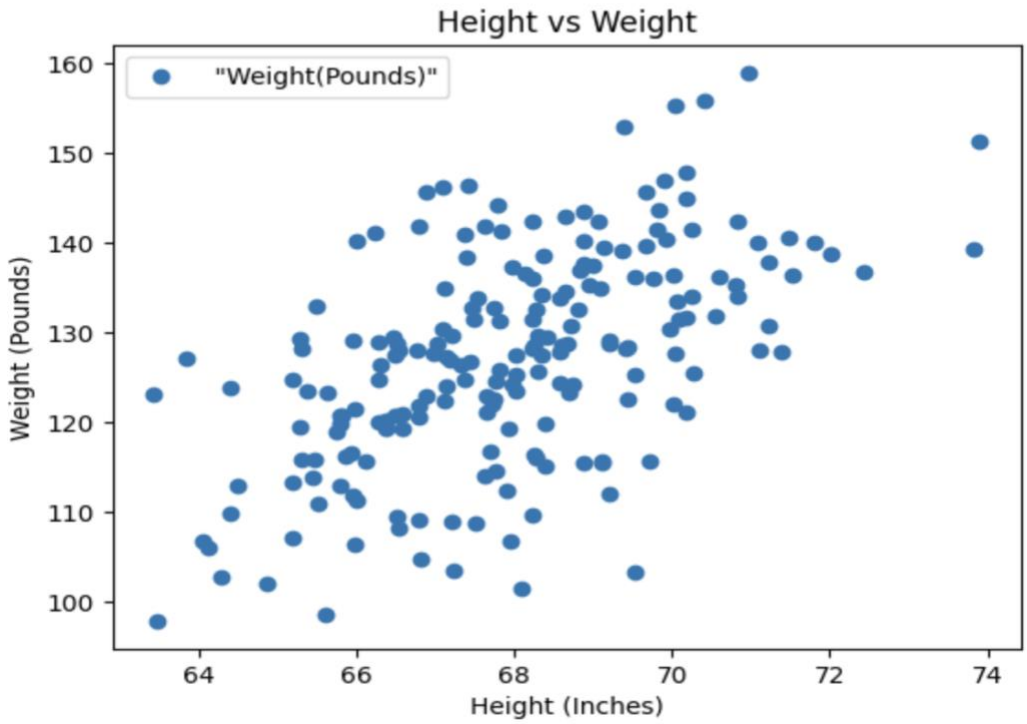
Build Machine Learning Model

I worked from jupyter notebook to create our learning model. Our dataset has 200 rows and 2 columns: Height(Inches), Weight(Pounds). Here is our dataset using the head() function:

	Height(Inches)"	"Weight(Pounds)"
0	65.78	112.99
1	71.52	136.49
2	69.40	153.03
3	68.22	142.34
4	67.79	144.30

Let's plot our data points on a scatter plot to visualize our dataset and see if we can find a correlation between the two features, height and weight.

```
height_weight.plot(x = 1, y = 2, style = "o")
plt.title("Height vs Weight")
plt.xlabel("Height (Inches)")
plt.ylabel("Weight (Pounds)")
plt.show()
```



Now that we have our attributes and labels, the next step is to split this data into training and test sets. We'll do this by using Scikit-Learn's built-in train_test_split() method:

```
[6]: from sklearn.model_selection import train_test_split
     X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 0)
```

```
[7]: from sklearn.linear_model import LinearRegression
     regressor = LinearRegression()
     regressor.fit(X_train, y_train)
```

Let's retrieve the slope (coefficient of x):

```
[9]: regressor.coef_
```

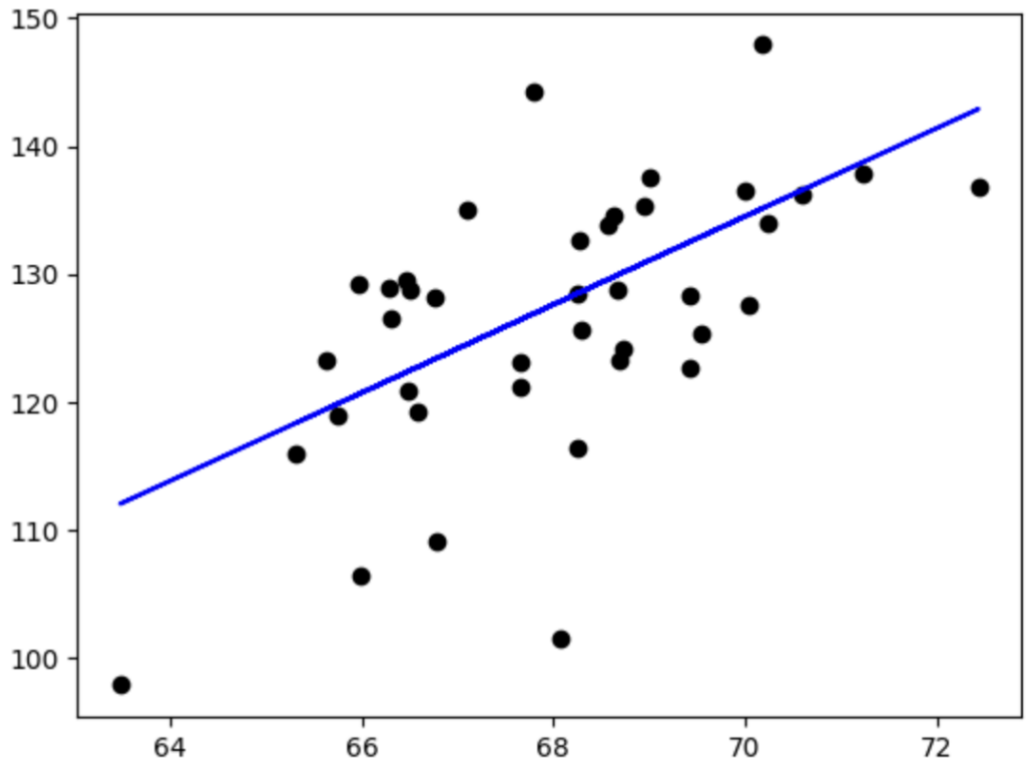
```
[9]: array([[3.44134897]])
```

Making Predictions: Now that we have trained our algorithm, it's time to make some predictions and plot our test sets with our linear regression line.

```
[10]: y_pred = regressor.predict(X_test)
```

```
[11]: plt.scatter(X_test, y_test, color = "black")
      plt.plot(X_test, y_pred, color = "blue")
```

```
[11]: [<matplotlib.lines.Line2D at 0x1523c51b0>]
```



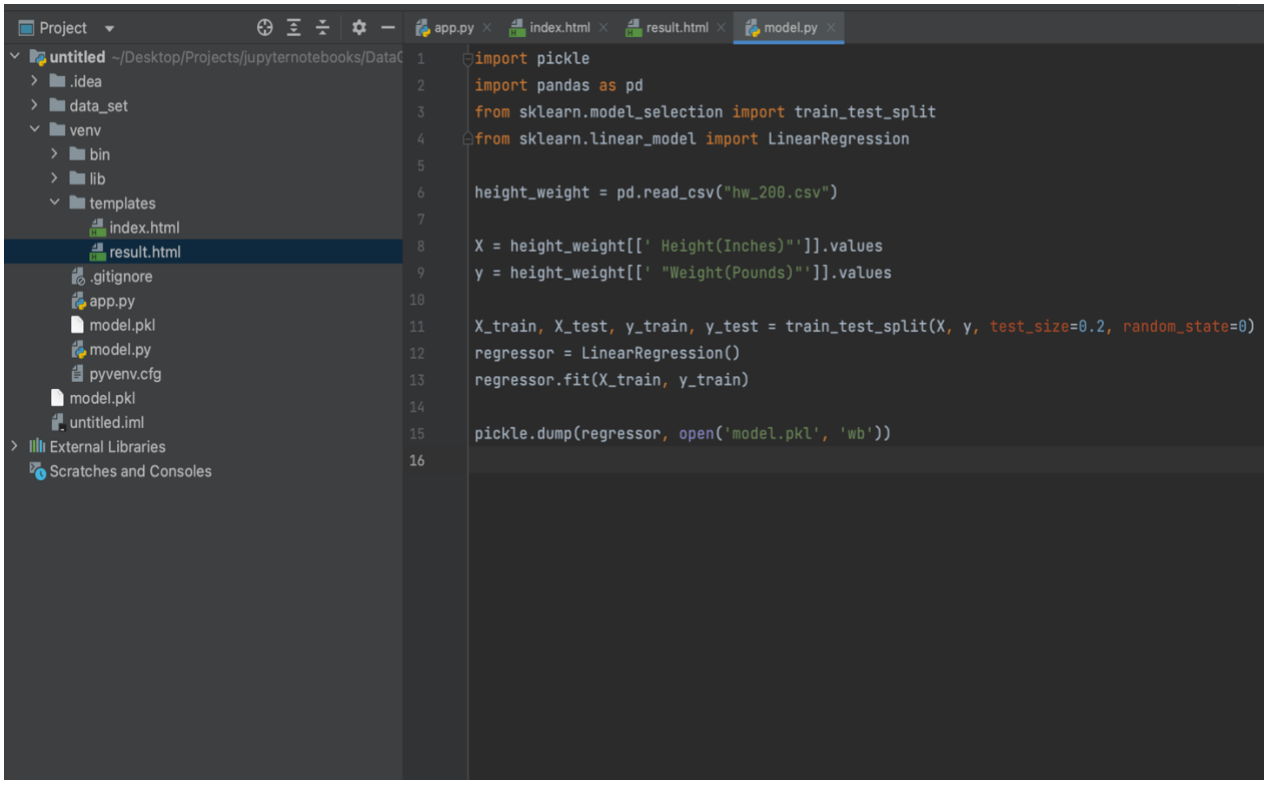
Save the Model: Save regression model using pickle.

```
[12]: import pickle
```

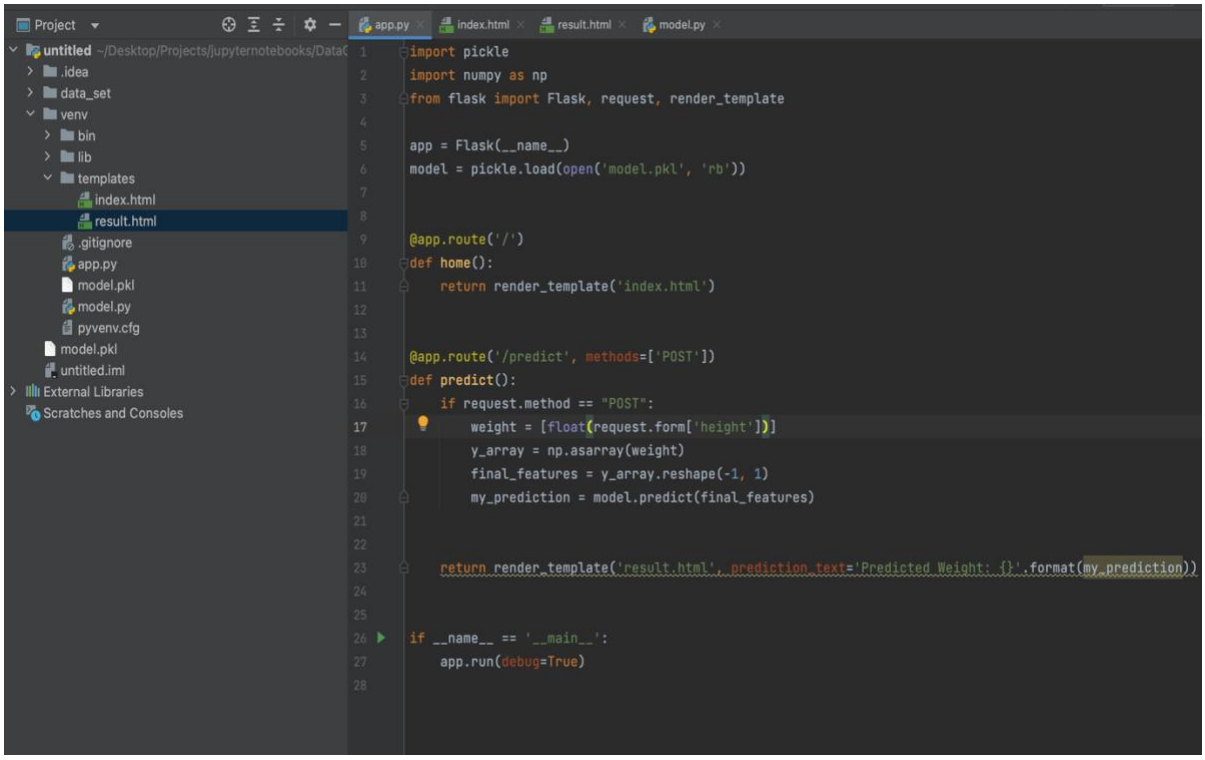
```
[13]: Regressor_Machine = open("model.pkl", "wb")
      pickle.dump(regressor, Regressor_Machine)
      Regressor_Machine.close()
```

Project Snapshots IntelliJ

Save the Model (model.py)

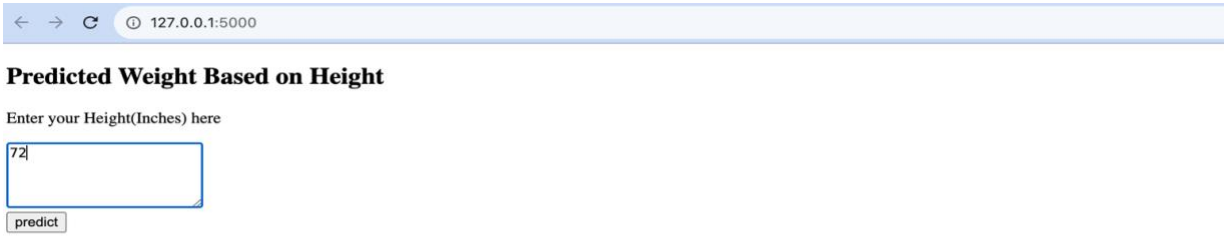


Connect the Webpage with the Model (app.py)



Deployed Model on Flask server

We have successfully started the Flask server! Open your browser and go to this address: http://127.0.0.1:5000. You will see that the Flask server has rendered our index.html template as our home page. Then after you enter your height in inches as a float, you click on our predict URL which will take us to the result.html page with our regressor model's prediction of your weight given the height entered.



Result Page: I entered 72 inches as float to our home page which is 6 feet tall, then we click on predict to give us our result page: