

# Regression ML Model Deployment On Heroku

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# 1-Data

```
In [3]: import pandas as pd  
df=pd.read_csv("/media/elliott/HDD/my_tipdata.csv")  
df
```

Out[3]:

	total_bill	sex	smoker	day	time	size	tip
0	12.16	1.0	Yes	Friday	Lunch	2	2.20
1	21.50	1.0	No	Sunday	Dinner	4	3.50
2	10.33	0.0	No	Thursday	Lunch	2	2.00
3	14.78	1.0	No	Sunday	Dinner	2	3.23
4	18.04	1.0	No	Sunday	Dinner	2	3.00
...	...	...	...	...	...	...	...
194	18.28	1.0	No	Thursday	Lunch	2	4.00
195	17.29	1.0	No	Thursday	Lunch	2	2.71
196	18.43	1.0	No	Sunday	Dinner	4	3.00
197	18.78	0.0	No	Thursday	Dinner	2	3.00
198	15.98	0.0	No	Friday	Lunch	3	3.00

199 rows × 7 columns

# 2-Model

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3 import pandas as pd
4 import pickle
5
6 df = pd.read_csv('my_tipdata.csv')
7 pd.DataFrame(df, columns=['total_bill', 'sex', 'smoker', 'day', 'time', 'size', 'tip'])
8 df.sex = df.sex.astype('category')
9
10 X = df[['total_bill', 'sex', 'size']]
11 Y = df['tip']
12
13 from sklearn.linear_model import LinearRegression
14 regressor = LinearRegression()
15 regressor.fit(X, Y)
16 pickle.dump(regressor, open('model.pkl', 'wb'))
17 model = pickle.load(open('model.pkl', 'rb'))
18
19
20
```

# 3-HTML

```
1 <!DOCTYPE html>
2 <html >
3 <head>
4   <meta charset="UTF-8">
5   <title>Deployment Tutorial with Flask</title>
6   <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
7   <link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
8   <link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
9   <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
10
11 </head>
12
13 <body style="background: #000;">
14   <div class="login">
15     <h1>Tip Forecasting</h1>
16
17     <!-- Main Input For Receiving Query to our ML -->
18     <form action="{{ url_for('predict') }}" method="post">
19       <input type="text" name="Total Bill" placeholder="Total bill" required="required" />
20       <input type="text" name="Gender" placeholder="0 - Female 1 - Male" required="required" />
21       <input type="text" name="Size" placeholder="Size of people" required="required" />
22       <button type="submit" class="btn btn-primary btn-block btn-large">Predict tip </button>
23     </form>
24
25     <br>
26     <br>
27     {{ prediction_text }}
28
29   </div>
30 </body>
```

# 4-CSS

```
1 @import url(https://fonts.googleapis.com/css?family=Open+Sans);
2
3 html { width: 100%; height:100%; overflow:hidden; }
4
5 body {
6     width: 100%;
7     height:100%;
8     font-family: 'Helvetica';
9     background: #000;
10    color: #fff;
11    font-size: 24px;
12    text-align:center;
13    letter-spacing:1.4px;
14 }
15
16 .login {
17     position: absolute;
18     top: 40%;
19     left: 50%;
20     margin: -150px 0 0 -150px;
21     width:400px;
22     height:400px;
23 }
24
25 .login h1 { color: #fff; text-shadow: 0 0 10px rgba(0,0,0,0.3); letter-spacing:1px; text-align:center; }
26
27 input {
28     width: 100%;
29     margin-bottom: 10px;
30     background: rgba(0,0,0,0.3);
31     border: none;
32     outline: none;
33     padding: 10px;
34     font-size: 13px;
35     color: #fff;
36     text-shadow: 1px 1px 1px rgba(0,0,0,0.3);
37     border: 1px solid rgba(0,0,0,0.3);
38     border-radius: 4px;
39     box-shadow: inset 0 -5px 45px rgba(100,100,100,0.2), 0 1px 1px rgba(255,255,255,0.2);
40     -webkit-transition: box-shadow .5s ease;
41     -moz-transition: box-shadow .5s ease;
42     -o-transition: box-shadow .5s ease;
43     -ms-transition: box-shadow .5s ease;
44     transition: box-shadow .5s ease;
45 }
```

# 5-App.py

```
1 import numpy as np
2 from flask import Flask, request, jsonify, render_template
3 import pickle
4
5 app = Flask(__name__)
6 model = pickle.load(open('model.pkl', 'rb'))
7
8 @app.route('/')
9 def home():
10     return render_template('index.html')
11
12 @app.route('/predict', methods=['POST'])
13 def predict():
14
15     int_features = [float(x) for x in request.form.values()]
16     final_features = [np.array(int_features)]
17     prediction = model.predict(final_features)
18
19     output = round(prediction[0], 2)
20
21     return render_template('index.html', prediction_text='Tip should be $ {}'.format(output))
22
23 @app.route('/results', methods=['POST'])
24 def results():
25
26     data = request.get_json(force=True)
27     prediction = model.predict([np.array(list(data.values()))])
28
29     output = prediction[0]
30     return jsonify(output)
31
32 if __name__ == "__main__":
33     app.run(debug=True)
```

# 6-Deploy on Heroku

The screenshot shows the Heroku deployment interface for a Salesforce app. At the top, the 'Salesforce Platform' header is visible. Below it, the Heroku logo and a search bar are present. The main section is titled 'master' and includes a checkbox for 'Wait for CI to pass before deploy' with a note: 'Only enable this option if you have a Continuous Integration service configured on your repo.' Below this is a button labeled 'Enable Automatic Deploys'.

On the left, under 'Manual deploy', it says 'Deploy the current state of a branch to this app.' On the right, under 'Deploy a GitHub branch', it says 'This will deploy the current state of the branch you specify below. [Learn more](#).' Below this is a 'Choose a branch to deploy' section with a dropdown menu showing 'master' and a 'Deploy Branch' button.

A progress bar at the bottom shows the deployment steps: 'Receive code from GitHub', 'Build master c5e618d6', 'Release phase', and 'Deploy to Heroku'. All steps are marked with green checkmarks. Below the progress bar, a message states 'Your app was successfully deployed.' with a 'View' button.

The footer contains links for 'heroku.com', 'Blogs', 'Careers', 'Documentation', and 'Support'. On the right, it includes 'Terms of Service', 'Privacy', 'Cookies', and '© 2021 Salesforce.com'.

# 7-Results

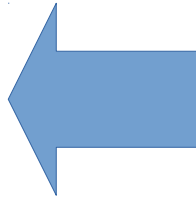
**Tip Forecasting**

500

1

3

Predict tip



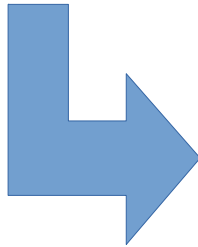
**Tip Forecasting**

Total bill

0 - Female 1 - Male

Size of people

Predict tip



**Tip Forecasting**

Total bill

0 - Female 1 - Male

Size of people

Predict tip

★ Tip should be \$ 52.19