

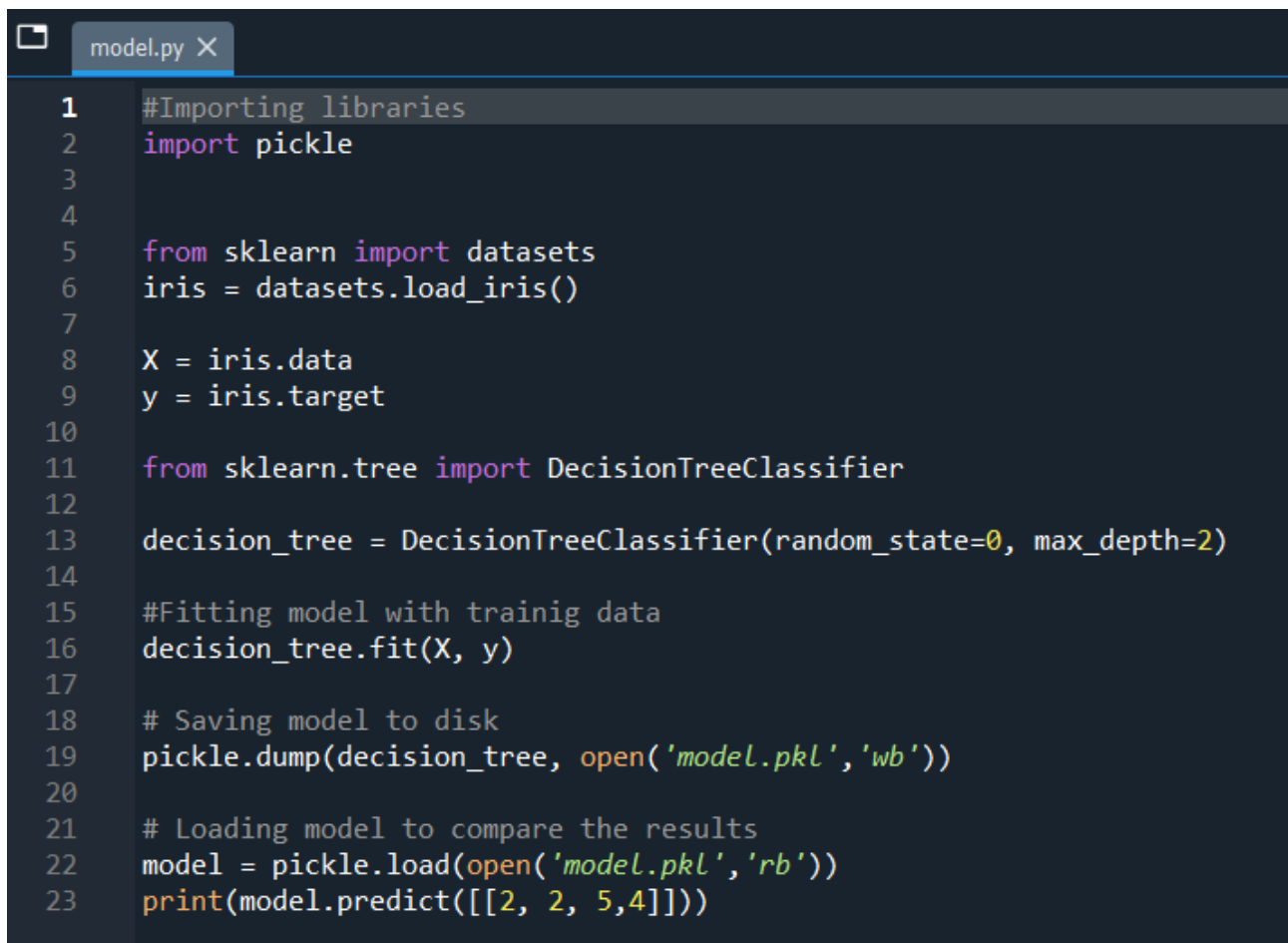
# Cloud and API deployment in Heroku

## Iris Flower Classification

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Machine Learning Model:



```
1 #Importing libraries
2 import pickle
3
4
5 from sklearn import datasets
6 iris = datasets.load_iris()
7
8 X = iris.data
9 y = iris.target
10
11 from sklearn.tree import DecisionTreeClassifier
12
13 decision_tree = DecisionTreeClassifier(random_state=0, max_depth=2)
14
15 #Fitting model with training data
16 decision_tree.fit(X, y)
17
18 # Saving model to disk
19 pickle.dump(decision_tree, open('model.pkl', 'wb'))
20
21 # Loading model to compare the results
22 model = pickle.load(open('model.pkl', 'rb'))
23 print(model.predict([[2, 2, 5, 4]]))
```

## Creating an API From a Machine Learning Model using Flask:

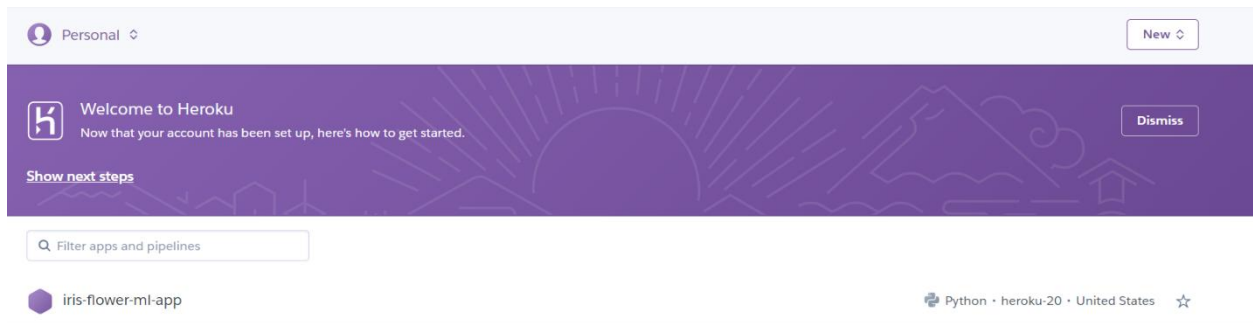
```
app.py X
1  import numpy as np
2  from flask import Flask, request, render_template
3  import pickle
4
5  app = Flask(__name__)
6  model = pickle.load(open('model.pkl', 'rb'))
7
8  @app.route('/')
9  def home():
10     return render_template('index.html')
11
12  @app.route('/predict', methods=['POST'])
13  def predict():
14     '''
15     For rendering results on HTML GUI
16     '''
17     int_features = [x for x in request.form.values()]
18     final_features = [np.array(int_features)]
19     prediction = model.predict(final_features)
20
21     flower_dict = {0: 'Setosa', 1: 'Versicolor', 2: 'Virginica'}
22     output = flower_dict[prediction[0]]
23
24     return render_template('index.html', prediction_text='The Iris Flower is {}'.format(output))
25
26  if __name__ == "__main__":
27     app.run(debug=True)
```

## HTML code:

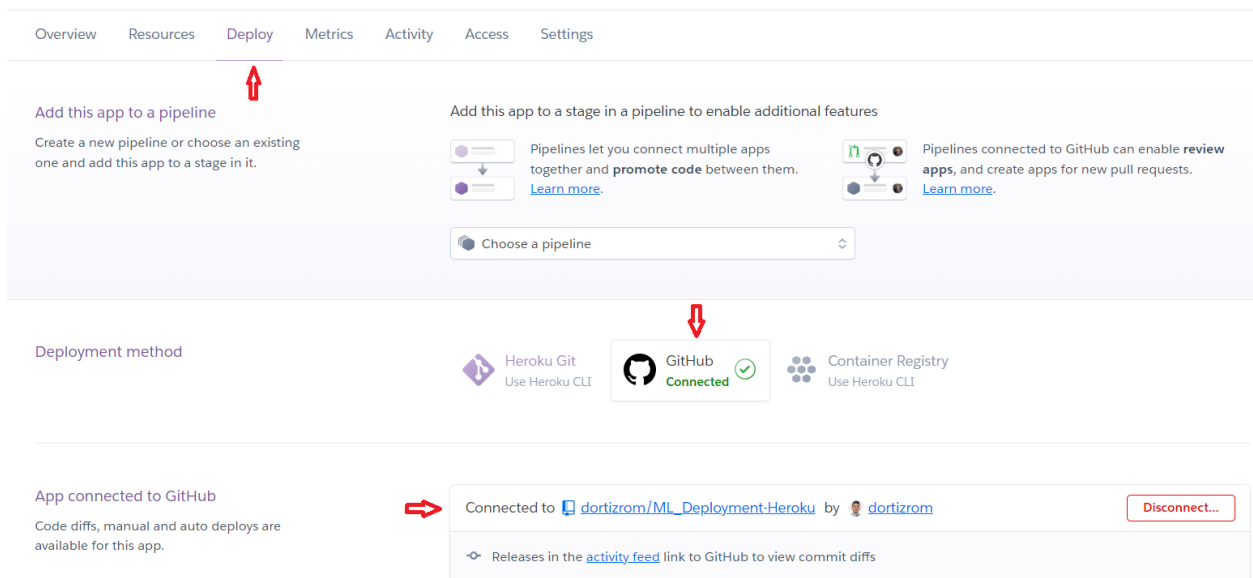
```
index.html X
1 <!DOCTYPE html>
2 <html >
3 <head>
4   <meta charset="UTF-8">
5   <title>ML API</title>
6   <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
7   <link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
8   <link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
9   <link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
10  <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
11
12 </head>
13
14 <body>
15   <div class="login">
16     <h1>Predict Iris Flower</h1>
17
18     <!-- Main Input For Receiving Query to our ML -->
19     <form action="{{ url_for('predict') }}" method="post">
20       <input type="text" name="sepal length" placeholder="sepal length in cm" required="required" />
21       <input type="text" name="sepal width" placeholder="sepal width in cm" required="required" />
22       <input type="text" name="petal length" placeholder="petal length in cm" required="required" />
23       <input type="text" name="petal width" placeholder="petal width in cm" required="required" />
24
25       <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
26     </form>
27
28     <br>
29     <br>
30     {{ prediction_text }}
31
32   </div>
33   
34   
35
36 </body>
37 </html>
```

## Testing API in Heroku:

### Creating new app



### Selecting GitHub as the Deployment method



# Manual Deploy

## Manual deploy

Deploy the current state of a branch to this app.

## Deploy a GitHub branch

This will deploy the current state of the branch you specify below. [Learn more.](#)

### Choose a branch to deploy

 main

Deploy Branch

### Receive code from GitHub



### Build main e50c65a3



```
-----> Using buildpack: heroku/python
-----> Python app detected
-----> No Python version was specified. Using the same version as the last build: python-3.10.5
        To use a different version, see: https://devcenter.heroku.com/articles/python-runtimes
-----> No change in requirements detected, installing from cache
-----> Using cached install of python-3.10.5
-----> Installing pip 22.1.2, setuptools 60.10.0 and wheel 0.37.1
-----> Installing SQLite3
```

☒ Autoscroll with output

[View build log](#)

### Release phase

### Deploy to Heroku

# App successfully deployed


## Manual deploy

Deploy the current state of a branch to this app.

## Deploy a GitHub branch

This will deploy the current state of the branch you specify below. [Learn more.](#)

### Choose a branch to deploy

 main

Deploy Branch

### Receive code from GitHub



### Build main e50c65a3



### Release phase



### Deploy to Heroku



Your app was successfully deployed.



 View


## Result:




← ↻ 🏠 🔒 https://iris-flower-app-flask.herokuapp.com 🔊 ☆ ⚙️ | ☆ 📄 👤 ⋮

For quick access, place your favorites here on the favorites bar. [Manage favorites now](#)

# Predict Iris Flower

Predict

**Data Glacier**  
Your Deep Learning Partner

  
**Iris Versicolor   Iris Setosa   Iris Virginica**