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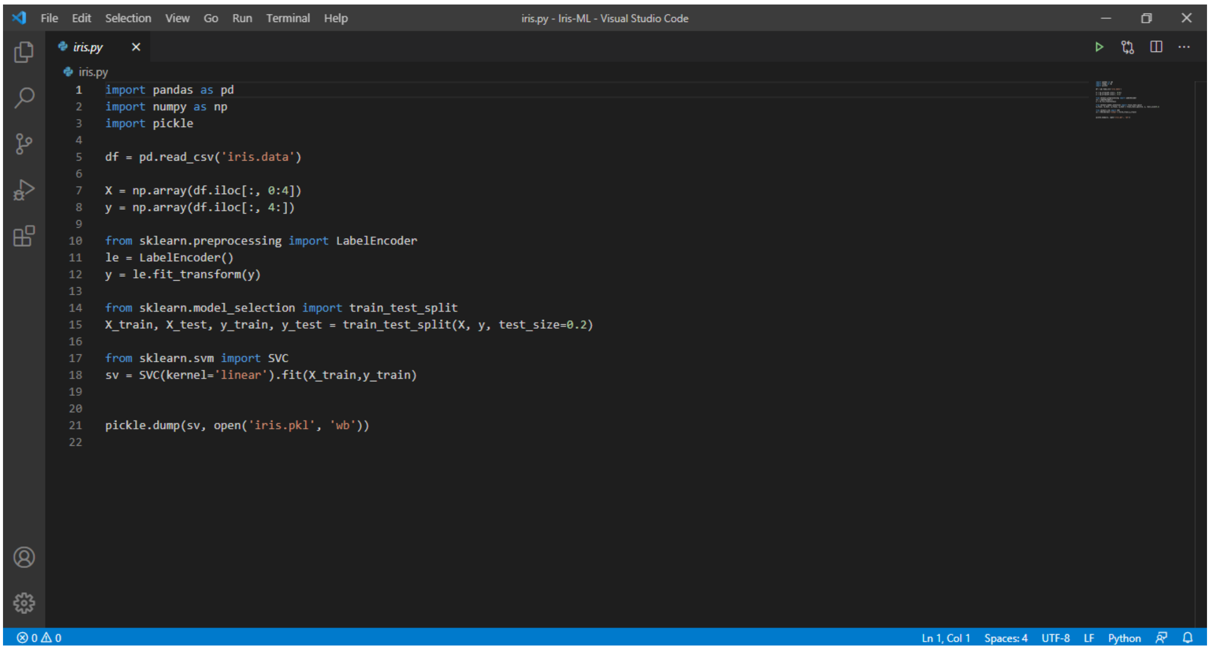
**Batch Code:** LISP01

**Submission Date:** 24-03-2021

**Submitted to:** Data Glacier

# DEPLOYMENT PROCESS:

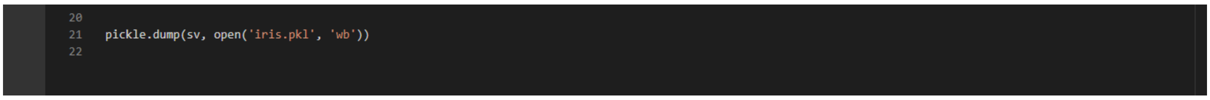
## Step 1) Create a Machine Learning Model



```python
import pandas as pd
import numpy as np
import pickle

df = pd.read_csv('iris.data')

X = np.array(df.iloc[:, 0:4])
y = np.array(df.iloc[:, 4:])

from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

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)

from sklearn.svm import SVC
sv = SVC(kernel='linear').fit(X_train,y_train)


pickle.dump(sv, open('iris.pkl', 'wb'))
```

I am using the iris dataset from UCI Machine Learning Repository and using Support Vector Classifier to train my model.

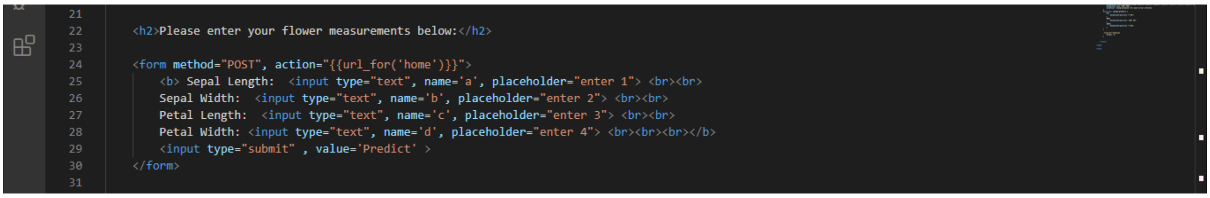
## Step 2) Serialization using Pickle



```python

pickle.dump(sv, open('iris.pkl', 'wb'))

```

Using pickle.dump() to perform serialization using python's inbuilt module pickle.

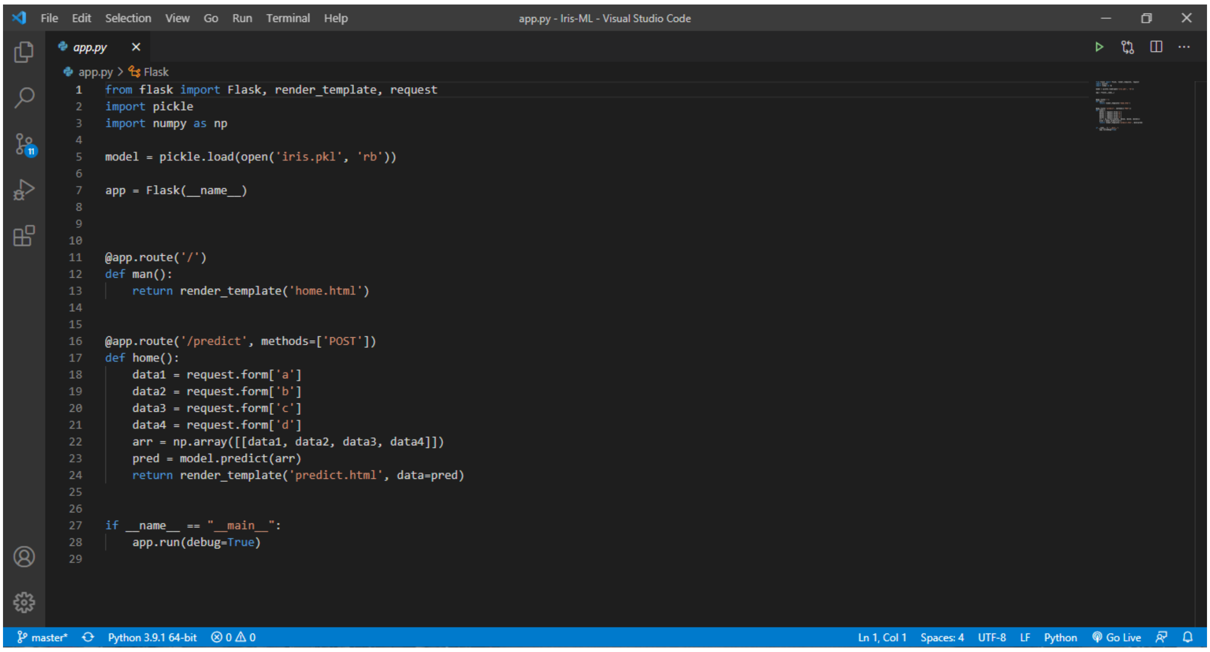
## Step 3) Creating HTML Form



```html

<h2>Please enter your flower measurements below:</h2>

<form method="POST", action="{{url_for('home')}}">
    <b> Sepal Length:  <input type="text", name='a', placeholder="enter 1"> <br><br>
    Sepal Width:  <input type="text", name='b', placeholder="enter 2"> <br><br>
    Petal Length:  <input type="text", name='c', placeholder="enter 3"> <br><br>
    Petal Width: <input type="text", name='d', placeholder="enter 4"> <br><br><br></b>
    <input type="submit" , value='Predict' >
</form>

```

To predict the class labels, the data is collected from new input values provided in the form and then use the model to predict the output and return the result in the form. Hence, an HTML form is used to display the result in the browser.

## Step 4) Create Flask App

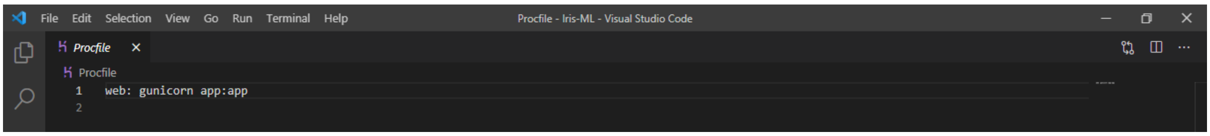


File Edit Selection View Go Run Terminal Help
app.py - Iris-ML - Visual Studio Code
app.py
app.py > Flask
master* Python 3.9.1 64-bit ⊗ 0 ⚠ 0
Ln 1, Col 1 Spaces: 4 UTF-8 LF Python Go Live

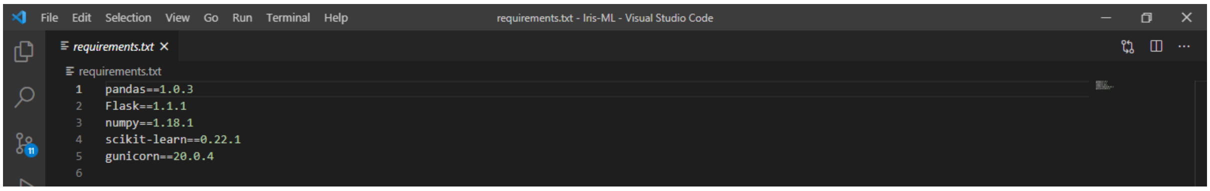
```python
from flask import Flask, render_template, request
import pickle
import numpy as np

model = pickle.load(open('iris.pkl', 'rb'))

app = Flask(__name__)



@app.route('/')
def man():
    return render_template('home.html')


@app.route('/predict', methods=['POST'])
def home():
    data1 = request.form['a']
    data2 = request.form['b']
    data3 = request.form['c']
    data4 = request.form['d']
    arr = np.array([[data1, data2, data3, data4]])
    pred = model.predict(arr)
    return render_template('predict.html', data=pred)


if __name__ == "__main__":
    app.run(debug=True)

```

To host the HTML form, a Flask web app is created where the pickle file is read using pickle.load(). A home() fuction is created which takes the input from homepage (HTML homepage), the model will predict the class label and return the result.

## Step 5) Create configuration files


File Edit Selection View Go Run Terminal Help
Procfile - Iris-ML - Visual Studio Code
Procfile

```
web: gunicorn app:app
```


File Edit Selection View Go Run Terminal Help
requirements.txt - Iris-ML - Visual Studio Code
requirements.txt

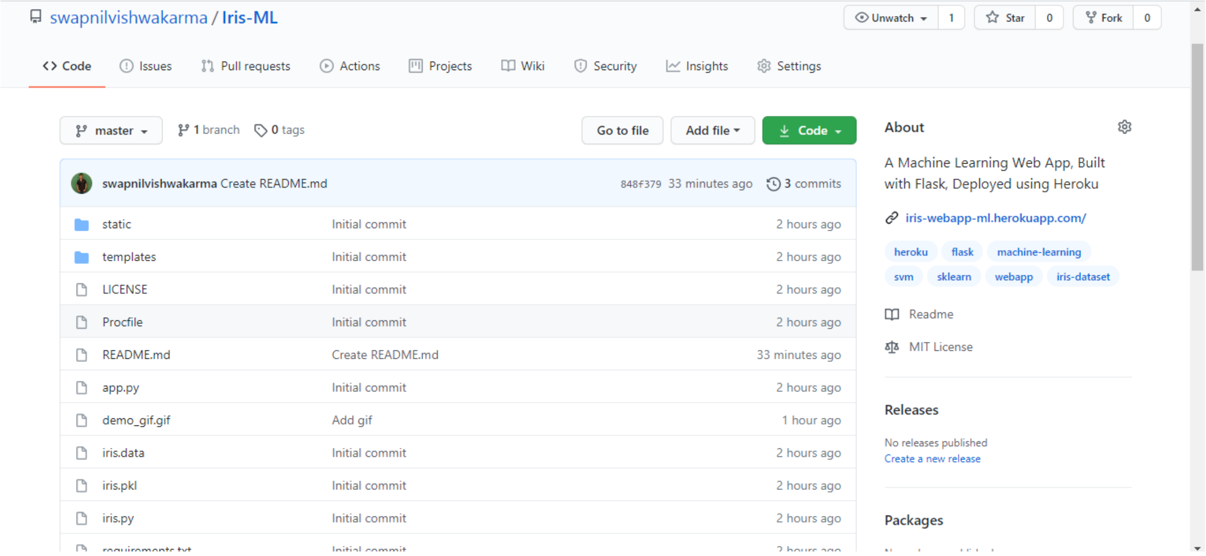
```
pandas==1.0.3
Flask==1.1.1
numpy==1.18.1
scikit-learn==0.22.1
gunicorn==20.0.4
```

For deployment, Procfile and requirements.txt files are created.

Procfile uses Gunicorn which is a pure-Python HTTP server for WSGI applications and it acts as a liaison in between the web application and the webserver.

Requirements.txt file contains all libraries and their dependencies.

## Step 6) Commit files in Github Repo



swapnilvishwakarma Create README.md 848f379 33 minutes ago 3 commits

| | | |
|---|---|---|
| static | Initial commit | 2 hours ago |
| templates | Initial commit | 2 hours ago |
| LICENSE | Initial commit | 2 hours ago |
| Procfile | Initial commit | 2 hours ago |
| README.md | Create README.md | 33 minutes ago |
| app.py | Initial commit | 2 hours ago |
| demo_gif.gif | Add gif | 1 hour ago |
| iris.data | Initial commit | 2 hours ago |
| iris.pkl | Initial commit | 2 hours ago |
| iris.py | Initial commit | 2 hours ago |
| requirements.txt | Initial commit | 2 hours ago |

About

A Machine Learning Web App, Built with Flask, Deployed using Heroku

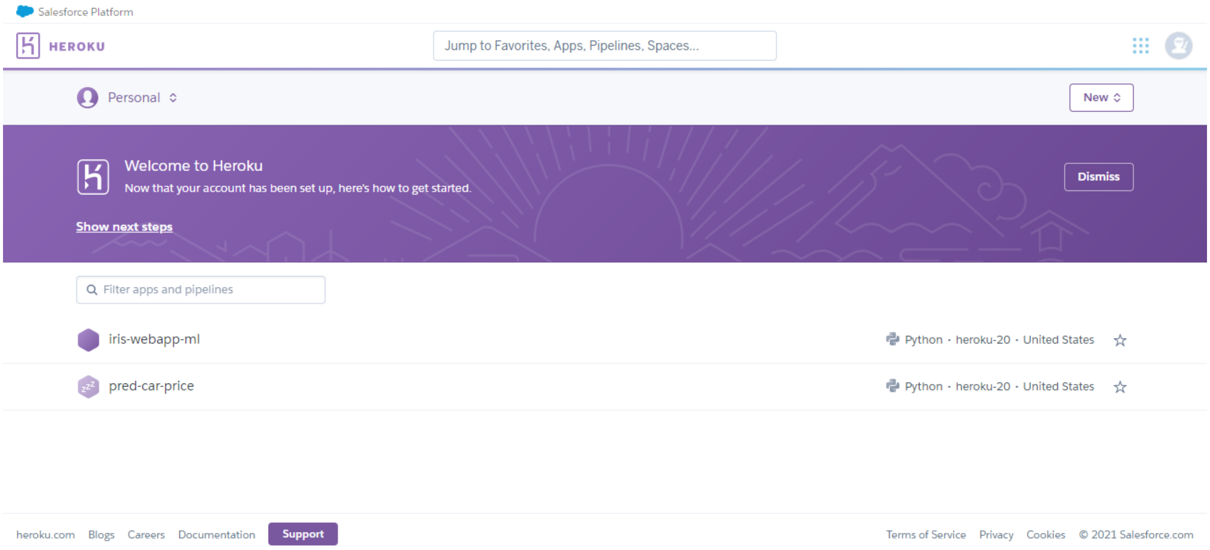
iris-webapp-ml.herokuapp.com/

Releases

No releases published
Create a new release

Packages

## Step 7) Link Github Repo to Heroku and Deploy



Welcome to Heroku

Now that your account has been set up, here's how to get started.

| | |
|---|---|
| iris-webapp-ml | Python · heroku-20 · United States |
| pred-car-price | Python · heroku-20 · United States |

After creating a free account on Heroku, connect it to your Github.

To deploy a new app, click on create new app and connect to the Github repo which you want to deploy and click deploy branch. Now the web app is ready publically available.