



Data Glacier

Your Deep Learning Partner

Week-5 Assignment

Cloud and API Deployment

Name : Dhvanilkumar Prajapati

Batch code : LISUM12

Submission date : 3rd September 2022

Submitted to : Data Glacier

Deployment

- Toy data: load_iris
- Training Machine Learning Model
- Creating Web App
- Committing code in Github
- Model Deployment on Heroku
- Testing Web app



Data Glacier

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Machine Learning Model Preparation

- Iris dataset is selected as toy data to play with.
- This dataset is used to predict species of Iris flower.
- There are three species mentioned in the dataset as follows:
 1. Setosa
 2. Versicolor
 3. Verginica
- As it is a classification problem, K nearest neighbors algorithm is used to predict the species based on inputs.
- Inputs are as follows:

Sepal length, Sepal width, Petal length and Petal Width

Machine Learning Model Preparation

```
# Loading data into the dataframe dataset
dataset = pd.DataFrame(load_iris().data, columns=load_iris().feature_names)
target_mapping={0:'setosa', 1:'versicolor', 2:'virginica'}
dataset['Target'] = load_iris()['target']
dataset['Target_name'] = dataset['Target'].map(target_mapping)

# Defining independent and dependent data
X = dataset.drop(columns=['Target', 'Target_name'])
Y = dataset['Target_name']

# Splitting data into test and train data
X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.3, random_state=42)

# Standardize independent features
scaler = StandardScaler()
scaled = pd.DataFrame((scaler.fit_transform(X)), columns=X.columns)

# Implementing KNN algorithm
model = KNeighborsClassifier(n_neighbors=1)
model.fit(X_train, Y_train)
predicted = pd.DataFrame(model.predict(X_test))
category=['setosa', 'versicolor', 'virginica']
confusion_matrix = pd.DataFrame(confusion_matrix(Y_test, predicted), columns=category, index=category)
print(confusion_matrix)

# Saving the python code as Pickle File
pickle.dump(model, open('model.sav', 'wb'))
```

HTML File for Web Application

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <title>Week-4 Assignment</title>
    <link rel="stylesheet" type="text/css" href="static\predict.css">
  </head>
  <body>
    <h1><u>IRIS Species Prediction Model</u></h1>
    <br>
    <h3>Please enter below required values: </h3>
    <form action="{{ url_for('predict')}}" method="post">
      Sepal length (cm): <input type="text" name="sepal_length" required="required"/><br><br>
      Sepal width (cm): <input type="text" name="sepal_width" required="required" /><br><br>
      Petal length (cm): <input type="text" name="petal_length" required="required" /><br><br>
      Petal width (cm): <input type="text" name="petal_width" required="required" /><br><br>
      <input type="submit" value="Submit" />
    </form>
    <br>
    <h3>{{ prediction }}</h3>
  </body>
</html>
```



IRIS Species Prediction Model

Please enter below required values:

Sepal length (cm):

Sepal width (cm):

Petal length (cm):

Petal width (cm):

{{ prediction }}

HTML
Webpage

CSS File for Web Layout

```
html{
  background-image: linear-gradient(to left top, #051937, #004d7a, #008793, #00bf72, #a8eb12);
  height:100%;
}
body{
  color:white;
  margin-top: 200px;
  background-image:
  url('https://www.freepik.com/premium-photo/texture-fabric-are-two-tone-color-background_2159300.htm');
  text-align: center}
```

IRIS Species Prediction Model

Please enter below required values:

Sepal length (cm):

Sepal width (cm):

Petal length (cm):

Petal width (cm):

Submit

HTML & CSS


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

app = Flask(__name__)
model = pickle.load(open('model.sav', 'rb'))

@app.route('/')
def home():
    print('start')
    return render_template('predict.html')

@app.route('/predict', methods=['POST'])
def predict():
    input_values = [float(x) for x in request.form.values()]
    features = [np.array(input_values)]
    output = model.predict(features)
    print('predict')
    return render_template('predict.html', prediction='Species should be {}'.format(output[0].upper()))

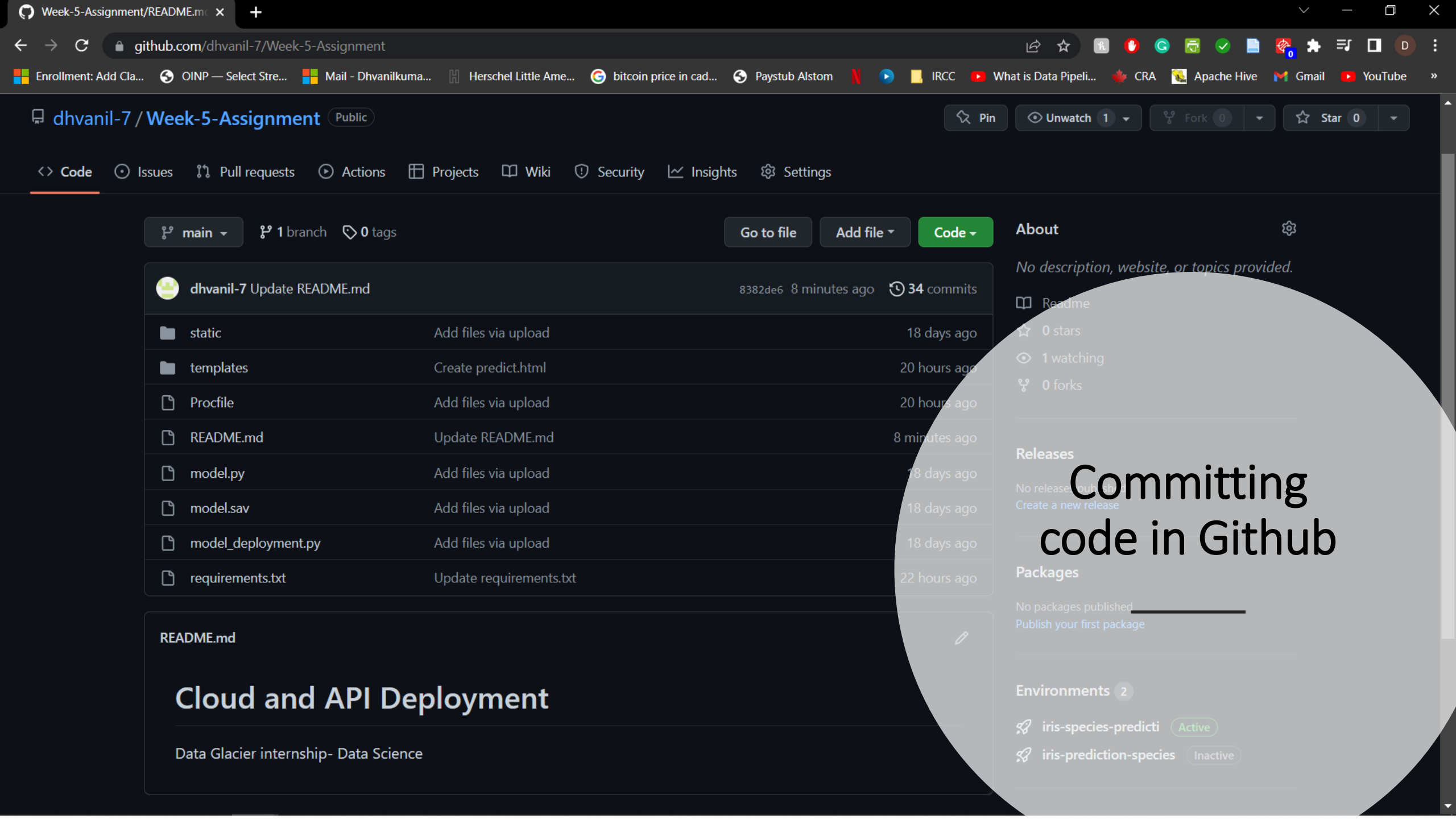
if __name__ == '__main__':
    app.run(port=5000, debug=True)
```

Creating Web Application using Flask

Requirements.txt and Procfile for Heroku deployment

```
requirements.txt x
1 click==8.1.3
2 colorama==0.4.5
3 cycler==0.11.0
4 Flask==2.2.2
5 fonttools==4.37.1
6 gunicorn==20.1.0
7 importlib-metadata==4.12.0
8 itsdangerous==2.1.2
9 Jinja2==3.1.2
10 joblib==1.1.0
11 kiwisolver==1.4.4
12 MarkupSafe==2.1.1
13 numpy==1.23.2
14 packaging==21.3
15 pandas==1.4.4
16 pyparsing==3.0.9
17 python-dateutil==2.8.2
18 pytz==2022.2.1
19 scikit-learn==1.1.2
20 scipy==1.9.1
21 six==1.16.0
22 threadpoolctl==3.1.0
23 Werkzeug==2.2.2
24 zipp==3.8.1
```

```
Procfile x
1 web: gunicorn model_deployment:app
```



Week-5-Assignment/README.m...+github.com/dhvanil-7/Week-5-Assignment

Enrollment: Add Cla...OINP — Select Stre...Mail - Dhvanilkuma...Herschel Little Ame...bitcoin price in cad...Paystub AlstomIRCCWhat is Data Pipeli...CRAApache HiveGmailYouTube

dhvanil-7 / Week-5-AssignmentPublic

PinUnwatch 1Fork 0Star 0

<> CodeIssuesPull requestsActionsProjectsWikiSecurityInsightsSettings

main1 branch0 tagsGo to fileAdd fileCode

dhvanil-7 Update README.md8382de6 8 minutes ago 34 commits

static	Add files via upload	18 days ago
templates	Create predict.html	20 hours ago
Procfile	Add files via upload	20 hours ago
README.md	Update README.md	8 minutes ago
model.py	Add files via upload	18 days ago
model.sav	Add files via upload	18 days ago
model_deployment.py	Add files via upload	18 days ago
requirements.txt	Update requirements.txt	22 hours ago

README.md

Cloud and API Deployment

Data Glacier internship- Data Science

About

No description, website, or topics provided.

Readme

0 stars

1 watching

0 forks

Releases

No releases published

Create a new release

Packages

No packages published

Publish your first package

Environments 2

iris-species-predictiActive

iris-prediction-speciesInactive

Committing
code in Github



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Personal > iris-species-predicti

GitHub dhvani1-7/Week-5-Assignment



Open app

More 

Overview

Resources

Deploy

Metrics

Activity

Access

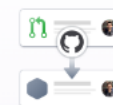
Settings

Creating account and connecting to Github on Heroku


Add this app to a stage in a pipeline to enable additional features



Pipelines let you connect multiple apps together and **promote code** between them. [Learn more.](#)




Pipelines connected to GitHub can enable **review apps**, and create apps for new pull requests. [Learn more.](#)



Heroku Git
Use Heroku CLI



GitHub 
Connected



Container Registry

Use Heroku CLI

App connected to GitHub

Code diffs, manual and auto deploys are available for this app.

Connected to [dhvanil-7/Week-5-Assignment](#) by [dhvanil-7](#)

Disconnect...

- Releases in the [activity feed](#) link to GitHub to view commit diffs

Week-5-Assignment/README.m...












iris-species-predicti · Build | Hero

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← → ↺

dashboard.heroku.com/apps/iris-species-predicti/activity/builds/3337d3d6-d463-42dd-ba94-a7d2be39917d

🔗 ☆



⋮

Enrollment: Add Cla...

OINP — Select Stre...

Mail - Dhvanilkuma...

Herschel Little Ame...

bitcoin price in cad...

Paystub Alstom

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IRCC

What is Data Pipeli...

CRA


Apache Hive

Gmail

YouTube


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Salesforce Platform

HEROKU

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Personal >

iris-species-predicti

☆

Open app

More

GitHub

dhvanil-7/Week-5-Assignment

Overview

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Activity Feed >

Build Log

-----> Building on the Heroku-22 stack

-----> Using buildpack: heroku/python

-----> Python app detected

-----> No Python version was specified. Using the same version as the last build: python-3.10.6

-----> 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-3.10.6

-----> Installing pip 22.2.2, setuptools 63.4.3 and wheel 0.37.1

-----> Installing SQLite3

-----> Installing requirements with pip

-----> Discovering process types

-----> Procfile declares types -> web

-----> Compressing...

-----> Done: 137.6M

-----> Launching...

-----> Released v19

-----> https://iris-species-predicti.herokuapp.com/ deployed to Heroku

Starting November 28th, 2022, free Heroku Dynos, free Heroku Postgres, and free Heroku Data for Redis® will no longer be available.

If you have apps using any of these resources, you must upgrade to paid plans by this date to ensure your apps continue to run and to retain your data. For students, we will announce a new program by the end of September. Learn more at https://blog.heroku.com/next-chapter

☒ Autoscroll with output

Deployment on Heroku

heroku.com

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- ☐ Wait for CI to pass before deploy

Only enable this option if you have a Continuous Integration service configured on your repo.

Enable Automatic Deploys

Deployment on Heroku

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 8382de69



Release phase



Deploy to Heroku



Your app was successfully deployed.

 [View](#)

<https://iris-species-predicti.herokuapp.com/>

Web Application : <https://iris-species-predicti.herokuapp.com/>



Testing Web
Application

IRIS Species Prediction Model

Please enter below required values:

Sepal length (cm):

Sepal width (cm):

Petal length (cm):

Petal width (cm):

Submit

Testing Web Application-
Submit Input parameters

IRIS Species Prediction Model

Please enter below required values:

Sepal length (cm):

Sepal width (cm):

Petal length (cm):

Petal width (cm):

IRIS Species Prediction Model

Please enter below required values:

Sepal length (cm):

Sepal width (cm):

Petal length (cm):

Petal width (cm):

Species should be VIRGINICA

OUTPUT

Thank You



Data Glacier

Your Deep Learning Partner