

Investment Strategy for Cab Industry

Code Documentation

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- The first step before creating a project is to make sure to create a python environment first, where all you have to do is enter the following command in the specified folder:

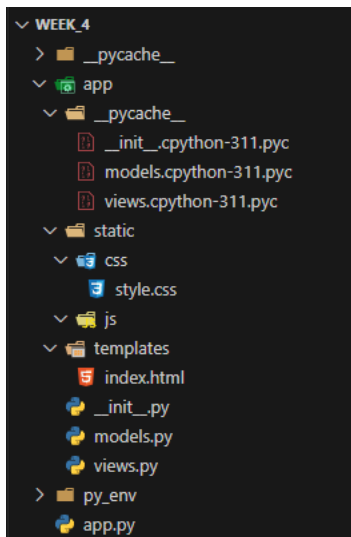
```
# install new python environment
python -m venv py_env
```

- Next, enter the python environment and download the required package, the command is as follows:

```
# move to python environment
source python_environment/Scripts/activate
```

```
# install necessary packages
Pip install flask
Pip install pandas
Pip install numpy
pip install -U scikit-learn
```

- Next, create a folder and file structure to make it easier to route and implement data, which are as follows:



- the next step is to create an initial and views file, this is to make it easier to do routing to switch pages, namely as follows:

```
# __init__.py
from flask import Flask
app = Flask(__name__)

from app import views
```

```
# views.py
from flask import request, render_template
from app import app
```

```
# Route Sections
@app.route('/intro')
def root():
    return 'Week 4'
```

- Next, after creating the file and folder structure and taking part in the file views, finally creating the app file to be able to run the program, here is the code:

```
# app.py
from app import app

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

- Next create modeling to apply machine learning functions from existing data, here is the implementation of the code:

```
# models.py
from sklearn import datasets, model_selection, tree
import pandas as pd
import numpy as np

sample_data = datasets.load_iris()
model_train_and_test = model_selection.train_test_split
model_decission_tree = tree.DecisionTreeClassifier()

# look toys data keys
print(sample_data.keys(), '\n')

# Model train and test
# =====
# sample data
x = pd.DataFrame(sample_data['data'], columns = sample_data['feature_names'])

# sample target
y = pd.DataFrame(sample_data['target'], columns = ['Target'])

x_train, x_test, y_train, y_test = model_train_and_test(x, y, test_size = 0.3, random_state = 1)

# Model decission tree
# =====
def dec_tree():
    # for implementation must same name in function
    dec_tree = model_decission_tree.fit(x_train, y_train)
    return dec_tree
```

- Next make a web appearance (html and css) so that the GUI (graphical user interface) is more attractive, namely as follows:

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1" />
    <title>Demo App</title>

    <!-- CSS - Bootstrap -->
    <link
      href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha3/dist/css/bootstrap.min.css"
      rel="stylesheet"
      integrity="sha384-KK94CHFLLe+nY2dmCWGMq91rCGa5gtU4mk92HdvYe+M/SXH301p5ILy+dN9+nJ0Z"
      crossorigin="anonymous"
    />

    <!-- CSS Custom -->
    <link href="../static/css/style.css" rel="stylesheet" />

    <!-- Media Size -->
    <style>
      .bd-placeholder-img {
        font-size: 1.125rem;
        text-align: middle;
        -webkit-user-select: none;
        -moz-user-select: none;
        -ms-user-select: none;
        user-select: none;
      }

      @media (min-width: 768px) {
        .bd-placeholder-img-lg {
          font-size: 3.5rem;
        }
      }
    </style>
  </head>
  <body>
```

```

<div
  class="d-flex flex-column flex-md-row align-items-center p-3 px-md-4 mb-3 bg-dark text-white border-bottom shadow-sm"
>
  <h5 class="my-0 mr-md-auto font-weight-normal">Iris Demo</h5>
</div>

<div class="container p-3 my-3 bg-secondary text-white">
  {% if setosa %}
  <div class="alert alert-primary">{{setosa}}</div>
  {% elif versicolor %}
  <div class="alert alert-primary">{{versicolor}}</div>
  {% elif virginica %}
  <div class="alert alert-primary">{{virginica}}</div>
  {% endif %}

  <form action="/" class="form-group" method="POST">
    <label for="s_length">Sepal length (cm):</label>
    <input type="number" class="form-control" name="s_length" />

    <label for="w_width">Sepal Width (cm):</label>
    <input type="number" class="form-control" name="s_width" />

    <label for="p_length">Petal length (cm):</label>
    <input type="number" class="form-control" name="p_length" />

    <label for="p_width">Petal Width (cm):</label>
    <input type="number" class="form-control" name="p_width" />

    <br>
    <button class="btn btn-dark" type="submit" name="submit">Submit</button>
  </form>
</div>

<div class="container">
  <div class="card-deck mb-3 text-center">
    <!-- Setosa -->
    <div class="card mb-4 shadow-sm">
      <h4 class="my-0 font-weight-normal">Setosa</h4>
    </div>

    <div class="card-body">
      <ul class="list-unstyled mt-3 mb-4">
        <li>Iris setosa, is a species in the genus Iris, it is also in the subgenus Limniris and in the series Tripetalae. It i
      </ul>
    </div>

    <!-- Virginica -->
    <div class="card mb-4 shadow-sm">
      <h4 class="my-0 font-weight-normal">Virginica</h4>
    </div>

    <div class="card-body">
      <ul class="list-unstyled mt-3 mb-4">
        <li>Iris virginica, with the common name Virginia iris, is a perennial species of flowering plant, native to eastern No
      </ul>
    </div>

    <!-- Versicolor -->
    <div class="card mb-4 shadow-sm">
      <h4 class="my-0 font-weight-normal">Versicolor</h4>
    </div>

    <div class="card-body">
      <ul class="list-unstyled mt-3 mb-4">
        <li>Iris versicolor is also commonly known as the blue flag, harlequin blueflag, larger blue flag, northern blue flag,
      </ul>
    </div>
  </div>

```

```

        </div>
    </div>
</div>

<!-- JS -->
<script
    src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0-alpha3/dist/js/bootstrap.bundle.min.js"
    integrity="sha384-ENjd04Dr2bkBIFxQpeoTz1HIcje39Wm4jDkdf19U8gI4ddQ3GYNs7NTKfAdVQSZe"
    crossorigin="anonymous"
></script>
</body>
</html>

```

```

html {
    font-size: 14px;
}

@media (min-width: 768px) {
    html {
        font-size: 16px;
    }
}

.container {
    max-width: 960px;
}

.card-deck .card {
    min-width: 220px;
}

```

- After creating a web view, the next step is to create a backend for the web navigation, which is as follows:

```

# views.py
from flask import request, render_template
from app import app
from app import models

# Route Sections

@app.route('/intro')
def root():
    return 'Week 4'

@app.route('/', methods = ['GET', 'POST'])
def home():
    if request.method == 'POST':
        sepal_length = request.form['s_length']
        sepal_width = request.form['s_width']
        petal_length = request.form['p_length']
        petal_width = request.form['p_width']

        y_pred = [[sepal_length, sepal_width, petal_length, petal_width]]
        model_tree = models.dec_tree()

        prediction = model_tree.predict(y_pred)

        setosa = 'The flower is classified as Setosa'
        versicolor = 'The flower is classified as Versicolor'
        virginica = 'The flower is classified as Virginica'

        if prediction == 0:
            return render_template('index.html', setosa = setosa)
        elif prediction == 1:
            return render_template('index.html', versicolor = versicolor)

```

```
else:
    return render_template('index.html', virginica = virginica)

return render_template('index.html')
```

- The following is the final appearance of the application:

Iris Demo

Sepal length (cm):

Sepal Width (cm):

Petal length (cm):

Petal Width (cm):

Submit

Setosa

Iris setosa, is a species in the genus Iris, it is also in the subgenus Limniris and in the series Tripetalae. It is a rhizomatous perennial from a wide range across the Arctic sea, including Alaska, Maine, Canada, Russia, northeastern Asia, China, Korea and southwards to Japan.

Virginica

Iris virginica, with the common name Virginia iris, is a perennial species of flowering plant, native to eastern North America. It is common along the coastal plain from Florida to Georgia in the Southeastern United States.

Versicolor

Iris versicolor is also commonly known as the blue flag, harlequin blueflag, larger blue flag, northern blue flag, and poison flag, plus other variations of these names, and in Britain and Ireland as purple iris. It is a species of Iris native to North America, in the Eastern United States and Eastern Canada.