SPRINT 1

Date	29 October
Team ID	PNT2022TMID45932
Project Name	Smart fashion recommender

INPUT:

app.py

```
from tensorflow.keras.preprocessing import image
from tensorflow.keras.layers import GlobalMaxPooling2D
from tensorflow.keras.applications.resnet50 import ResNet50, preprocess_input
from tensorflow.keras.models import Sequential
import numpy as np
from numpy.linalg import norm
import os
from tqdm import tqdm
import pickle
model = ResNet50(weights="imagenet", include_top=False, input_shape=(224, 224, 3))
model.trainable = False
model = Sequential([model, GlobalMaxPooling2D()])
#model.summary()
def extract_features(img_path,model):
img = image.load_img(img_path,target_size=(224,224))
img_array = image.img_to_array(img)
expand_img = np.expand_dims(img_array,axis=0)
preprocessed_img = preprocess_input(expand_img)
result_to_resnet = model.predict(preprocessed_img)
flatten_result = result_to_resnet.flatten()
# normalizing
result_normlized = flatten_result / norm(flatten_result)
```

```
return result_normlized
#print(os.listdir('fashion_small/images'))
img_files = []
for fashion_images in os.listdir('fashion_small/images'):
images_path = os.path.join('fashion_small/images', fashion_images)
img_files.append(images_path)
# extracting image features
image_features = []
for files in tqdm(img_files):
features_list = extract_features(files, model)
image_features.append(features_list)
pickle.dump(image_features, open("image_features_embedding.pkl", "wb"))
pickle.dump(img_files, open("img_files.pkl", "wb"))
```

main.py

```
import streamlit as st

import tensorflow

import pandas as pd

from PIL import Image

import pickle

import numpy as np
```

```
from tensorflow.keras.preprocessing import image

from tensorflow.keras.applications.resnet50 import ResNet50, preprocess_input

from tensorflow.keras.layers import GlobalMaxPooling2D

from tensorflow.keras.models import Sequential

from numpy.linalg import norm

from sklearn.neighbors import NearestNeighbors

import os

features_list = pickle.load(open("image_features_embedding.pkl", "rb"))

img_files_list = pickle.load(open("img_files.pkl", "rb"))

model = ResNet50(weights="imagenet", include_top=False, input_shape=(224,
224, 3))

model.trainable = False

model = Sequential([model, GlobalMaxPooling2D()])

st.title('Clothing recommender system')

def save_file(uploaded_file):

try:
```

```
with open(os.path.join("uploader", uploaded_file.name), 'wb') as f:

f.write(uploaded_file.getbuffer())

return 1

except:

return 0

def extract_img_features(img_path, model):

img = image.load_img(img_path, target_size=(224, 224))

img_array = image.img_to_array(img)

expand_img = np.expand_dims(img_array, axis=0)

preprocessed_img = preprocess_input(expand_img)

result_to_resnet = model.predict(preprocessed_img)

flatten_result = result_to_resnet.flatten()

# normalizing

result_normlized = flatten_result / norm(flatten_result)

return result_normlized
```

```
def recommendd(features, features_list):

neighbors = NearestNeighbors(n_neighbors=6, algorithm='brute',
metric='euclidean')

neighbors.fit(features_list)

distence, indices = neighbors.kneighbors([features])

return indices

uploaded_file = st.file_uploader("Choose your image")

if uploaded_file is not None:

if save_file(uploaded_file):

# display image

show_images = Image.open(uploaded_file)

size = (400, 400)

resized_im = show_images.resize(size)

st.image(resized_im)

# extract features of uploaded image

features = extract_img_features(os.path.join("uploader", uploaded_file.name),
```

```
model)

#st.text(features)

img_indicess = recommendd(features, features_list)

col1,col2,col3,col4,col5 = st.columns(5)

with col1:

st.header("I")

st.image(img_files_list[img_indicess[0][0]])

with col2:

st.header("II")

st.image(img_files_list[img_indicess[0][1]])

with col3:

st.header("III")

st.image(img_files_list[img_indicess[0][2]])

with col4:

st.header("IV")

st.image(img_files_list[img_indicess[0][3]])
```

```
with col5:

st.header("V")

st.image(img_files_list[img_indicess[0][4]])

else:

st.header("Some error occur")
```

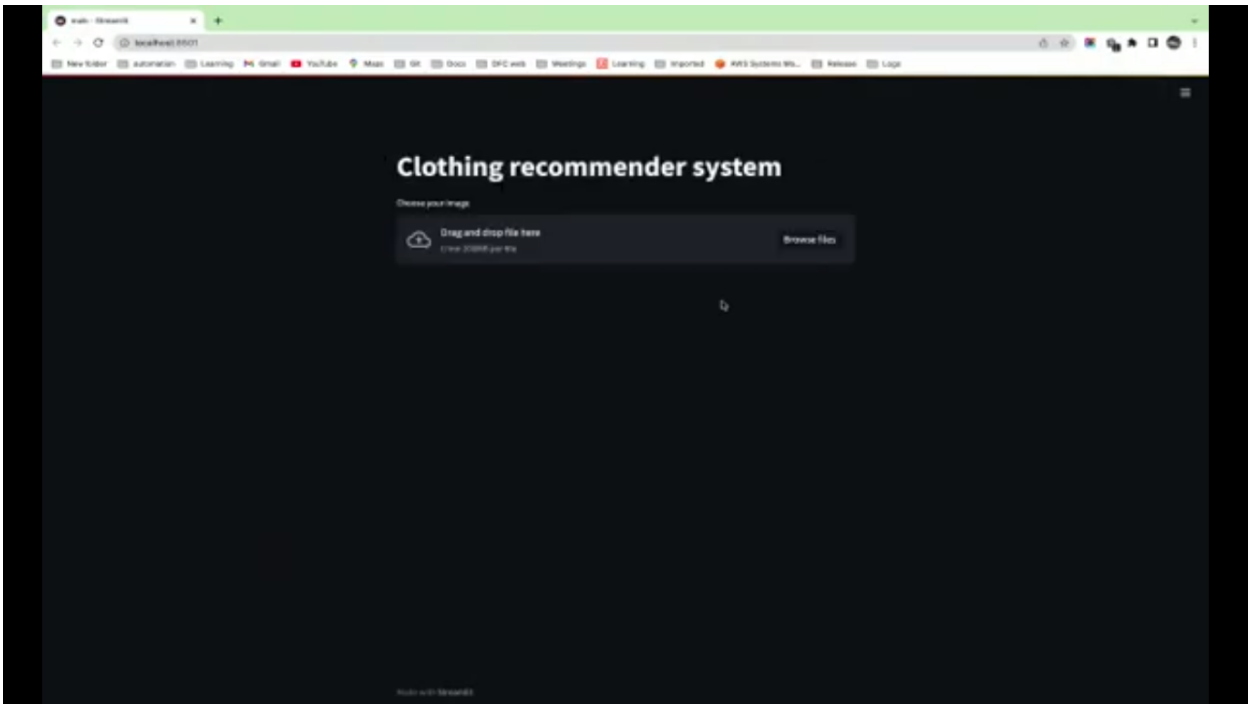
Test .py

```
import pickle

import numpy as np

from tensorflow.keras.preprocessing import image

from tensorflow.keras.applications.resnet50 import ResNet50, preprocess_input

from tensorflow.keras.layers import GlobalMaxPooling2D

from tensorflow.keras.models import Sequential

from numpy.linalg import norm
```

```
from sklearn.neighbors import NearestNeighbors

import cv2

features_list = pickle.load(open("image_features_embedding.pkl", "rb"))

img_files_list = pickle.load(open("img_files.pkl", "rb"))

print(np.array(features_list).shape)

model = ResNet50(weights="imagenet", include_top=False, input_shape=(224,
224, 3))

model.trainable = False

model = Sequential([model, GlobalMaxPooling2D()])

img = image.load_img('sample/shoes.jpg',target_size=(224,224))

img_array = image.img_to_array(img)

expand_img = np.expand_dims(img_array,axis=0)

preprocessed_img = preprocess_input(expand_img)

result_to_resnet = model.predict(preprocessed_img)

flatten_result = result_to_resnet.flatten()

# normalizing
```

```
result_normlized = flatten_result / norm(flatten_result)

neighbors = NearestNeighbors(n_neighbors = 6, algorithm='brute',
metric='euclidean')

neighbors.fit(features_list)

distence, indices = neighbors.kneighbors([result_normlized])

print(indices)

for file in indices[0][1:6]:

print(img_files_list[file])

tmp_img = cv2.imread(img_files_list[file])

tmp_img = cv2.resize(tmp_img,(200,200))

cv2.imshow("output", tmp_img)

cv2.waitKey(0)
```

Output


Clothing recommender system
Choose your image
Drag and drop file here
Browse files