

FACE RECOGNITION DENGAN DEEPFACE

Tugas Kelompok Pembelajaran Mesin Lanjut (EI-7007)

Oleh:

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(Program Studi Doktor Teknik Elektro dan Informatika)



**SEKOLAH TEKNIK ELEKTRO DAN INFORMATIKA
INSTITUT TEKNOLOGI BANDUNG
MEI 2022**

▼ PEMBUATAN KUMPULAN DATA

▼ 1. Instalasi Deepface

```
!pip install deepface
```

```
Requirement already satisfied: tqdm>=4.30.0 in /usr/local/lib/python3.7/dist-packages (from deepface==0.7.0)
Requirement already satisfied: Pillow>=5.2.0 in /usr/local/lib/python3.7/dist-packages (from deepface==0.7.0)
Requirement already satisfied: fire>=0.4.0 in /usr/local/lib/python3.7/dist-packages (from deepface==0.7.0)
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Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.7/dist-packages (from deepface==0.7.0)
```

```
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.7/
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Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.7/di
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Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-
Requirement already satisfied: urllib3!=1.25.0,!>=1.25.1,<1.26,>=1.21.1 in /usr/loc
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.7/dist-pa
Requirement already satisfied: PySocks!=1.5.7,>=1.5.6 in /usr/local/lib/python3.7/
```

▼ 2. Mount Google Drive

```
from google.colab import drive
drive.mount('/content/drive')
```

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.m

```
%cd /content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mes
```

```
/content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mesin Lanjut/Tugas/Ke]
```

▼ 3. Import Library

```
import os
import cv2
import pickle
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.metrics.pairwise import cosine_similarity

from PIL import Image
from os import listdir
from deepface import DeepFace
```

▼ 4. Memproduksi, Menyimpan, Memuat dan Menampilkan data dari wajah.

▼ Memproduksi data dari wajah dengan model ArcFace

```
folder='AnggotaKelas/'
database = {}
models = ["VGG-Face", "Facenet", "Facenet512", "OpenFace",
          "DeepFace", "DeepID", "ArcFace", "Dlib"]
i = 6

for filename in listdir(folder):
    path = folder + filename
    number = DeepFace.represent(path, model_name=models[i],
                                align=False,
                                enforce_detection = True)
    number = np.asarray(np.array(number))
    database[filename] = number
```

▼ Menyimpan data wajah ke dalam file .pkl

```
myfile = open("data.pkl", "wb")
pickle.dump(database, myfile)
myfile.close()
```

▼ Memuat data wajah dari file .pkl

```
myfile = open("data.pkl", "rb")
data = pickle.load(myfile)
myfile.close()
```

▼ Menampilkan data wajah

data

```
3.01162452e-02, 3.23075019e-02, 1.45804519e-02, -1.71837345e-01,
-9.19244662e-02, 1.34388171e-02, 1.33630875e-02, 2.14882493e-01,
-8.62496495e-02, -8.89773481e-03, -4.66442332e-02, 1.04219750e-01,
-4.71051335e-02, 9.83616337e-02, -2.96602011e-01, 3.34913909e-01,
-2.17390791e-01, -8.80041271e-02, 4.88047600e-02, 1.59812048e-01,
1.41791105e-01, -1.51074743e-02, -7.43276998e-02, -1.87700894e-03,
-1.01860195e-01, -8.73850435e-02, -6.84828088e-02, 3.66853289e-02,
7.37819374e-02, 6.65027350e-02, -5.28283007e-02, -1.36386141e-01,
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```

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-8.36446360e-02, -1.81271620e-02, 2.39007950e-01, -4.35493886e-02,
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8.93519372e-02, -1.08855844e-01, 1.73984885e-01, 6.58060461e-02,
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-1.57071888e-01, -4.69318330e-02, -5.61115086e-01, -4.19671126e-02,
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1.26495481e-01, 3.00322086e-01, -1.02765843e-01, 2.59481043e-01,
-3.18738110e-02, 4.90235090e-02, -9.29539427e-02, 7.85039961e-02,
1.88337713e-01, -3.33188891e-01, -2.16575712e-01, -6.72939420e-02,
-9.73019004e-02, -1.03922989e-02, 3.00435573e-01, 2.24859640e-01,

✓ 0s completed at 10:01 PM



▼ Pengenalan Wajah

▼ 1. Instalasi Deepface

```
!pip install deepface
```

```
Requirement already satisfied: keras>=2.2.0 in /usr/local/lib/python3.7/dist-packages (from deepface==0.7.0)
Requirement already satisfied: opencv-python>=4.5.5.64 in /usr/local/lib/python3.7/dist-packages (from deepface==0.7.0)
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Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.7/dist-packages
Requirement already satisfied: PySocks!=1.5.7,>=1.5.6 in /usr/local/lib/python3.7/dist-packages
```

▼ 2. Mount Google Drive

```
from google.colab import drive
drive.mount('/content/drive')
```

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount(force=True)

```
%cd /content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mesin Lanjut
```

```
/content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mesin Lanjut/Tugas/Kelompok
```

▼ 3. Import Library

```
import os
import cv2
import pickle
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.metrics.pairwise import cosine_similarity

from PIL import Image
from os import listdir
from deepface import DeepFace
```

▼ 4. Memuat data wajah dari file .pkl

```
database = {}
myfile = open("data.pkl", "rb")
```



```
database = pickle.load(myfile)
```

▼ 5. Memilih model yang digunakan

Model yang digunakan adalah ArcFace

```
models = ["VGG-Face", "Facenet", "Facenet512", "OpenFace", "DeepFace",  
          "DeepID", "ArcFace", "Dlib"]  
i = 6
```

▼ 6. Fungsi untuk menghitung euclidean

```
def euclidean_distance(source_representation, test_representation):  
    euclidean_distance = source_representation - test_representation  
    euclidean_distance = np.sum(np.multiply(euclidean_distance,  
                                             euclidean_distance))  
    euclidean_distance = np.sqrt(euclidean_distance)  
    return euclidean_distance
```

▼ 7. Fungsi untuk mencari wajah

```
def mencari_wajah(img_path):  
    index = 0  
    prediksi = ''  
    jarak = 10  
    pic2 = np.array(DeepFace.represent(img_path, model_name=models[i],  
                                       align=False,  
                                       enforce_detection = True))  
    for key, value in database.items():  
        pic1 = value  
        distance = euclidean_distance(pic1, pic2)  
        # print(distance)  
        if(distance < jarak):  
            prediksi = key  
            jarak = distance  
        index += 1  
    menampilkan_wajah_cocok(img_path, prediksi, jarak)
```

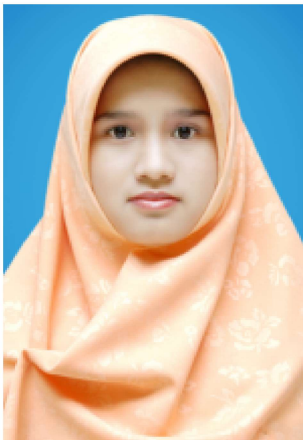
▼ 8. Fungsi untuk menampilkan hasil pencarian

```
def menampilkan_wajah_cocok(image_path, prediksi, jarak):  
    threshold = 4.4  
    if(jarak < threshhold):  
        print (f"Ini anggota kelas bernama : {prediksi.split('.')[0]}")  
        print(f"ED: {round(jarak,3)}")  
    else :  
        print ("Ini BUKAN anggota kelas")  
  
    img = plt.imread(img_path)  
    plt.imshow(img)  
    plt.axis('off')  
    plt.show()
```

▼ 9. Uji coba Foto yang merupakan anggota kelas.

```
img_path = 'fotoTest/meza silvana.jpg'  
mencari_wajah(img_path)
```

Ini anggota kelas bernama : Meza Silvana
ED: 3.356



```
img_path = 'fotoTest/meredita susanty.jpg'  
mencari_wajah(img_path)
```

Ini anggota kelas bernama : Meredita Susanty
ED: 3.34



▼ 10. Uji coba Foto yang merupakan bukan anggota kelas.



```
img_path = 'fotoTest/sucipto.jpg'  
mencari_wajah(img_path)
```

🔗 Ini BUKAN anggota kelas



+ Code

+ Text

```
%cd /content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mes  
from google.colab import files
```

```
uploaded = files.upload()
```

```
for fn in uploaded.keys():  
    print('User uploaded file "{name}" with length {length} bytes'.forma  
          name=fn, length=len(uploaded[fn]));
```

```
%cd /content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mes  
img_path = "UploadFiles/" + fn  
print("-----")  
mencari_wajah(img_path)
```

/content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mesin Lanjut/Tugas/Ke]

Choose Files teuku wisnu.jfif

- **teuku wisnu.jfif**(image/jpeg) - 87700 bytes, last modified: 5/7/2022 - 100% done

Saving teuku wisnu.jfif to teuku wisnu.jfif

User uploaded file "teuku wisnu.jfif" with length 87700 bytes

/content/drive/MyDrive/S3/Kuliah/Semester2/EI7007-Pembelajaran Mesin Lanjut/Tugas/Ke]

Ini BUKAN anggota kelas



✓ 17s completed at 10:18 PM

