

Fingerprint and Iris Recognition with CNN

1.SYSTEM REQUIREMENT SPECIFICATION

Hardware Requirements

- **System Processor** : i5/i7.
 - **Hard Disk** : 1 TB.
 - **Ram** : 8 GB/12GB.
- Any desktop / Laptop system with above configuration or higher level.

Software Requirements:

- **Operating system** : Windows 8 / 10
- **Programming Language** : Python 3
- **Environment** : Anaconda Framework
- **IDE** : Jupyter Notebook
- **Libraries** : Keras, TensorFlow

2. REQUIREMENT Libraries and Modules

- `import warnings warnings.filterwarnings("ignore")`
- `import numpy as np`
- `import cv2`
- `import matplotlib.pyplot as plt`
- `%matplotlib inline`
- `import keras`
- `from tensorflow.keras import layers`
- `from tensorflow.keras.models import Model`
- `from tensorflow.keras.utils import Sequence`
- `from sklearn.utils import shuffle`
- `from sklearn.model_selection import train_test_split`
- `from imgaug import augmenters as iaa`
- `import random`

3.Steps to Run our Fingerprint And Iris Recognition With CNN Approach Project

i. Open the anaconda navigator and Set the path where your project is and run your program

```
Anaconda Prompt (anaconda3)

(base) C:\Users\Darsh>cd
C:\Users\Darsh

(base) C:\Users\Darsh>:

(base) E:\>cd "Final Year project"

(base) E:\Final Year project>cd "IRIS & Finger Print with Front End"

(base) E:\Final Year project\IRIS & Finger Print with Front End>cd fingerPrint_Iris_new

(base) E:\Final Year project\IRIS & Finger Print with Front End\fingerPrint_Iris_new>python app.py
```

Program is running successfully

```
Anaconda Prompt (anaconda3) - python app.py

(base) C:\Users\Darsh>:

(base) E:\>cd "Final Year project"

(base) E:\Final Year project>cd "IRIS & Finger Print with Front End"

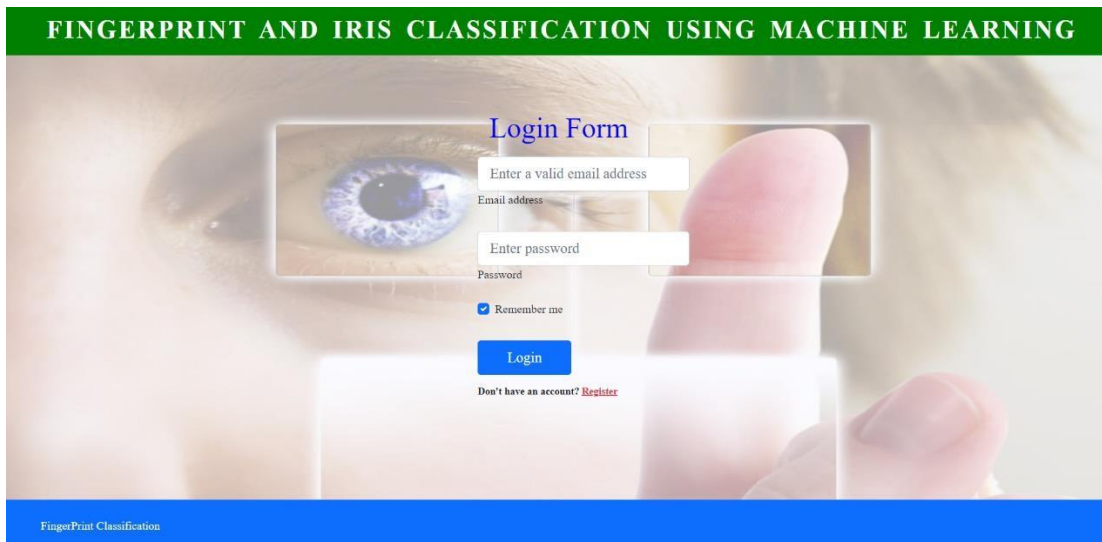
(base) E:\Final Year project\IRIS & Finger Print with Front End>cd fingerPrint_Iris_new

(base) E:\Final Year project\IRIS & Finger Print with Front End\fingerPrint_Iris_new>python app.py
2022-07-05 10:30:34.073049: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2022-07-05 10:30:34.075264: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2022-07-05 10:30:35.312336: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2022-07-05 10:30:35.315459: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cublas64_11.dll'; dlerror: cublas64_11.dll not found
2022-07-05 10:30:35.318222: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cublaslt64_11.dll'; dlerror: cublaslt64_11.dll not found
2022-07-05 10:30:35.320471: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cufft64_10.dll'; dlerror: cufft64_10.dll not found
2022-07-05 10:30:35.322884: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'curand64_10.dll'; dlerror: curand64_10.dll not found
2022-07-05 10:30:35.327756: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cusolver64_11.dll'; dlerror: cusolver64_11.dll not found
2022-07-05 10:30:35.330781: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cusparse64_11.dll'; dlerror: cusparse64_11.dll not found
2022-07-05 10:30:35.333875: W tensorflow/core/common_runtime/gpu/gpu_device.cc:1850] Cannot dlopen some GPU libraries. Please make sure the missing libraries mentioned above are installed properly if you would like to use GPU. Follow the guide at https://www.tensorflow.org/install/gpu for how to download and setup the required libraries for your platform.
Skipping registering GPU devices...
2022-07-05 10:30:35.338886: I tensorflow/core/platform/cpu_feature_guard.cc:193] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX AVX2
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
* Serving Flask app "app" (lazy loading)
* Environment: production
   WARNING: Do not use the development server - use a production WSGI server instead.
* Debug mode: on
* Restarting with watchdog (windowsapi)
2022-07-05 10:30:55.181221: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2022-07-05 10:30:55.182987: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2022-07-05 10:30:56.909281: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2022-07-05 10:30:56.912686: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cublas64_11.dll'; dlerror: cublas64_11.dll not found
2022-07-05 10:30:56.915380: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cublaslt64_11.dll'; dlerror: cublaslt64_11.dll not found
2022-07-05 10:30:56.918087: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cufft64_10.dll'; dlerror: cufft64_10.dll not found
2022-07-05 10:30:56.921095: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'curand64_10.dll'; dlerror: curand64_10.dll not found
2022-07-05 10:30:56.924355: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cusolver64_11.dll'; dlerror: cusolver64_11.dll not found
2022-07-05 10:30:56.926459: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cusparse64_11.dll'; dlerror: cusparse64_11.dll not found
2022-07-05 10:30:56.928992: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudnn64_8.dll'; dlerror: cudnn64_8.dll not found
2022-07-05 10:30:56.929676: W tensorflow/core/common_runtime/gpu/gpu_device.cc:1850] Cannot dlopen some GPU libraries. Please make sure the missing libraries mentioned above are installed properly if you would like to use GPU. Follow the guide at https://www.tensorflow.org/install/gpu for how to download and setup the required libraries for your platform.
Skipping registering GPU devices...
2022-07-05 10:30:56.933746: I tensorflow/core/platform/cpu_feature_guard.cc:193] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in performance-critical operations: AVX AVX2
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
* Debugger is active!
* Debugger PID: 183-421-860
* Running on http://127.0.0.1:3000/ (Press CTRL+C to quit)
```

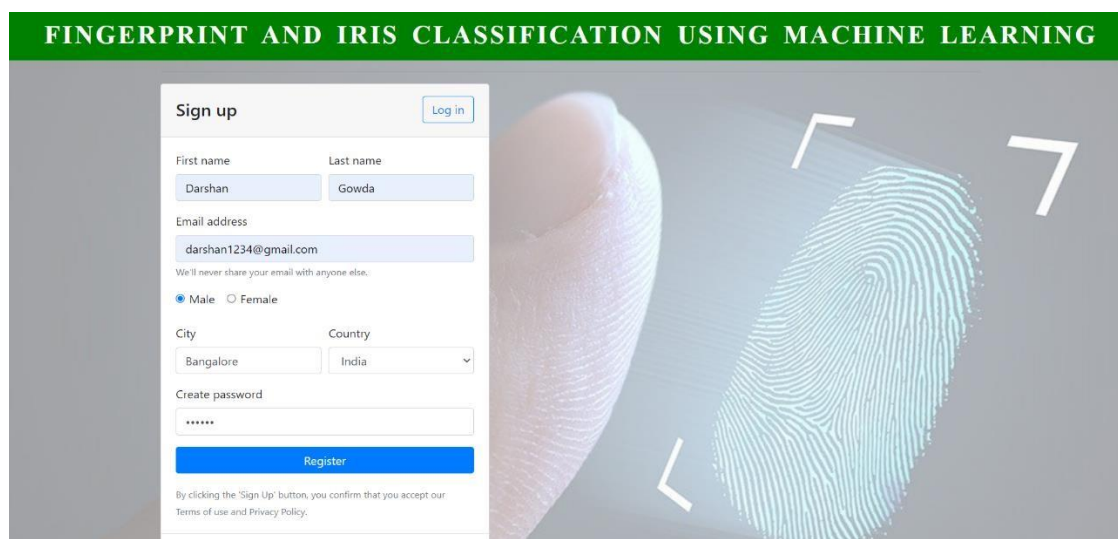
ii. Now open any browser and type the localhost id as of now we have given

<http://localhost:3000>

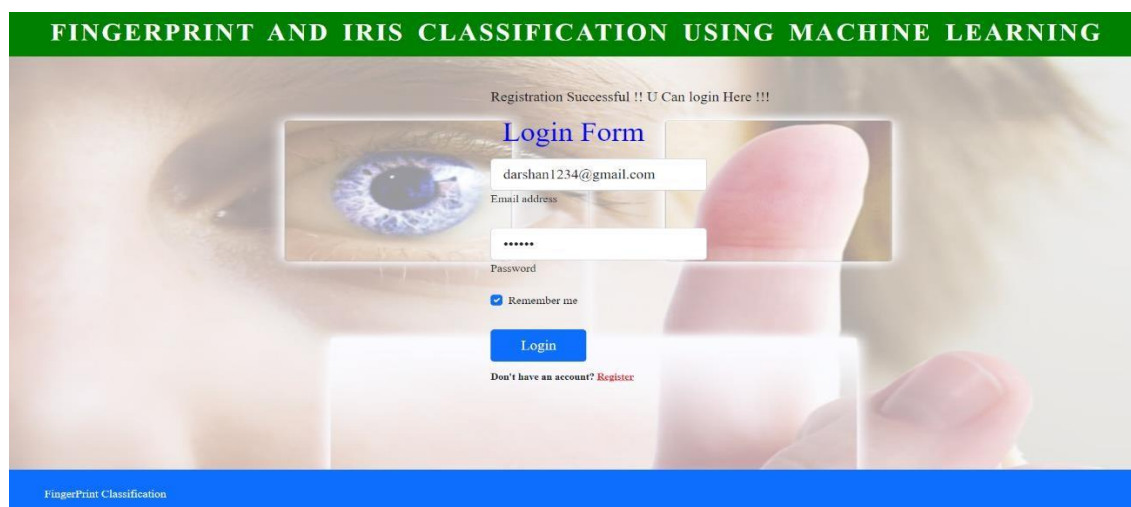
iii. After clicking on enter project Home page appears



IV. Now if you are already an user you can login or you need to register



V. Once the registration is done successfully you can login



VI. After Logging in the home page will be displayed to the user

FINGERPRINT AND IRIS CLASSIFICATION USING MACHINE LEARNING

HOME
CNN
Change Password
Logout

Upload Original Fingerprint:

Choose File
No file chosen

Upload Test Fingerprint :

Choose File
No file chosen

Upload Original Iris :

Choose File
No file chosen

Upload Test Iris :

Choose File
No file chosen


Predict

VII. Now you can test the Iris and fingerprint of the suspect with the data you are having

FINGERPRINT AND IRIS CLASSIFICATION USING MACHINE LEARNING

HOME
CNN
Change Password
Logout


Original Fingerprint:



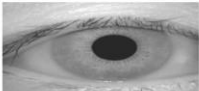
FingerPrint Matching Score

[[0.9999991]]

Test Fingerprint:



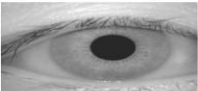
Original Iris:



Iris Matching Score

[[0.9999991]]

Test Iris:



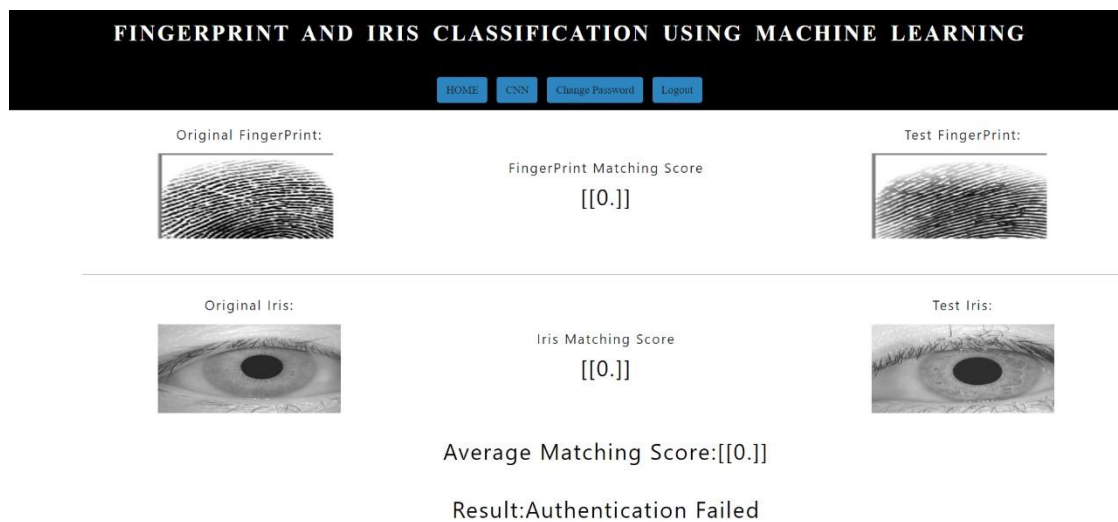
Average Matching Score:[[0.9999991]]

Result:Authentication Success

From the above picture, you can see both iris and fingerprint is matching
Hence the Average Matching score is 99% and Authentication is Success
Another test case with a different fingerprint and same iris



Another test case with a different fingerprint and different iris



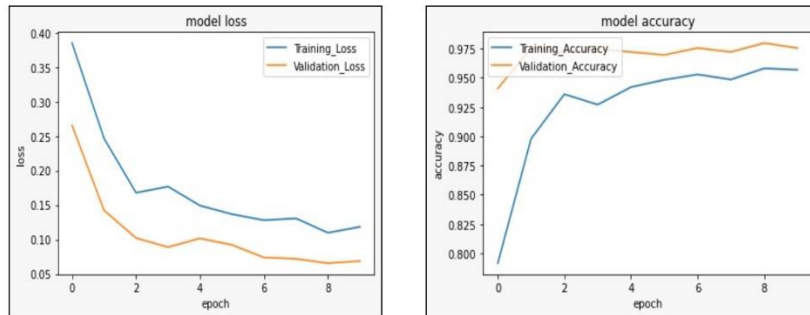
As you can see in both images that is fingerprint and iris matching score is 0%

VIII. Accuracy and Loss Plot Graph for CNN Model as Shown Below

FINGERPRINT AND IRIS CLASSIFICATION USING MACHINE LEARNING

[HOME](#) [CNN](#) [Change Password](#) [Logout](#)

Accuracy and Loss Plot Graph for CNN Model



IX. You can also change the Password as Shown Below

FINGERPRINT AND IRIS CLASSIFICATION USING MACHINE LEARNING

[HOME](#) [CNN](#) [Change Password](#) [Logout](#)

Change Password

Current Password:

New Password:

The password must be 8-20 characters, and must not contain spaces.

Re-enter:

To confirm, type the new password again.

[Save](#)

X. For storing and retrieving User credentials we will be using Excel sheet as shown Below

The screenshot shows an Excel spreadsheet with the following data:

name	email	password
admin	admin@gmail.com	admin
Darshan	darshan1234@gmail.com	123456