AI
Handwritten Signature Verification 1.0
(HWSV)

날짜	버전	내용	작성자
2022.10.14	1.0	최초 작성	Ashutosh Sharma and Sampan Acharya

Contents

Figures

1. Overview:

- AI Handwritten Signature Verification provides the service to authenticate user's signature via web-based API using various user interaction details.
- This document provides a user guide on how to implement the HWSV service using API.
- Entire code is on GitHub repository.

2. Feature Details:

Fig 1: Feature details

- Getting 2 images as input i.e., original and forged
- Resizing:
    - The system must be able to maintain the high performance regardless of the size and slant given for the signature. It should be important that the system must be insensitive enough for the correction in the signature image. The image matrix is rescaled to standard resolution which is 155 X 220 in this case.

3. Flow Diagram for whole process:

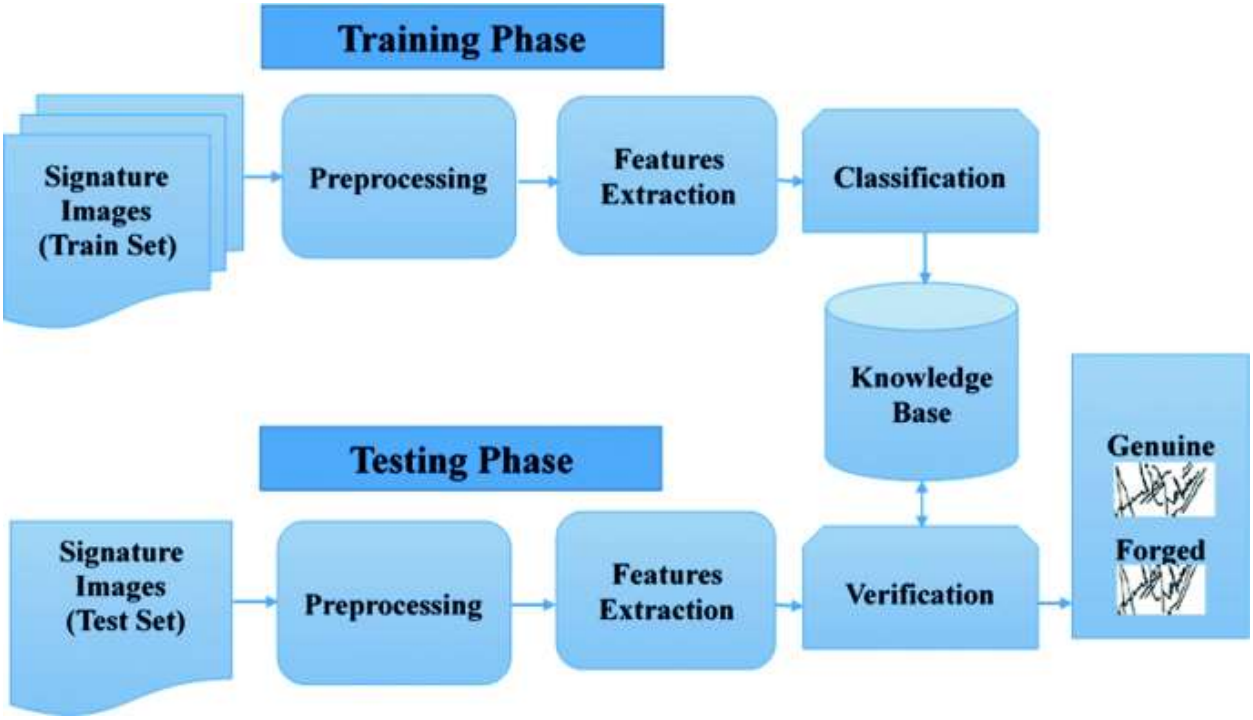

Fig 2: Process Flow Chart

4. How it works:

- The input will we taken in the form of 2 images, one will we the original signature and another will be the forged signature.
- These images will pass through the convolutional neural networks after preprocessing pipeline.
- Preprocessing pipeline load the image, add a extra channel to it and take the bitwise not of it.
- we Normalize image pixel values or divide image matrix by 255.
- These preprocessed images are set in the form of list to the model and then this preprocessed data is passed to the model (Concatenated Convolution Model).
- Prediction probability is given by Concatenated Convolution Model.
- The output score is the Euclidean score or the nearest similarity score for both of the images.

5. API Server Working Screenshot:

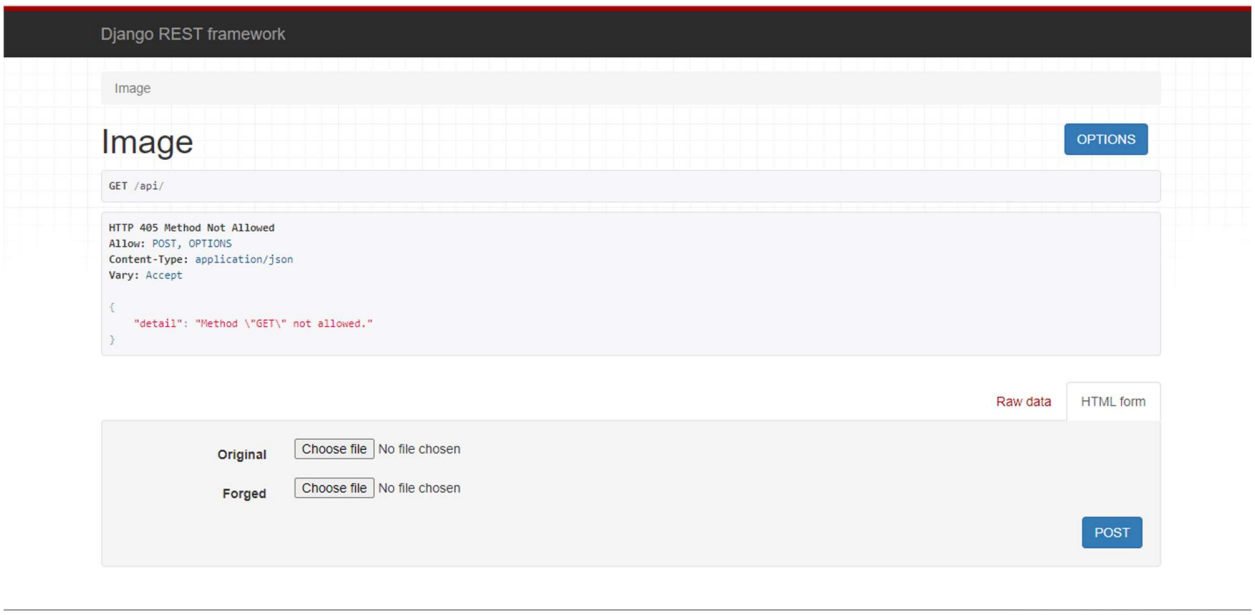

Fig. 3: API Home Page Screenshot

6. Running HWSV API on Local Server:

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\company\HWSV_local\venv> .\env\Scripts\activate
(env) PS D:\company\HWSV_local\venv> cd env
(env) PS D:\company\HWSV_local\venv\env> cd .\hwsv_api\
(env) PS D:\company\HWSV_local\venv\env\hwsv_api> python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...
```

```
System check identified no issues (0 silenced).
October 17, 2022 - 11:54:50
Django version 3.2.6, using settings 'hwsv_api.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.
```