Facial Recognition Using Python OpenCV

Facial recognition is the process of identifying or verifying the identity of a person using their facial features. This project implements a facial recognition system using Python OpenCV.

Requirements

- Python 3.x
- OpenCV
- NumPy

Installation

First, ensure that Python is installed on your machine. Then install OpenCV and NumPy using pip:

```bash
pip install opencv-python
pip install numpy
```

Usage

Dataset Creation

To create a dataset for the facial recognition system, run `create_dataset.py`. This script will capture images from your camera and save them to the `dataset` folder.

```bash
python create_dataset.py
```

You will be prompted to enter a name for the person you are capturing images of. The script will then capture 50 images and save them to a folder with the person's name in the `dataset` folder.

Repeat this process for each person you want to add to the dataset.

Training

Once you have created a dataset, you can train the facial recognition system using `train.py`. This script will use the images in the `dataset` folder to train a facial recognition model.

```bash
python train.py
```

The script will save the trained model as a file named `trainer.yml`.

Recognition

To use the trained model to recognize faces, run `recognize.py`. This script will open your camera and start recognizing faces in real-time.

```bash
python recognize.py
```

If the script recognizes a face that it has been trained on, it will display the person's name on the screen.

Troubleshooting

- If you encounter an error while running any of the scripts, make sure that you have installed the required libraries and that your camera is connected and working properly.
- If the recognition script is not recognizing faces, try adjusting the `scaleFactor` and `minNeighbors` parameters in the `cv2.CascadeClassifier.detectMultiScale()` function in `recognize.py`.

Conclusion

This project provides a basic implementation of facial recognition using Python OpenCV. It can be used as a starting point for more advanced facial recognition applications.