Main task: Face detection and recognition by video

Necessary information to use the project:

- create_face_recognition_models.py/ipynb - creation models for detection and recognition
- face_recognition_api.py - realization main functions
- find_faces.ipynb - pipeline of the project
- folder ‘Training ‘contains training photo sets for 10 people
- folder ‘Test’ contains folders for every person with testing videos and its descriptions
- folder ‘results’ contains pictures for every found face in all testing videos
- folder ‘metrics’ contains txt files with detailed descriptions of the results: TP,FP,FN,precision,recall

Train dataset:
The training dataset consists of a set of photos of 10 famous people. Photos for every person are in separate folder.

Test dataset:
The test dataset consists of a set of videos of 10 famous people with txt description (left, top, right, bottom).

Metrics:
Precision and recall were used as a base metrics for the project.

Created models:
The first model was using FaceRecognitionLibrary, wich was built using dlib.
There were used two pretrained models, which was not change: face embedding and face detection. Recognition was realized by C-Support Vector Classification (sklearn lib).
The second model also used two pretrained models for face embedding and face detection from FaceRecognitionLibrary. Recognition was realized by k-nearest neighbors vote (sklearn lib).
The third model was using OpenCV library. There were used pretrained Haar feature-based cascade classifiers for detection (with settings from haarcascade_frontalface_default) and retrained Local Binary Patterns recognizer.

Results for test dataset:
The first model

- Precision: 0.876
- Recall: 0.876
- Time: 442.3576247692108

The second model

- Precision: 0.747
- Recall: 0.747
- 376.21446347236633

The third model

- Precision: 0.099
- Recall: 0.107
- 257.80742931365967