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ECE 753

Class Attendance Automation

Problem and Objective:

The class project of Pattern recognition and Neural Networks holds the objective to develop an algorithm which can automatically detect faces out of a video and recognize them through a database. This algorithm should be implemented to solve real world problems such as class attendance.

School teachers and students loose valuable class time taking attendance when this time can otherwise be used with teaching. By having attendance to be automated, it can completely solve this issue, giving teachers more time with their students for their classes and removing the need for students to be waiting and listening for their name.

Due to lack of databases of students' faces and videos of them getting in classrooms, a proof of concept will be developed using a database of actors' pictures and their movies.

Dataset:

The training set will be taken from the CelebA dataset, which is a database containing pictures of different world celebrities.

As for the testing set, different movie scenes can be used. This will be able to be used as the algorithm can detect if, when and where a certain actor has appeared in the movie.

Implementation:

For this project to be implemented the concept of Face Recognition in Video (FRiV) will need to be further studied. Different techniques for the concept will still need to be studied to see the feasibility of the project and how it can be implemented.

Some ideas of how the project can be implemented is using neural networks in order to train the algorithm to detect and recognize faces in videos.

Face detection in videos can be performed using the classical feature-based cascade classifier using the OpenCV library. As for face detection and recognition, this can be applied using a multi-task cascade CNN using the MTCNN library. Other techniques and frameworks such as YOLO (You Only Look Once) will also be studied in order to decide the best implementation for such problem.