K.S.INSTITUTE OF TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Project phase 0+Seminar [17CSP78]

Suspect Identification Alert System

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Under the guidance of :

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# Suspect Identification Alert System

Problem Statement: Face detection is an important part of modern security systems but since machine learning systems require a large dataset to provide high accuracy, our model gives a solution to identify the suspect - efficiently

Proposed Solution:
 providing a code for accurate prediction of faces using data augmentation Techniques (available set of images)
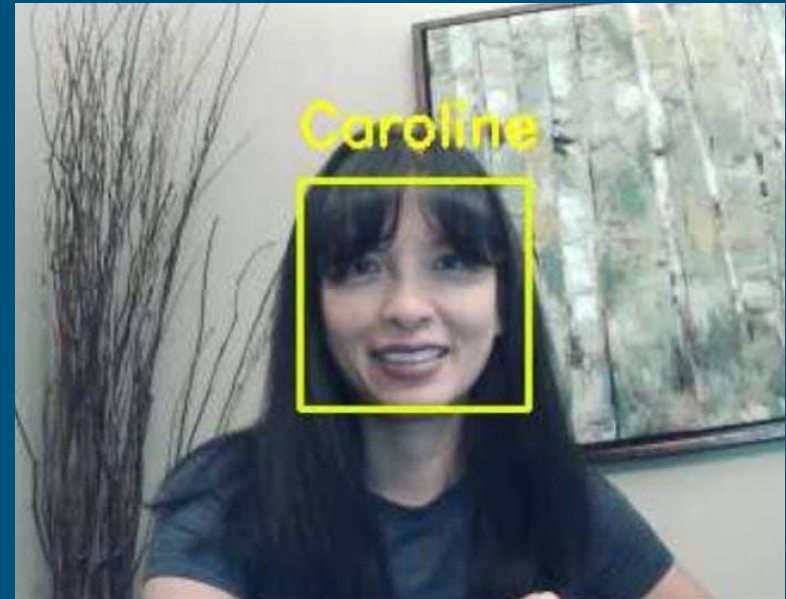
Augmentation

Augment means "to make something bigger". In the context of our project, we plan to enlarge the dataset with the minimal pictures we have of the person and creating multiple transformed copies of it. This ensures that the neural networks can train better even on very few examples

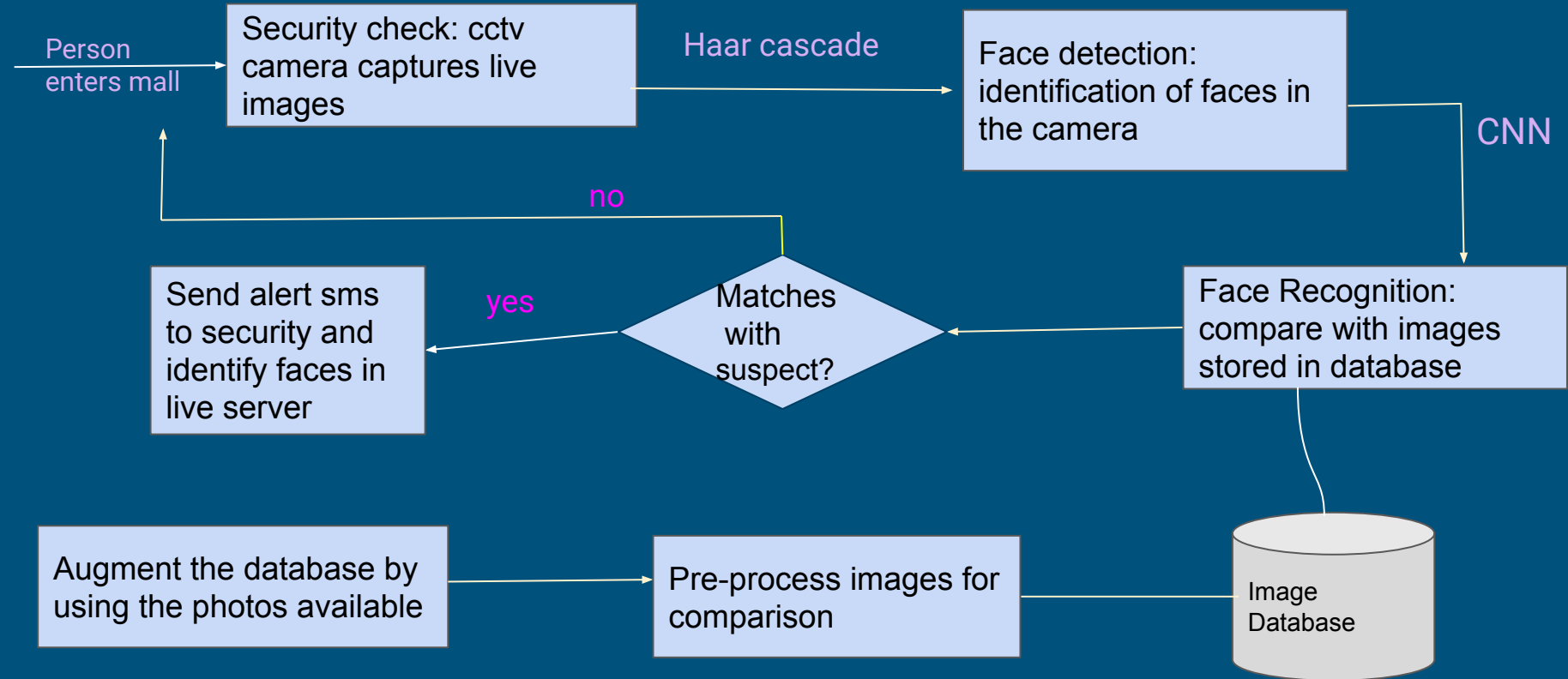Figure 7. Four methods for data augmentation.
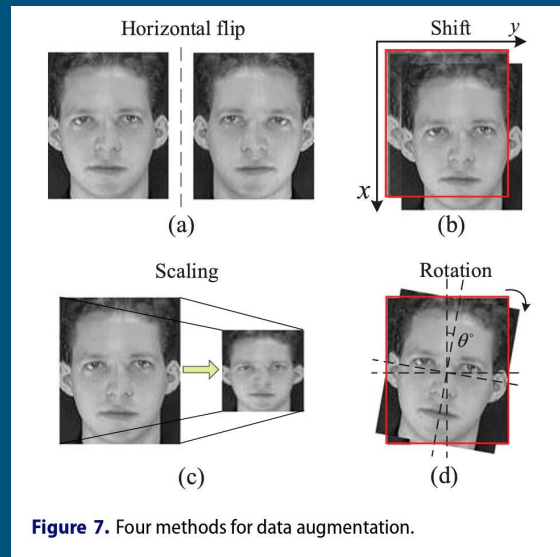
GOALS

To successfully identify a person's face from the image and match the person's face with that of the images in the database. This further helps in ensuring the safety of public by alerting the security

The motive behind the project is to save time of the security officers, identify threats more efficiently and to remove the racial and religious prejudices from the systems.

DATA FLOW DIAGRAM

Person enters mall

Security check: cctv camera captures live images

Haar cascade

Face detection: identification of faces in the camera

CNN

Face Recognition: compare with images stored in database

Matches with suspect?

no

yes

Send alert sms to security and identify faces in live server

Image Database

Pre-process images for comparison

Augment the database by using the photos available

APPLICATIONS

The solution of the problem statement chosen aims at making suspect identification efficient for the security officers at a crowded place like a mall, stadium, exhibitions, railways stations or airports. It can be implemented at anyplace that requires security/safety of a crowd.

REQUIREMENTS

Hardware requirements:

Camera suitable for taking pictures/videos, System with windows/macOS, 500gB and above hard disk, GPU for faster processing (only for training)

Software requirements:

Python IDE - jupyter notebook/google colab (for GPU), OpenCV, keras, tensorflow

DATASET

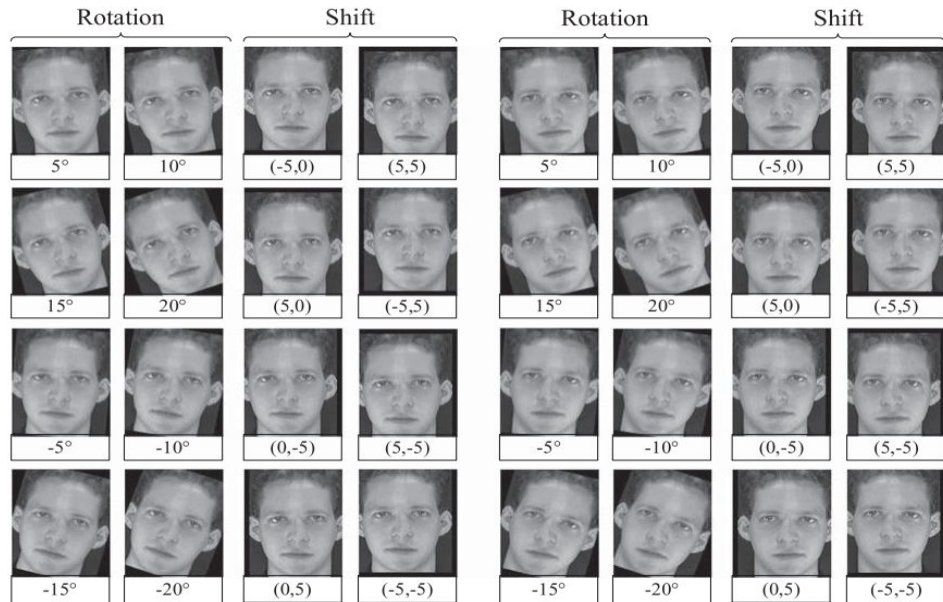Training and testing will be made from a dataset of images we collect

Figure 8. Data augmentation for the first face.

REFERENCE

- Human face recognition based on convolutional neural network and augmented dataset Peng Lu, Baoye Song & Lin Xu (2021)

- Research on Face Recognition Based on CNN. Jie Wang and Zihao Li 2018 IOP Conf. Ser.: Earth Environ. Sci. 170 032110

- Face detection using Haar Cascade Classifiers (LISR).3, march 2021

Thank you !