**CS512 - Computer Vision**

**Prof. Dr. Gady Agam**

**Project Report**

**Face Recognition using PCA**

Prateek Parab

A20400954

**Overview**

There are usually too many images in the background when one clicks a photo.Latest cameras have the inbuilt functionality to detect the faces of a subject or subject’s in focus. Thus face detection is very useful when we want to remove the focus from unwanted background images and focus only on the human subjects i.e their faces.

**Keywords:** Haar-Cascade**,** detectMultiscale, LBPHFaceRecognizer, recognize.train

**Introduction**

A **face recognition system** is a computer application capable of identifying or verifying a person from a digital image or a video frame from a video source. Face recognition is necessary when the human subject has to be focused .Before any of the the smile detection etc. Thus the face has to be detected and then further things such as emotion detection etc can be implemented

It has many applications in video cameras, mobile phones, security systems, distance learning systems, video conferencing, interactive systems like gaming etc. The detection starts with the facial recognition

**Implementation**

There are 2 parts for the design, i.e., pre-processing and expression detection, respectively. The preprocessing includes:

1. Providing the images from the Dataset

* We take the images from the dataset and get the labels and images from the dataset

1. Face detection

* We then pass this image into a haar classifier function which compares the image with a database of positive and negative images. We use the following function to compare:

Face = faceCascade.detectMultiScale(gray, minNeighbors=8,minSize=(55, 55),flags=0)

* Upon comparison we can determine whether the image contains a face or not.

**Process Diagram**

Image database

Grayscale Image

Face Detection

Fig.1 Face Detection

**References**

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2. <https://docs.opencv.org/3.3.0/d7/d8b/tutorial_py_face_detection.html>