City University Bangladesh

Assignment

On

Artificial Intelligence Lab

CSE - 417

***Submitted To***

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**Chapter-1**

**Introduction**

The face is our primary focus of attention in social life playing an important role in conveying identity and emotions. We can recognize a number of faces learned throughout our lifespan and identify faces at a glance even after years of separation. This skill is quite robust despite of large variations in visual stimulus due to changing condition, aging and distractions such as beard, glasses or changes in hairstyle.

Computational models of face recognition are interesting because they can contribute not only to theoretical knowledge but also to practical applications. Computers that detect and recognize faces could be applied to a wide variety of tasks including criminal identification, security system, image and film processing, identity verification, tagging purposes and human-computer interaction. Unfortunately, developing a computational model of face detection and recognition is quite difficult because faces are complex, multidimensional and meaningful visual stimuli.

Face detection is used in many places now a days especially the websites hosting images like picassa, photobucket and facebook. The automatically tagging feature adds a new dimension to sharing pictures among the people who are in the picture and also gives the idea to other people about who the person is in the image. In our project, we have studied and implemented a pretty simple but very effective face detection algorithm which takes human skin colour into account.

Our aim, which we believe we have reached, was to develop a method of face recognition that is fast, robust, reasonably simple and accurate with a relatively simple and easy to understand algorithms and techniques. The examples provided in this thesis are real-time and taken from our own surroundings.

**Objectives**

The problem of face recognition can be stated as follows : Face Recognition human facial features like the mouth, nose and eyes in a full frontal face image. We will be adapting a multi-step process in order to achieve the goal. To detect the face region we will be using a skin-color segmentation method. Morphological techniques will be adapted to ﬁll the holes that would be created after the segmentation process. From the skeletonization process, a skeleton of the face will be obtained from which face contour points could be extracted. Facial features can be located in the interior of the face contour. We will use several diﬀerent facial-images to test our method.

**Proposed Solution**

1. Trying to ﬁnd a face within a large database of faces. In this approach the system returns a possible list of faces from the database. The most useful applications contain crowd surveillance, video content indexing, personal identiﬁcation (example: drivers license), mug shots matching, etc.

2. Real time face recognition: Here, face recognition is used to identify a person on the spot and grant access to a building or a compound, thus avoiding security hassles. In this case the face is compared against a multiple training samples of a person.

**Chapter-2**

**Related Work/Background Study**