

7. Chapter 7

## **CONCLUSIONS AND FUTURE SCOPE**

## 7.1 Introduction

Face recognition from video is an expanding research field since this biometric is widely used these days. Even then there are various factors that deteriorate the recognition rate of face from video. Various researchers have contributed to overcome the issues with respect to this biometric from their point of view. However an exact and reliable solution has not yet been found. In this work three significant contributions are done to increase the recognition rate of faces from video.

Recognizing a pose variant face image is presented in Chapter 3. In this work a face from video with different poses are been recognized. In order to know the orientation of the face the eye points and nose tip is considered. A mathematical modeling is performed to get the angle formed due to different poses. This input frame of face is compared with the dictionary in the database. Curvelet Transform is used to extract the features. Test face images are compared with faces in the data set using minimum distance matching. The result gave a better recognition rate when compared with the existing methods

Chapter 4 modifies the existing Exemplar Inpainting method. In this work Exemplar Inpainting algorithm is modified for inpainting the lost region. In order to fill the occluded region, a texture from the known region is used. A patch for choosing the best matching region is found based on the priority of the pixel on the contour region of the unknown area. To select the most prioritized patch, confidence term and the magnitude of the gradient is made use of. Matching is done using similarity measure.

Recognizing partially occluded face using modified exemplar is presented in Chapter 5. In this work, modified exemplar inpainting is used to recover the occluded region of a face. This work considers a part of face occlusion only. Curvelets are used in extracting features. Minimum distance matching is used for matching of the test face with the gallery images. The result gave a better recognition rate when compared with the existing methods.

## **7.2 Contribution of this Work**

- Recognizing a pose variant face image classifies face images from video frames based on the angle formed by the eye points and nose point on rotation of the face. This determines the angle of orientation of the head of a face image. Features are extracted using Curvelet transform as they are good in identifying curved features of a face image. Euclidian distance matching is performed to identify the best match with the gallery set images. The work is implemented in Matlab. A comparative study is performed to analyze the efficiency of the method with existing methods. The You tube and Honda/UCSD dataset are used as they contains video sequence with large pose variation.
- Modified Exemplar Approach for Inpainting fills in the missing region of an image. This work is based on the Criminisi's Exemplar Inpainting. Gradient value of the pixel at edge is calculated using Sobel edge detector and gradient calculation method. The matching for the patch of the prioritized pixel with the patch from the known area is done using structural similarity measure.

- Recognizing partially occluded face using modified exemplar inpainting, recognizes a face that is partially occluded in a video sequence. Recognizing occluded faces is tedious task and this work improves the recognition rate of occluded face. In this work to regain the region of occlusion, modified exemplar inpainting is used. The face regions forehead and eyes with glasses are considered. This approach shows a better recognition rate with the regions taken into consideration when compared with existing methods.

### **7.3 Future Work**

Face recognition from video is gaining popularity every day and with this sole reason there exist many opportunity in this area for future work. Improvement made in any one component of face recognition in turn will improve the efficiency of the overall recognition rate.

Improvement in the area of illumination can significantly increases the recognition rate of the system.

Occlusion is a major concern in face recognition from video. Face can be with dense occlusion. This can reduce the recognition rate. The proposed work can be extended to recover the densely occluded area.