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School of Technology

Artificial Intelligence

BTech ICT/CSE Semester VI, Winter Semester 2018-19

Lab 6: Face Recognition

Preamble

Today in this information era, data is secured by passwords, encryption keys, fingerprints and many other modes. The human face plays an important role in our social interaction and in conveying people's identity. Biometric face recognition technology has received significant attention in the past several years due to its potential for applications in both law enforcement and non-law enforcement agencies.

As compared with other biometrics systems using fingerprint, palm print and iris, face recognition has distinct advantages because of its non-contact process. Images can be captured from a distance without touching the person and face can be extracted from that image. The identification does not require interacting with the person. In addition, recognized face images can be recorded and archival can later help to identify the person(s).

Problem Statement:

Given a data set consisting of facial images and their sketches, retrieve all images (real and /or sketch) which are similar to the given test image or sketch.

Dataset

The data set of your project team with real and sketch images.

Constraint: Use Non-Neural Network approach for recognition

Exercises

1. Discuss the characteristics of data set e.g., describe illumination in the images, background complexity, proportion of the area covered by the face, resolution of the images, format of images, camera(s) used for capturing the data set.
2. Discuss the type of pre-processing to be done on the images of your data set before they are used for recognition.
3. How would you identify "Where is the face" in the image?
4. Write and implement algorithm for your approach.
5. Empirically compare the recognition accuracy for the following cases:
 - a. When complete image is used for recognition.
 - b. When only face part of the image is used for recognition.
6. Find, implement and discuss various metrics for measuring accuracy of the face recognition algorithm developed by you.

References

1. https://en.wikipedia.org/wiki/Facial_recognition_system
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4. https://www.cv-foundation.org/openaccess/content_cvpr_2015/html/Klare_Pushing_the_Frontiers_2015_CVPR_paper.html