INTRODUCTION

1.1 Computer Technology

In the current digital era, Face Recognition is an important concept. Which has widely studied over the past few decades. Face detection is one of the important key steps towards many subsequent face-related applications, such as image verification, image recognition and image clustering, etc. Following the Discover work of Viola Jones object detection framework, numerous methods have been proposed for face detection in the past decade. Early research studies in the literature were mainly focused on extracting different types of hand-crafted features with domain experts in computer vision, and training effective classifiers for detection and recognition with conventional machine learning algorithms. Such techniques are limited in that often require computer vision experts in crafting effective features and each individual component is enhanced separately, making the whole detection pipeline often sub-optimal.

In generic, image detection can be considered as a special type of object detection task in computer vision. Researchers have attempted to tackle face detection by exploring some successful deep learning techniques or generic object detection tasks. In this paper, we explore one of the very important and highly successful frameworks for generic object detection using Convolutional neural network (CNN) method, which is a kind of classifier extension for solving the object detection tasks.

The developments in computer technology have made it possible to use face recognition in applications where it is required to establish or confirm the identity of individuals. Applications such as Apple has brought in face ID as facial authentication in iPhones, some banks are trying to use facial authentication for lockers. Some of the banks in Malaysia have installed systems which use face recognition to detect valuable customers of the bank so that the bank can provide the personalized service. This way, banks are able to engender more revenues by holding such customers and keeping them happy. Plentiful insurance companies are using Face Recognition to match the face of the person with that provided in the photo ID proof. This way, the covered by writing process becomes much faster.
Face Recognition system consisting of 2 levels.

1) Face Detection: Identify the people images with in the digital images. It detect the human faces with in the larger images.

2) Face Recognition: The Detected images will check in to the database and find out the correct faces.

The difference between Face Recognition and Face Detection is: In detection we need to identify faces in the image but in the Face Recognition we must determine whose face it is. In existing system they are not going to identify the partial images.

Fig:1 Image detection

Face Recognition system Applications:

There are 5 applications are in using Face Recognition

1. Payments: The Government of Indian had declared Demonetization, the people of this country slowly adjusted towards digitalization of their transactions by doing online shopping, using debit cards, credit cards, master cards etc., and also preferring online transactions for their needs and necessities. In the year 2016 Master Card has introduced a new selfie pay App called Master Card Identity Check. To use this card the customers are using their camera to take selfie after opening the App to pay their payments and this App compares their face with which their was already stored in the App and after recognizing the face only the transfer of amounts will be allowed from their respective account.

2. Access and Security: To verify and to identify persons biometrics are using thumb and face of a person with physical devises and objects instead using pass codes, pass words in mobile phones, computers, and other consumer electronic goods to be accessed via owners facial features. The companies like Apple, Samsung and Xiomi Corporations have already installed Face Tech application in their mobile phones. It gave a broad scope to the future that the people
may interested to use and able to accesses to their cars, houses, lockers, and other personal secure physical locations by simply standing before them to recognize their face before getting opened. The well known cars company Jaguar is already working on walking gait ID, it’s a potential parallel to facial recognition technology. The other multinational companies are like to take advantage of the same. This kind of innovative facial security recognizing technology could especially useful for the companies and organizations where they handles sensitive data and they needs to keep strict and tight control over the said places where on who are tries to enters their facilities.

3. Criminal identification:
   A developing country like India need a lot of protection to people under law and order system, so we can attract many foreign companies for investments. A criminal identification is very big task for Indian Police due to lack of infrastructural facilities available to them. In well developed country like United States of America Federal Bureau of Investigation (FBI) is attempting to identify criminals by using a machine learning algorithm to identify suspects from their driver’s licenses. Currently the FBI is having database in its custody of half of the national population faces. This makes law enforcers to easily identify in tracking the criminals across the country by using equipped cameras around the country and also United Kingdom trialled on those smuggling contraband in to prisons. Presently in India also some State Governments have implementing those systems for reduction of crime rate and also in identifying the criminals.

4. Advertising: Its an challenging task to marketing agencies and advertisers to collect an collate masses of personal data to get closer than ever to their targets in markets. Face recognising technique do could much work on recognising its customers to companies to recognise certain demographics. For an instance if the customer is a male or female between the ages of 12 and 21 years, the screen must show an advertisements for the latest FIFA game, Grocery Giant Tesco plans to install Optiom Eyes screens at 450 petrol stations in UK to deliver targeted ads to customers. One of the CEO of the company Simon Sugar rightly said the cameras could change the face of British retail in identifying its customers correctly by the cameras by classifying the wrong age or gender is far less amusing than having name spelt wrong on a starbucks cup.
5. Healthcare: In health care system medical professionals may easily identify illness by looking at a patient’s features may alleviate the ongoing strain on medical centres by slashing waiting lists in streamlining the appointments process for needy patients. The other application of facial biometrics within health care is to secure the data of patient by using a unique patient photo instead of pass words and usernames.

The facial biometrics are very much helpful tool for finance, law enforcement, advertising and health care and as well as a solution to stopping hacking of data and also identify the theft. Face Tech is no means of full proof but gaining access to possessions using physical traits could even be counter intuitive or security.