

# Intelligent Retrieval of Data Using IoT During Contingency

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## ABSTRACT

With the furtherance in technology of information systems an aggrandized system can be discretely built for the ambulance using Internet Of Things(IoT).The system is comprehensively built to discern a person in critical trauma due to road catastrophes.The system predominantly concentrates on three areas of sensing viz - Iris scanning, face detection and fingerprint sensing. Initially, when the patient is positioned in the ambulance a face detection technique is performed using an automated system capturing the gestures. Subsequently the iris scanning is done by automation and fingerprints are also taken.The intelligence obtained from these procedures is emulated with the details in AADHAR database.The ambulance communication system then figures out the hospital in the vicinity.The hospital is intimated about the patient and the cops.A minimum level of information regarding the patients health such as blood group, blood pressure and sugar level in the blood are intimated to the hospital. Also the people concerned with the patient are informed using the details retrieved from the AADHAR database. The system also deals with various security issues and other possible challenges.

*Index Terms:* Internet of Things, Iris Scan, Face Recognition, Fingerprint Recognition, Information System.

## I. INTRODUCTION

### (A) The Internet of Things (IoT)

Envisage a world where myriad of objects can sense, communicate and share information, all interconnected over public or private Internet Protocol (IP) networks. These hooked objects have data collected on a regular basis, anatomized and maneuvered to pioneer action, providing an affluence of cognizance for planning, management and decision making. This is the world of the Internet of Things (IoT) [1].

### (B) Moving toward a Smarter Internet

The IoT notion was conceived by a member of the Radio Frequency Identification development community and it has temporarily become more germane to the practical world colossally because of the bloom in the count of mobile devices, embedded and pervasive communication, cloud computing and data analysis[2],[4], [5]. Many quixotic have seized on the phrase Internet of Things to ascribe the generic idea of things. Conventional objects include not only the electronic devices but also vehicles and products associated with sensors. Examples of things include: People, Location of the individual or the object along with the Time information (of objects), and Condition (of objects)[6].

IoT relies on a ubiquitous communication network that allows everything and everywhere connectivity to occur [7], [9]. Over the years, network operators have been exalting their infrastructure to undergird data capability and ameliorating network throughput for their existing cell sites, transceivers, and interconnection facilities. Today, most operators worldwide have deployed UMTS (Universal Mobile

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Telecommunications System) with HSPA (High Speed Packet Access) [8] technology for higher throughput and low latency. HSPA, otherwise known as 3G, has also shown us the power and potential of always on, omnipresent network connectivity that has ignited a huge wave of innovation in the industry that spans devices and applications. As the technology trend shifts towards providing faster data rates and lower dormancy in connecting with Third Generation Partnership Project (3GPP) standards body has developed a series of enhancements to HSPA Evolution. HSPA Evolution represents a logical development of the Wideband Code Division Multiple Access (WCDMA) approach, and is the aid to an entirely new 3GPP radio platform called 3GPP Long Term Evolution (LTE). LTE overtures a number of distinct supremacy such as increased performance attributes, lower suspension, high peak data rates and greater efficacy in using the wireless spectrum [26], [27], [30].

Combining the IoT with health care will propel not just the innovation in services but also reduce costs, increase accuracy and brings the service to a larger extent of usage.

### (C) AADAR Card

Aadar card is an 12 digit unique identification card issued by the government of India to every citizens in India. It is used as an identity and proof of address. It also enables the user to incorporate their respective personal records. It establishes the uniqueness based biometric information and demographic information.

## II. FACE RECOGNITION SYSTEM

A facial recognition system is a regimen which is adept in spying a person from a digital image database or from a video stream. Juxtaposing with other biometric systems, facial recognition is at more dominance because of its non contact process. This system is based on identification and authentication based on individual facial hallmarks and it can be revamped with tranquility to existing IT systems. It is more open-ended so that we can integrate it into many types of video monitoring systems. Facial recognition is commonly used for security purpose but in our project we are focusing mainly on tracing the patient detail from AADHAR card so that his/her condition can be intimated to their family about the hospitalization at the earliest. We have proposed an algorithm for this facial recognition system which can classify the obtained images into various basic categories of facial expression. It is because, during an exigency we cannot expect the normal figure of the person. Hence on taking up the input, we normally take the image of the person with various expressions which helps the system for identification. Hence forth increasing the efficiency of this system. Principal component analysis is used for the reduction in dimensionality with the input data, simultaneously, retaining the characteristics of dataset which contributes the variance by keeping the principal component of the lower order eliminating the higher order components. As the lower order components contains essential aspect of data. The expunged feature vectors in the shortened space, are used to train the neural network. This kind of approach are quiet efficient as it doesnt require any nodal point or reference point.

Initially input is taken as picture with different expressions. Then, along with the input picture, details of the individual is also provided. Details such as name, address, phone numbers, associate phone numbers, attachment of medical records, blood group type etc. Hence, during analyzation process the input data is compared with the inputs present inside the database. On similar case identification which is drawn from the database is considered as the output of this system. This system is quiet efficient in identifying the individual.

## III. IRIS RECOGNITION

Iris recognition is an robotic method of biometric identification that uses mathematical pattern-recognition techniques on video images of either one or both of the individual irises, whose complex random patterns

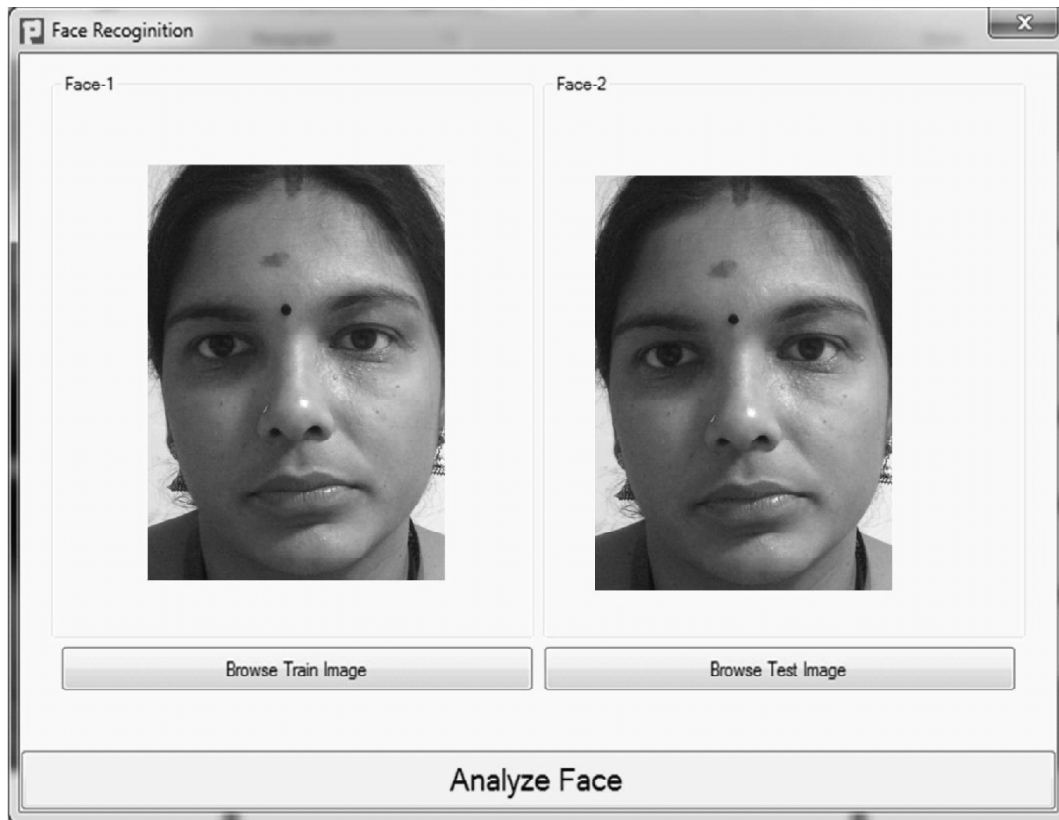


Figure 1: Analysing the Faces

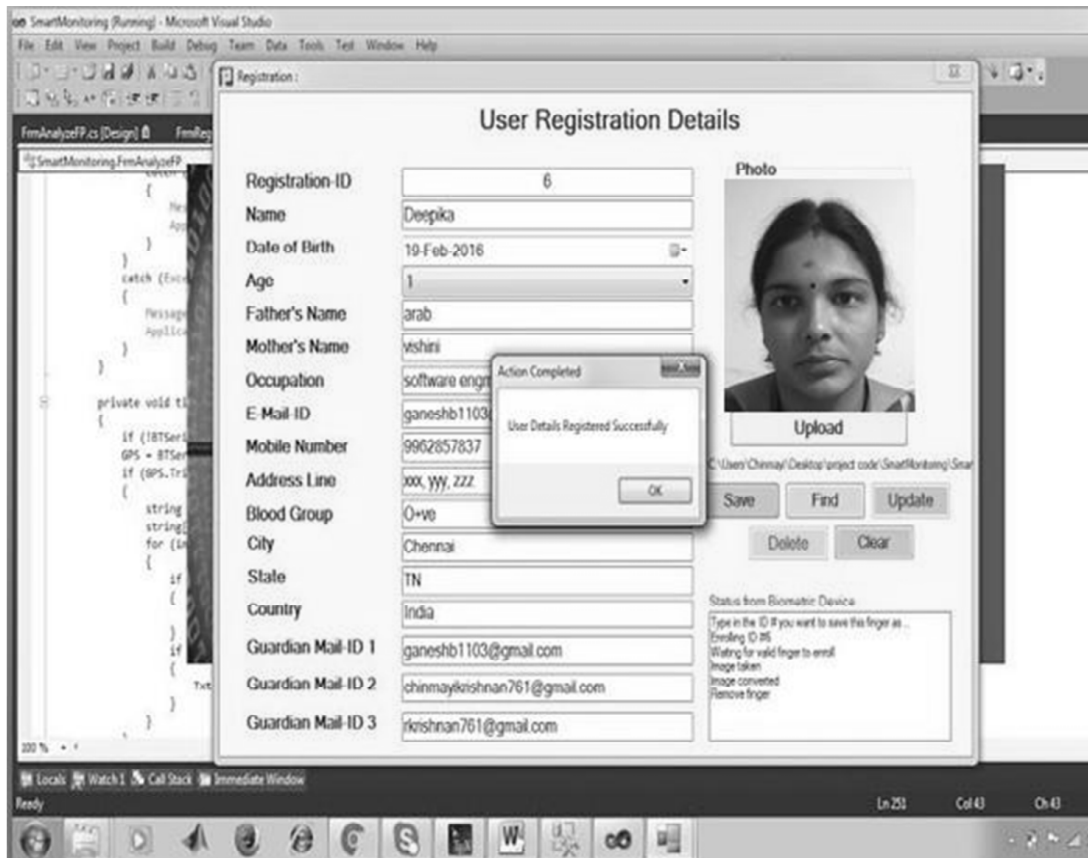


Figure 2: Input of Identity Details

are unique, stable, and can be seen from some distance. Here in this system, the iris recognition along with facial recognition will help to identify a person more unerringly [10],[11],[12].

Iris recognition is a method of single out the individual based on onliest patterns within the ring-shaped region encom- passing the pupil of the eye. The iris usually has various colors such as brown, gray or even greenish color, with complex patterns. As it makes use of a biological characteristic, iris recognition is also considered as a unique form of biometric verification. In iris recognition, the process is carried out by collecting one or more detailed images of the eye with a refined, high-resolution digital camera at visible or infrared wavelengths, and then using the information system, it is then compared with the subject's iris pattern with images present in the database. This system gets the matched iris pattern by comparing millions of images per second with a level of precision comparable to conventional fingerprint recognition system or digital finger scanning system. In order to provide accurate and dependable results, the subject should be kept within a few meters away from the camera. Some control mechanisms are also implemented to ensure that the subjects captured image is a real face, not a high-quality photograph. Uncertainty here is, certain types of contact lenses and glasses can obscure the iris pattern [32].

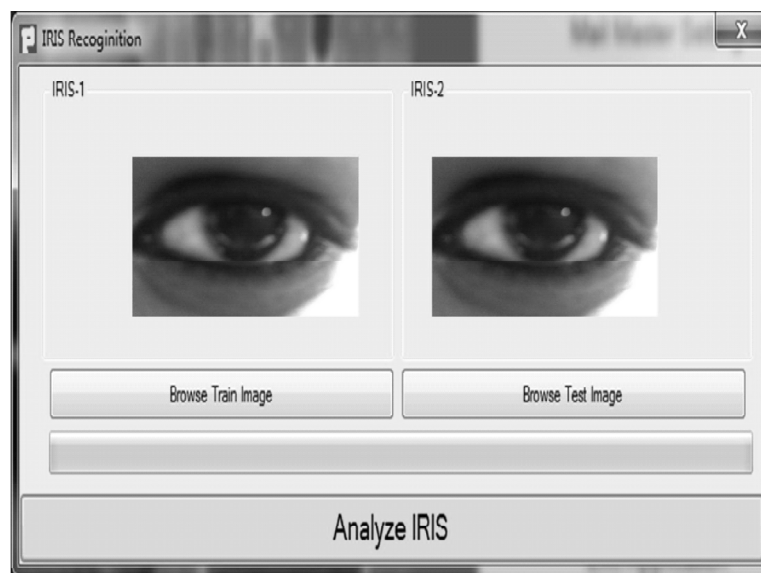


Figure 3: Iris Comparison

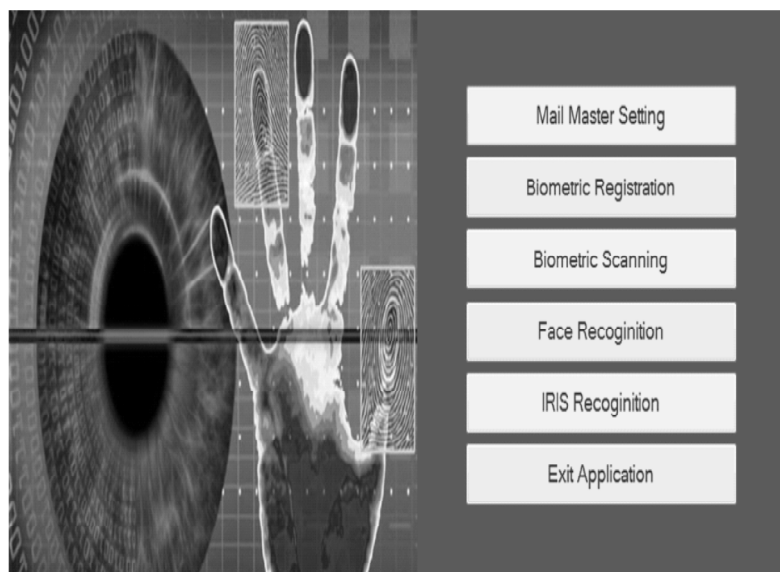


Figure 4: Overview

#### IV. FINGERPRINT RECOGNITION

Fingerprint recognition refers to the robotic method of verifying a match between two human finger prints [20],[21]. Fingerprints are of various forms in biometrics are used to identify individuals and verify their identity. It is one of the most important criminal investigation tools due to two characteristics: their perseverance and their uniqueness. A person's fingerprints are solitary and do not change over time. The friction ridges which create fingerprints are formed while inside the void and grow proportionally as the individual grows. Fingerprint scanners are security systems of biometrics [22],[23]. They are now used in all kinds of corporate industries, security industries and most recently, on computers and other PDAs. Every person has marks on his or her fingers which is unique. These marks have a pattern and this pattern is called the fingerprint [24], [25], [26] [33], [34].

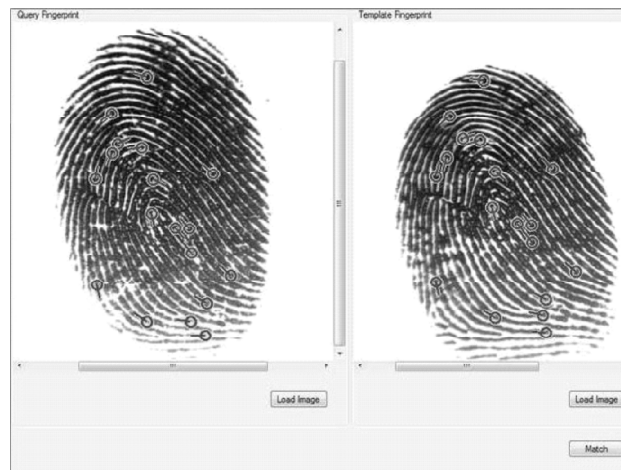


Figure 5: Finger Print Comparison

#### V. PROPOSED SYSTEM

On combining all the three biometrics, the patient's detail can be identified which is similar to that of a Public Data Card (AADHAR card). The condition of the patient will be intimated to his/her relative which is mentioned in the public data card through SMS or voice-initiated call and a personal mail is also sent.

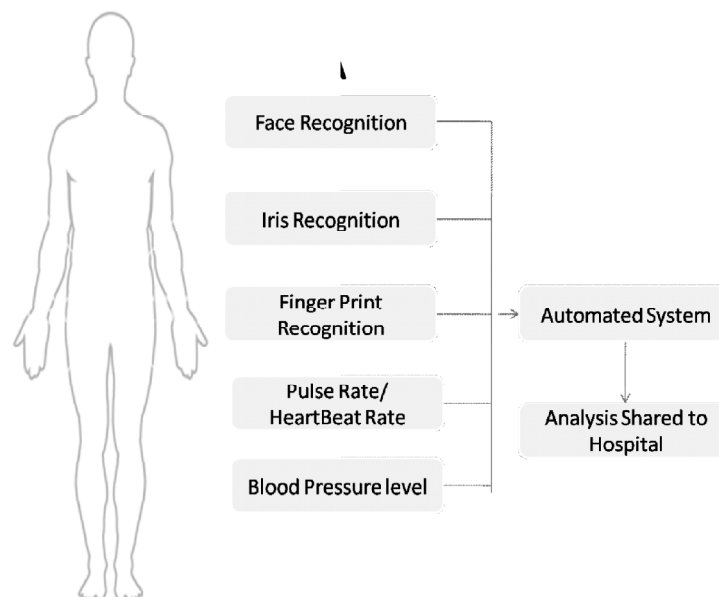


Figure 6: Overall Identification

The patients reference person will get information about the patient details and the hospital where the patient is admitted. The ambulance may be routed to the nearest hospital using V2V communication using GSM. A minimum level of information about the patient such as pulse rate, blood group, blood pressure, sugar level is intimated to the hospital via GSM, before the ambulance reaches the destination, so that the hospital emergency unit will be ready to attend the patient and give first aid. The complete analysis is done with the help of an automated system which can be built inside the ambulance. With the help of GSM system, all the above sensing analysis is made and identity is done. On a default scenario, apart from referential person, only to the destination hospital the observed details are shared. This system is made much smarter making it an Internet of Thing.



Figure 7: Mail Reception at User Reference End

## VI. SECURITIES AND CHALLENGES

The IoT is bodied with multiple semi-conductor technologies, including power management devices, microprocessors and sensors[17]. Performance and security requirements varies considerably with respect to the application and which led to accomplishment of smart homes, connected vehicles and Industries 4.0 industries concatenate on users confidence in robustness. Higher the volume of data, we transfer over the IoT, the greater the risk of it and identity theft, device control, data falsification, Internet Protocol theft and also the network manipulation. Hence on usage of secured firewall for proper authentication, integrating the datas and there by increases the confidentiality of using an IoT system [18], [19].

## VII. CONCLUSION AND FUTURE SCOPE

With the world shaping digitally, usage of technologies becomes smarter. And this smartness enriches the user to shape to ones own requirement. This is one such system that can be incorporated into an emergency vehicle and its biggest advantage is that it is a complete automated system with less cost. In future, this system can be further integrated with X ray machines and other possible devices. With the available higher internet data rate, adoption of such system is easier and simpler.

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