

# **RFID & FACE RECOGNITION SYSTEM FOR SCHOOL CHILDREN SAFETY ENHANCEMENT**

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**Abstract-** A system is monitor to pick up /drop off of school children enhance the safety. Its developed data base driven application that facilities is management and provide useful in about the children to authorized personal. The system aims at automatically detecting when a child boards or leaves the bus and issues alert message immediately. In this type of tracking these devices can be connected with a mobile application and can alert the parents if their child when outside a range specified by them. In face recognition biometric identification by scanning a person face and matching it against a library of known faces. It played important role surveillance system as it does not need the object cooperation. In this system automatically searching of faces for the face data base, typically in a group of facial images ranked by computer evaluated similarity.

**Keywords-** RFID, face recognition, GSM, micro controller.

## **1.INTRODUCTION**

In RFID techniques using for children safety and focus on a particular risk associated with the daily bus trip to and from school . Biometrics which based on authentication on the intrinsic aspects of a specific human being appear as a viable alternative to more traditional approaches such as PIN code or passwords. Among the oldest biometric technique is finger print recognition. In this research focuses on using face recognition to more accurately & efficiently identify different personal through classification at low cost. It is a computer application for automatically identify or verifying a person from a digital image or video frame from a video source. Facial recognition system typically used in security system. The automatic identification of living individuals by using their physiological & behavioral .face recognition is a task so common to human , that the individual does not even notice the extensive no of time its performed every day. face recognition algorithm may analyzed the relative position, size,

shape of the eyes, nose, cheekbone recognize faces. Much better recognition performance can be achieved by extracting features from the boundaries of the faces by using Active shape model(ASM) and using Active appearance models(AAM). The automatic recognition of human faces spans a variety of different technology. At a highest level, the technologies are best distinguished by the input medium that is used. whether visible light, infra red or 3 dimensional data or other range finding technologies.

## **2. EXISTING SYSTEM**

### **2.1 System Design**

The existing system are following the requirements

- The system should recognize each child and detect when every child boards or leaves the bus.
- The system should be easy to re-configure.
- The communication should be reliable.

### **2.1.1 Top level description**

The school unit is the central unit where it collects data from all the buses, adds them to the system data base ,checks if there are missing children, and it sends a text message notification to the parents .

The system uses RFID tags for children detection which is not harmful since it uses frequency ranges that are safe and legally approved. It developed cost is reasonable

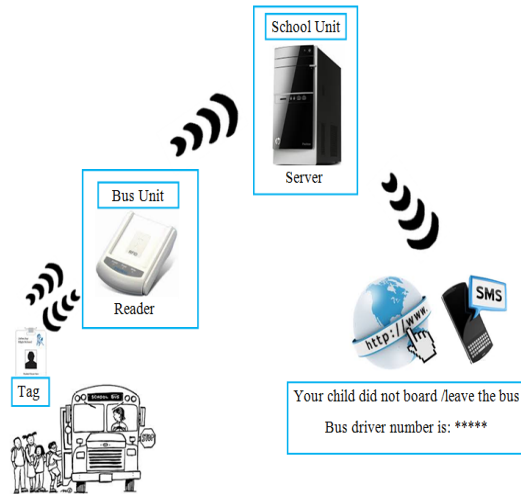


Fig. 2.1.1 Top level description

## 2.2RFID(Radio Frequency identification)

RFID-radio frequency identification is the wireless use of electromagnetic fields to transfer data, for the purpose of automatically identifying and tracking tags attached to object. RFID is electronically stored information. Credit cards are shaped for use in access applications. There are two types of RFID tags: passive and active tags. Passive RFID tags have a short reading range. But here we are using active RFID tags; they need no maintenance, they will only detect the children when they are inside the bus, but if the child was outside near the bus, the reader will not detect him/her. Each child will wear a card with RFID tags attached to it. When the school children are not present in the message is immediately passed to the parents and school unit.

### 2.2.1System data base

A child can be on only one bus, but a bus may have many children.

A child has one or many relatives.

A relative may have many children registered at the school.

## 2.3 MICROCONTROLLER

A microcontroller is a compact device designed for the operation of an embedded system. A microcontroller contains the circuitry of a microprocessor and, in addition, it has built-in ROM, RAM, I/O devices, timer, and counters. It has many bit-handling instructions. A microcontroller is used to interface the RFID reader with the GSM modem. This system requires less hardware, reducing PCB size and increasing reliability.

### 2.3.1 Types of microcontroller

A microcontroller is divided into categories according to the memory architecture, bits, and instruction sets, so let's look at the types of microcontroller.

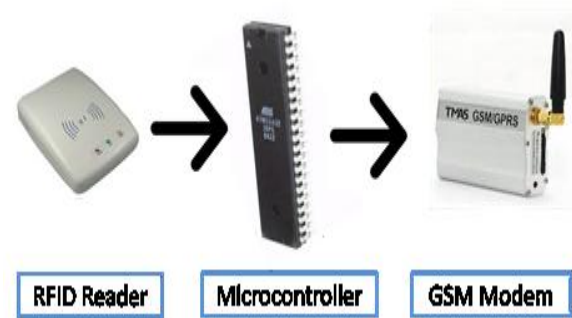


Fig. 2.3 Micro controllers

#### 2.3.1.1 Bits

An 8-bit microcontroller executes logic & arithmetic operations. A 16-bit microcontroller executes with greater accuracy and performance in contrast to 8 bits.

#### 2.3.1.2 Memory

External memory: When an embedded structure is built with a microcontroller which does not comprise of all the functions, the blocks existing on a chip are its name or external memory microcontroller. Embedded memory: When an embedded structure is built with a microcontroller.

#### 2.3.1.3 Instruction set

CISC means complex instruction set of computer; it allows the user to apply 1 instruction as an alternative to many simple instructions. RISC means reduced instruction set of computer. RISC reduced the operation time by shortening the clock cycle per instruction. The ATmega32 microcontroller is used to interface the reader and the GSM modem in the bus unit for exchanging data. RS232 is a different voltage level; a max232 is a serial port, once a standard feature of a personal computer, used to connect to modems, printers, data storage.

## 2.4 GSM (Global system for mobile)

It is a digital mobile telephony system that is widely used in the world. It is based on TDMA, CDMA. GSM modem connectivity was tested using the TMAS GSM-GPRS modem test program with the AT commands that are responsible for sending and receiving SMS and calling. GSM network users can quickly change their phone number from one GSM network to another by simply moving the other SIM card. Access to the code is provided by a memorandum of understanding (MOU). GSM uses voice coders and

decoder or vocoders. GSM operates on the 900 MHz, 1800 MHz. Each frequency is divided into eight time slots using TDMA and one or more carrier frequencies are assigned to each base station.

#### 2.4.1 SMS notification

The PHP code written for the SMS gateway was tested. To user ID, password, language and the messages. The test can be set to whatever the user wants to send the result of testing the code.

### 3. Proposed system

#### Face recognition

Face recognition systems are becoming increasingly popular in biometric authentication as they are non-intrusive and do not really require the user's cooperation. Biometrics which are based on authentication on the intrinsic aspects of a specific human being appear as a viable alternative to more traditional approaches such as PIN code or passwords. In features can be consistently located across face images instead of just the intensities of the pixels across the face detection region.

A training image with automatically marked feature points from the database.

#### Real time recognition

In screenshots of real-time recognition built using faces as a pattern classifier. Successive frames from a standard web-cam are tracked by the face recognition system done on a small window of frames. Naturally before recognizing a face it must be located in the image. In some cooperative systems, face detection is done by constraining the user.

Most systems use a combination of skin tone and face texture to determine the location of a face and use an image pyramid to allow faces of varying sizes to be detected. Having processed the face and extracted the features, these are stored or transmitted as a facial code (face template), which can be as small as 84 bytes. Since faces may not be the only objects in the image presented to the system, all face recognition systems perform face detection which places a rectangular bounding box around the face or faces in the images.

### 3.1 EXPERIMENTAL RESULT

#### Existing system

RFID is increasingly used with biometric technologies for security. RFID tags support a large set of unique IDs then bar codes and can incorporate additional data such as manufacturer's product type and even measure environment factors such as temperature. It gives an overview of the current

state of radio frequency identification (RFID) technology. It's grouped under the broad category of automatic identification technologies. RFID systems contain three components. In combination, a transceiver and antenna are usually combined as an RFID reader.

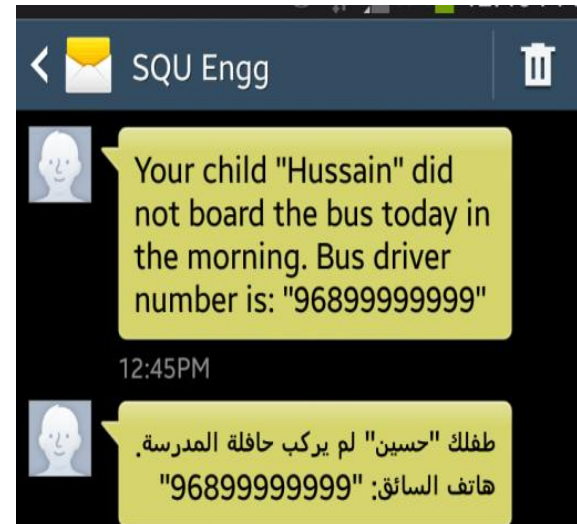


Fig: 3.1 Existing of RFID system

If it gets a serial number that matches one in the file, then it selects a student's ID and updates the corresponding column to that time interval in his entry for that day in the attendance record table. Many tags can be read simultaneously. RFID tags can be combined with sensors. Automatic reading at several places reduces time and tags and increases accuracies in an inventory.

Attempting to read several tags at a time may result in a signal collision, ultimately leading to data loss. To prevent this, an anti-collision algorithm can be applied at an extra cost. Transmission mode RFID tags basically use two kinds of data transmission depending on the behavior of the electromagnetic field at the frequency used. The cost of tags depends on their type.

#### 3.1.1 System Integrated test

RFID has been used in manufacturing plans for more than a decade. It's used to track parts and work in process to reduce defects, increase throughput, and manage the production of different versions of



**Fig: 3.1.1. System integrated system**

The same product. In RFID tags are only used for the purpose of item type or instance identification usually, a data base is maintained in the background to provide or receiver the additional information needed.

### 3.2 Proposed system

#### Face recognition

Face recognition is a topic of great interest to several disciplines. To progress in automatic face recognition driven by searching large data base in real time with a high accuracy and low cost. In face recognition has received substantial attention for research in biometric pattern recognition and computer vision communities. It from image or video is a popular in biometric research many public places usually have surveillance camera for video captures and these camera have their significant value for security purpose. The face recognition can be regarded as a specified case of object class detection. It is analogous to image recognized in which image of a person is matched bit by bit.



**Fig: 3.2. Face recognition system**



## CONCLUSION

RFID based system that aims at enhancing the safety of children during the daily bus trip to and from the school. but it poor read rate can occur if the reader and receiver are not properly aligned. check out the potential misuse section of the site to obtain specific for threat. In face recognition verification time is about five seconds. It is impossible that the system made mistake. It also electronically stored information. In face recognition system is a computer application capable of identifying or verifying a person from a digital image or a video from a video source. it can be prevent card counter. It finding missing children. In typically used in security system and can be compared to other biometric such as finger point or eyes iris recognition system. In three dimensional face recognition techniques user 3D sensor to capture information about the shape of a faces.

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