

EXAM PAPER LEAKAGE DETECTION AND ALERT SYSTEM WITH THEFT PROTECTION

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Abstract – The idea behind this project is to guard the leak of question papers sometimes we receive cancelled exam messages due to paper leakage. Therefore, we have come up with a affordable and concise outcome and we have decided to design and implement the "Exam paper Leak protection Framework" which will be a much more secure structure depending on the controller.

The Electronic control Box is an embedded system that was designed using Arduino Mega along with the IR Sensor to monitor the Electronic control Box. Together with the fingerprint scanner, Face detection Camera, GSM and GPS modules are used. If the face and fingerprint of the person opening the box not matched with the authorized person, the system communicates to the university authorities by sending an SMS(short Message Service) through GSM. Hence we can easily identify that exam papers have been leaked.

Key Words: Face Detection Camera, Fingerprint Scanner, IR Sensor, GSM, GPS and Buzzer.

1. INTRODUCTION

Education is important for both men and women as both have an essential role in the development of a healthy and smart society. Education is a best way for delivering a brilliant future and at the same time performs most significant part in growth and improvement of the nation. The citizens of the

nation are responsible for the greater future and progress of the nation. Education is the soul of a community; it goes from one generation to another. Exam is the prime responsibility of an educational framework. The reason for an examination is to select talented applicants for multiple positions. Exam is an important aspect of the education system to test students' abilities online and in oral papers.

A test or examination is an assessment intended to measure a test-taker's knowledge, skill, aptitude, physical fitness or classification in many other topics (e.g., beliefs). A test may be administered orally, on paper, on a computer or in a confined area that requires a test taker to physically perform a set of skills. Tests vary in style, rigor and requirements. For a long time, the traditional system involves printing the question papers centrally and then distributing to different zones including remote areas several days or months before the test. In the transportation or after papers reached to the centers the leakage of papers is occurring in some areas.

To avoid this leakage we propose a mechanism where the Question papers will be sent to the examination centers in a sealed electronic box, which cannot be opened by the unauthorized persons. First the question paper comes to the college from University in an electronic sealed box which is called Electronic Control Box. Thus by considering the problems faced by the students and society a plan has to be made to implement a system

which will help to stop this malpractice of leaking of the question paper.

In order to overcome the various flaws, combination of biometric and face detection and recognition system based storage box is proposed in this paper. Inside this implemented box we are keeping our question paper with a noted way. With a solid fingerprint and respected face detection camera, the box can be open by proposing we can achieve our problem statement positively.

2. RELATED WORK

Mamilla Sirisha, Neelam Syamala "RFID Based Security for Exam Paper Leakage System"[1]. The kit is turned on by turning on the power supply. A welcome message appears on the LCD. For proper operation, the kit should be reset. A card must be presented to an RFID reader, which will read the data contained on the card. The prompt requires you to input a mobile phone number to which the OTP should be issued. The prompt instructs you to display the card. If the card is legitimate, an OTP is sent to the specified mobile number. Otherwise, the number will receive a notification indicating that an unlawful action has occurred. The prompt instructs you to display the card. If the card is legitimate, an OTP is sent to the provided mobile phone number. Otherwise, the number will receive a notification indicating that an unlawful action has occurred. The OTP must be entered using the numeric keypad. The lock is opened if the OTP entered is correct. Otherwise, a message about the unlawful access is transmitted to the authorities.

Kimia Tuz Zaman, WordhUI Hasan, Monsur Hillas, Abdullah Al Mahfuj Shaan, Khan Afnan Rahad "IOT based question paper delivery box: A Solution towards preventing question paper leakage"[2]. To avoid leakage, the recommended method was among digitally distribute the inquiries to all of the exam centers. The exam begins after the question sheets are printed. The delivery box is password-protected, and only those with the password can open it. It can only be opened half an hour before the exam begins by the appropriate authorities. The boxes will be automatically locked 20 seconds after they are opened. IR Proximity Sensors, Lasers & LDR,

GSM Module and Servo Motors were all connected for the safety system. An error occurs when the values of any of the sensors change. The GSM Module is then utilized to send the anomaly text to the server and central board, where it is continuously monitored.

3. EXISTING SYSTEM

In the Existing system, a Arduino Uno controller is used along with the RFID module which requires RFID tags to access which is a disadvantage as the card can be used by anyone and there is not track that is accessing it. In the existing system, there is no face detection camera and GPS module. To overcome the disadvantage of the existing system a face detection camera and GPS module is used in the proposed system to provide more security to the electronic control box.

4. PROPOSED SYSTEM

The proposed system is built on a fingerprint and face detection camera for authentication . GPS module to provide better security and control over the access. To avoid tampering, the system uses a sensor to monitor and send alert messages automatically. To track the system location, it has been implemented with GPS and it sends the location to the control room by using GSM. Furthermore, Batteries are used to supply power for the system.

4.1 BLOCK DIAGRAM

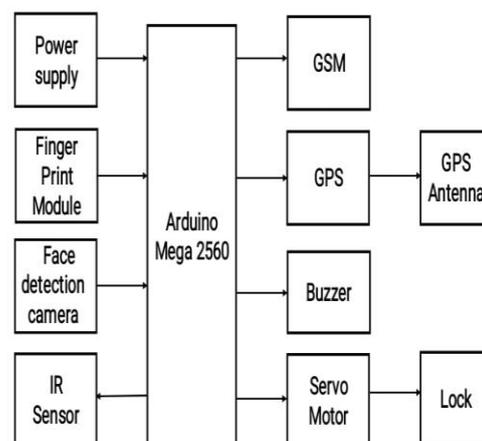


FIG 1: BLOCK DIAGRAM

4.2 WORKING

The Arduino Mega 2560 is heart of the system and many other components are employed in conjunction with it, such as Face detection Camera, Fingerprint scanner, LCD digital display, Buzzer and IR sensor. There is a two-level authentication process when someone wants to unlock the lock of examination box. If the user desire is to open the electronic box, then the user needs to show his face in front of the camera and if the face is matched with the authorized person then it give access to fingerprint module. If both fingerprint and face matches then the box will open and an alert message is sent to the authorized person that “open the box” with location through GPS. Then the buzzer will get ON as an indication. If the fingerprint is not matched then the box will not open and an alert message has been sent to authorized person automatically through GSM. Hence an acknowledgment has been sent to the control room about that the box is opened by the authorized person with the authorized face and valid location.

5.COMPONENTS REQUIRED

5.1 HARDWARE COMPONENTS

(a) IR SENSOR

An IR (Infrared) Sensor is an electrical device that is intended to detect some environmental characteristics. It senses the motion of any person around the box.

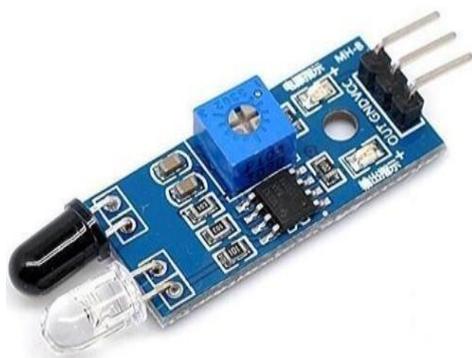


Fig 1: IR SENSOR

(b) GSM MODULE



Fig 2: GSM MODULE

GSM's abbreviation is “Global System for Mobile Communication”. GSM Modem has been used to establish interconnection between a device as well as GSM service. GSM modem can create, accept, decline a call and also send text messages.

(C) GPS MODULE

GPS refers to the “Global positioning system” through which anybody in the world could always access the position information. GPS module does not require Ethernet, but it works on the frequency.



Fig3: GPS MODULE

(d) FINGERPRINT SCANNER

Fingerprint scanners seem to be biometric authentication devices. These are now being used at government offices, defense industries and smart phones. Every human has their own marks on their fingertips and these were not irrevocable or editable.

These marks include a shape and this shape is called Fingerprint. Now fingerprints become a perfect option for the identification of the authorized person and it is generally used for security purposes.



Fig 4: FINGERPRINT SCANNER



Fig 6: SERVO MOTOR

(e) BUZZER

A Buzzer seems to be a small and simple component for adding sound features to our projects or systems. It is quite compact and lightweight which makes it easy to use on printed circuit boards (PCBs). Major uses of buzzers and beepers involve user input inspection, warning systems and alarms.



Fig 5: BUZZER

(f) SERVO MOTOR

A servo motor is a type of motor that can rotate with desired angle. It is used to unlock the electronic box when a person fingerprint and face is matched with the fingerprint and face of the authorized person.

(g) POWER SUPPLY

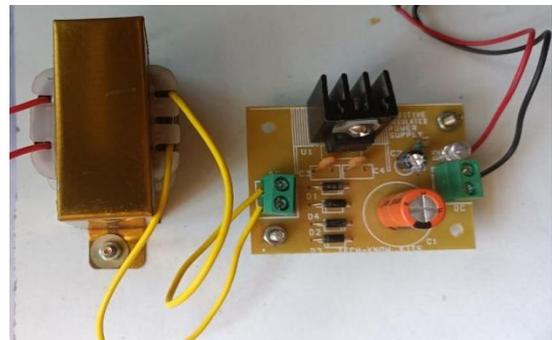


Fig 7: POWER SUPPLY

A 230V AC supply is giving to the step down transformer. By using the transformer step down the voltage to convert it into DC supply. The converted DC supply will come out from the RPS.

(h) FACE DETECTING CAMERA

It is using to detect the face of the persons who tries to open the Electronic Control Box. This camera will provide more protection to the Electronic Control Box against leakage of papers in the box.



Fig 8: FACE DETECTION CAMERA

(i) ARDUINO MEGA 2560

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. The code is dumped into this microcontroller which unlock the box. The microcontroller is programmed by using a programming language.



Fig 9 : ARDUINO MEGA 2560

5.2 SOFTWARE

In this system, the microcontroller is programmed by using the Arduino IDE (Integrated Development Environment) software. Here embedded c programming is used.

6. EXPERIMENT AND RESULTS

The response of the system is successfully tested in all conditions of the system that is mentioned in the system functionality.

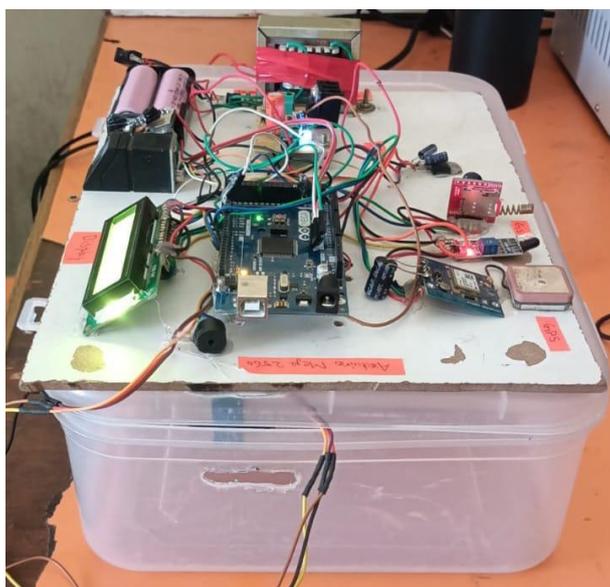


Fig 10 : Experimental setup

This figures shows the position of opened box. when the both face and fingerprint of authorized person matched then servo motor rotated and box get opened.

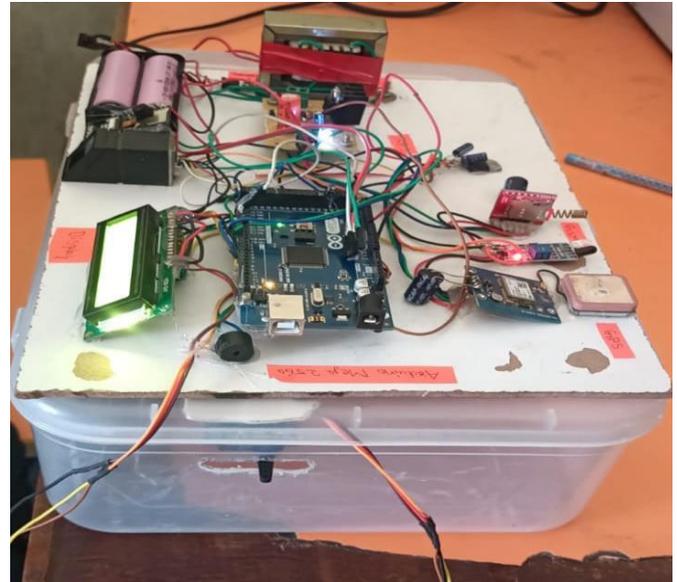


Fig 11: When kit is ON

This figure shows position of closed box. In this case the face and fingerprint of a person not matched, hence servo motor rotates and box get close

7. CONCLUSIONS

Thus, the Design and implementation of embedded system for the exam paper leakage were effectively carried out with the advantages of low power consumption, low cost, and high portability. The system was tested with the help of fingerprint scanner and face detection Camera. This will ensure that the exams go well and that no unethical practices detract from the purpose of assessing a person's knowledge through education. As a result, people will be forced to put their talents and knowledge to use, and only the most competent persons will be able to claim 100% correct outcomes. The time and money squandered in such an occurrence will no longer be a barrier to education, and the perpetrators will be discovered and dealt with in the most reliable way possible. We can expect to build an ideal education system in this way, where pupils rely on their own hardship rather than the leaked question.

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