IRIS SCANNER BASED COMPUTATIONAL METHOD OLOGY FOR SMART ATM SYSTEMS

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ABSTRACT

Iris recognition is a robotic biometric identification system that uses fine pattern-recognition techniques on videotape images of either one or both of a person's iris, which have complex patterns that are distinct, stable, and visible up close. A biometric system automatically recognizes an entity based on some sort of distinctive point or attribute maintained by the entity. The security system plays a significant role in everyday living. Iris recognition is emerging as one of the key types of biometrics-based identifying systems as security systems mature. Biometric systems have substantially improved individual identification and authentication, contributing significantly to national, international, and especially public security. Age makes the iris pattern more stable, and its main characteristics are correctness, sufficiency, and unity. Iris recognition is utilized in high-security sectors due to its excellent reliability and nearly flawless identification rates. The advantages of iris recognition systems over conventional biometric systems are explained in this design, along with the security measures utilized by ATMs. In this design, MATLAB software is utilized for iris detection, and Arduino UNO is used to interact with the laptop and mobile device.

Keywords- Biometrics, Iris, ATM, Arduino, MATLAB

INTRODUCTION:

Iris recognition is a robotic biometric identification method that analyses distinct patterns in a ring-shaped region surrounding each eye's pupil. It is an identifying system that is incredibly trustworthy, accurate, and has incredibly low false match rates. Iris scanning uses inconspicuous infrared light to photograph each eye's distinctive patterns, which are invisible to the unaided sight. The position of the pupil, iris, eyelids, and eyelashes are captured by a specialized camera. It simply takes a few seconds for the counterplotted, recorded, and stored iris information to be used for future matching or verification. A set of instructions that instruct a biometric system on how to interpret a certain issue is known as an algorithm. The biometric system uses algorithms to check whether a biometric sample and record match. Algorithms can be utilized in a variety of ways. Iris patterns are incredibly intricate, contain an astounding amount of information, and have more than 200 distinct locations. The fact that a person has different patterns in their right and left eyes and those patterns are simple to photograph makes iris check technology one of the few biometrics thatis undeniably resistant to fraud and false matching. Iris recognition systems have a false acceptance rate of 1 in 1.2 million, which is statistically lower than the standard point recognition method. The true benefit is in the false-rejection rate, a metric of drug users who are turned away while being authenticated. While iris scanning technologies promise erroneous rejection rates of zero percent, point scanners have a three percent rate. The main justification for any biometric is, of course, greater security, so a technology that is largely accurate like iris scanning has enormous appeal.

EXISTING SYSTEM:

There are seven modules in the iris recognition system. Challenge-response test (CRT), iris segmentation, iris normalization, iris enrichment, iris point garbling, and iris discriminator design are some of the techniques used to analyze an iris image. The accompanying figure provides a block diagram of the suggested iris recognition system. Image accession is a crucial and difficult phase in an iris recognition system. The iris is tiny and black in color, especially for Indians. It takes skill to capture sharp photos. Biometric features are vulnerable to fraud and unauthorized use. This is the biometric system's primary flaw. The goal of this module is to ensure that input images come from real people and not from fake iris or eye images or other artificial sources.

This system uses various illumination conditions at the same distance from the eye to test how the pupil's periphery reacts. The following is how this system's algorithm was created.

Step 1: Take pictures of the same person's eyes under various lighting conditions.

Step 2: Using the ocular pictures that were taken, measure the pupil's perimeter.

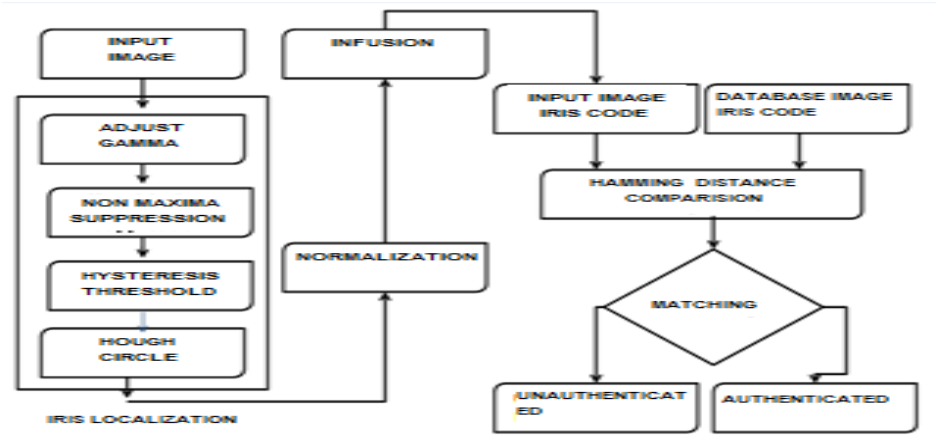

Fig.1. Block diagram of existing system

This technique ensures that an input originates from a genuine sequence rather than from photographs or other man-made sources. The biometrics-capturing equipment needs to be able to verify that they are looking at real stoner features (as opposed to those from a photograph or recording) and that the relationship signal isn't being replaced. By attaching a videotape archivist to the frame-theft, for example, this is utilized to aid renewal attacks extracted from videotape- signals.

LIMITATIONS OF EXISTING SYSTEM

The constraints of the existing ATM system, which depends only on the account holder's presence, include

1. This system needs an IR detector; it cannot use a standard camera.

2. Requires routine camera preservation.

3. Compared to other biometric modalities, the cost of iris scanners is rather high-end.

PROPOSED SYSTEM:

There are two options available in the ATM. Another bone is for others, and one is for tone. The graphic below shows a block diagram of the suggested system.

If the user selects the first option, iris recognition can be performed using the MATLAB picture set, and cash pullout information will be displayed if the permitted image is uploaded from MATLAB. After the user has input the required quantum, the cash motor will start to operate. The buzzer alarm turns on if an unauthorized picture is loaded from MATLAB.

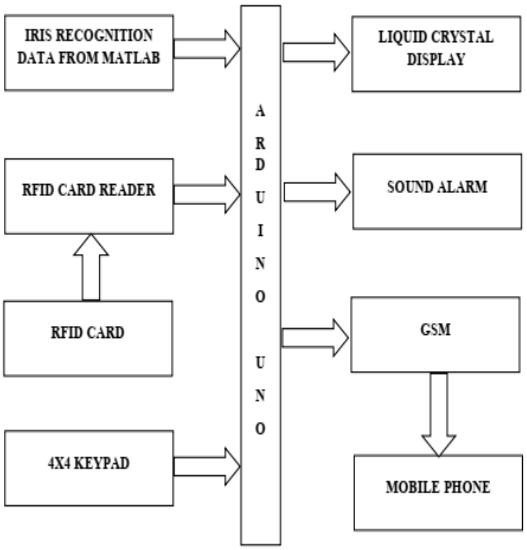

Fig.2. Block diagram of proposed system

Even so, if the user chooses the other option, they will be prompted to swipe the card. The system will provide an OTP to the concerned person after inspecting the card. The mechanism displays information on the cash pullout when the stoner enters the proper OTP. They are free to select the required quantum. After then, the cash motor will start. In the event that they entered the incorrect OTP, the loud buzzer will also switch on.

METHOD	CODED PATTERN	MISIDENTIFICATION RATE	SECURITY	APPLICATIONS
Iris Recognition	Iris pattern	1/1,200,000	High	High-security facilities
Fingerprinting	Fingerprints	1/1,000	Medium	Universal
Hand Shape	Size, length and thickness of hands	1/700	Low	Low-security facilities
Facial Recognition	Outline, shape and distribution of eyes and nose	1/100	Low	Low-security facilities
Signature	Shape of letters, writing order, pen pressure	1/30	Low	Low-security facilities

Tab.1: Accuracy rate of using iris scanner in the ATM

PROPOSED HARDWARE'S FUNCTIONALITY:

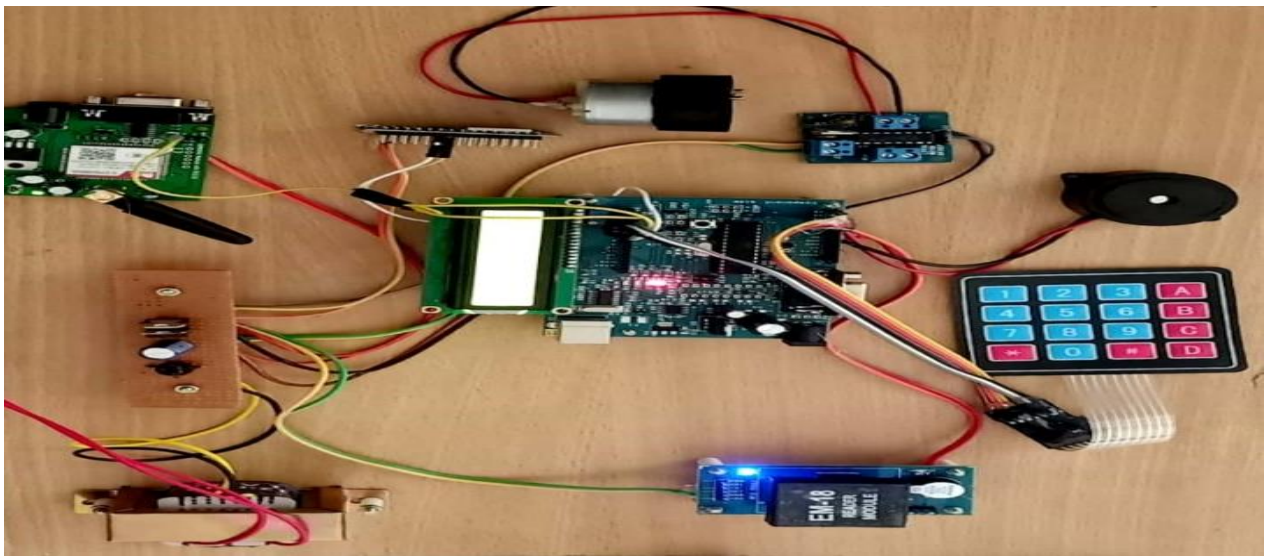

Fig.3: Hardware kit

The user must decide whether to withdrawmoney from his own account or from another person's account.

There are two possibilities.

1. Self \s
2. Other

If the user chooses option 1, a request to scan the iris will be made.

Fig.4: Scanning of Iris

Even so, if the iris doesn't match, the process will be rejected and the buzzer will activate. Once the proper iris has been examined, it will be possible to select the quantum details. There are 4 choices that are equivalent to 100, 500, 1000, and 2000.

Fig.5: Selection of amount details and confirmation

The evidence of the quantum that the stoner has been named will be displayed after choosing the quantum.The cash engine will now start to work to distribute the plutocrat. Additionally, a “Thank You “message and the last step of directing the stoner to collect the money will be visible. If the stoner chooses option 2, it will still prompt them to check their RFID card, and an OTP will be sent to the relevant mobile number. The right OTP will be verified by the application. If the entered OTP is incorrect, the buzzer will activate and the process will berefused. The next stage, amount details, will be displayed after you input the right OTP. There are 4 choices that are equivalent to 100, 500, 1000, and 2000.The proof of the amount the user has chosen will be provided after the amount has been concluded. The cash engine will now start to dispense the plutocrat. Additionally, a message saying "Thank You" and the final step of telling the stoner to collect the money will be shown.

CONCLUSION:

The system we suggested is much better at adding security measures when it is built up. The design will be extremely valuable in providing cutting-edge, top-notch security. High security against unauthorized people is provided. The average verification time is less than ten seconds. Iris structure and pattern display long-term stability. This kind of system is applicable to visually appealing security systems. People who are unable to go immediately to an ATM will benefit from this. The proposed method has an encouraging performance, according to all experimental findings. This further demonstrates the significance of excellent iris segmentation for iris recognition systems. Sweats must still be taken to improve the performance even further.

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