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THIRD GENERATION OTP BASED SECURE ONLINE TRANSACTION SYSTEM USING FACE RECOGINITION

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ABSTRACT: Banks give ATM cards to client to mileage the services like cash pull out, Leg change, balance inquiry etc. But physical cards have some problems. It can be stolen, skimmed, reproduced, commandeered, damaged or expired. Due to this problem, we need to suppose an alternate way to give better security. Numerous experimenters are allowing about card less sale through ATM. Proposed a abstract model for card less Electronic ATM through which client can do cash pull out, balance inquiry, fund transfer etc. We've anatomized their protocol and plant some excrescencies on this. This protocol doesn't specify what if it's off us sale. Either, guests get different orders of services but this protocol cannot determine which client will get which order of services. For this application we are using face detection with the account number, aadhar number, pin number, mobile number and name. When we recognize the face then it will give access to enter the ATM details. After that it will send message to the phone number. if we enter the password it will give transaction access. For this purpose we are using deep learning.

Keywords: *ATM, OTP, face detection, deep learning*

1. INTRODUCTION

The proposed computer-implemented method for card less use of an automated teller machine (ATM) sounds like a promising approach to enhance security and reduce fraudulent activities at ATMs [1-7], especially in remote areas. By implementing machine learning (ML) and artificial intelligence (AI) technologies alongside face recognition algorithms, you can create a robust system that restricts ATM access to authorized individuals. This could significantly reduce the risk of fraudulent card usage and enhance overall ATM security.

It seems like you've provided a detailed description of a computer-implemented method for cardless use of an ATM, incorporating face recognition technology for user authentication and security purposes. This method involves generating and transmitting a one-time password (OTP) to the user, who then enters it at the identified ATM. The OTP is verified, and upon successful verification, access to ATM services is authorized, without the need for a physical card. Additionally, you discussed the application of deep learning-based video analytics in centralized surveillance systems.

This technology can automate the identification of individuals from large collections of videos captured by surveillance cameras. Deep learning, a subset of artificial intelligence, is employed for image classification and helps in identifying security threats or specific individuals efficiently. Both of these methods leverage advanced technologies such as machine learning (ML), artificial intelligence (AI), and deep learning to enhance

security measures and automate complex tasks. The wireless networking [8-9] is used to transfer data from ATM to main Server of banks. They have applications in various fields, including military, schools, banking, online applications, and public places, where security and identification of individuals are crucial.

1.1 DIGITAL IMAGE PROCESSING:

The process of identifying objects in an image would most likely begin with image processing techniques like noise removal, then move on to (low-level) feature extraction to find regions, lines, and potentially even places with certain textures.

1.2 IMAGE :

An image is a two-dimensional depiction that resembles a subject—typically, a person or a physical item. An image can be three-dimensional (like a statue) or two-dimensional (like a picture or computer display). Optical instruments like cameras, mirrors, lenses, telescopes, microscopes, and the like, as well as natural occurrences and things like the human eye and water surfaces, can record them.

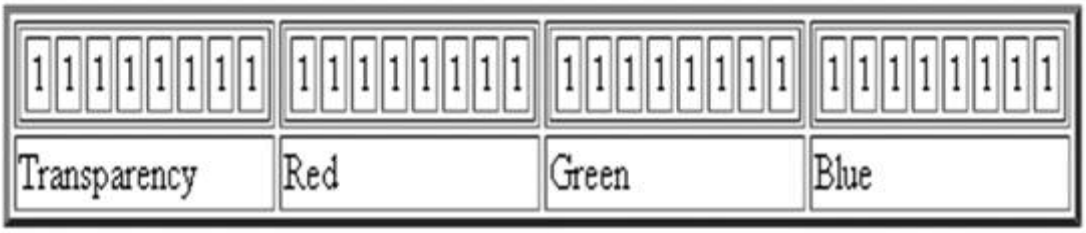

Figure 1: Bit Transferred for Red Green and Blue Plane
(24bit=8bit red;8-bit green;8bit blue)

1.2.1 IMAGE FILE SIZES:

The amount of bytes that rises in proportion to the number of pixels and color depth in a picture is known as the image file size .The larger the file and the higher the number of rows and columns, the higher the image resolution. Additionally, the size of each pixel in an image grows as the color depth does. For example, an 8-bit pixel (1 byte) can store 256 colors, while a 24-bit pixel (3 bytes) may store 16 million colors—the latter of which is referred to as true color. Algorithms are used in image compression to reduce file size.

Depending on the resolution of the camera and the capacity of the image-storage format, high-resolution cameras generate big image files that can range from hundreds of kilobytes to megabytes. High-end digital cameras capture 12-megapixel images missing one picture and one million or more true color photos (1MP = 1,000,000 pixels / 1 million). For instance, a 12 MP camera would record a picture that would require 36,000,000 bytes of memory to keep in its uncompressed form.

This is a significant quantity of digital storage for a single image, as cameras are designed to capture and store a large number of images. Each pixel in a camera records true color using three bytes. Image file formats were created to store huge photos because of the large file sizes that might be found on storage discs and within cameras.

1.2.2 IMAGE PROCESSING:

Comparing digital image processing to man's long-standing concern with visual stimuli, the former is a comparatively recent phenomenon. It has been applied to almost every kind of image in its brief existence, with differing degrees of effectiveness. Perhaps disproportionately, scientists and laypeople are drawn to pictorial displays because of their intrinsic subjective appeal. Like other glamorous professions, digital image processing is plagued by misconceptions, misinformation, misconnections, and myths. It is a broad umbrella that encompasses many areas of computer technology, optics, electronics, mathematics, photography, and graphics. It's a genuinely interdisciplinary project with a lot of vague terminology.

1.2.3 IMAGE ACQUISITION:

To acquire a digital image is to perform image acquisition. An image sensor and the capacity to digitize the signal the sensor produces are needed to accomplish this. Every 1/30 seconds, the sensor—which could be a monochrome or color TV camera—produces a full image of the problematic area. An alternative to the image sensor would be a line scan camera, which only generates one image line at a time. The objects in this instance move past the line.

1.2.4 IMAGE ENHANCEMENT:

One of the easiest and most interesting applications of digital image processing is image enhancement. The basic idea behind enhancement techniques is to either highlight specific attractive parts of an image or bring out details that are hidden. A common example of enhancement is when we make an image more contrasty because we think it "looks better." Remember that the field of image processing improvement is highly subjective.

1.2.5 IMAGE RESTORATION:

Improving an image's look is another aspect of image restoration picture restoration, on the other hand, is objective as opposed to augmentation, which is subjective, because restoration methods are typically based on probabilistic or mathematical models of picture degradation.

1.3 COLOR IMAGE PROCESSING:

There are two main reasons why color is used in image processing. First of all, color is a potent identifier that frequently makes it easier to identify and remove objects from a scene. Second, there are thousands of hues and intensities of color that humans can distinguish, whereas there are only roughly two dozen shades of grey. In the context of manual image analysis, this second aspect is especially crucial.

1.3.1 SEGMENTATION:

Segmentation techniques divide an image into its component objects. Generally speaking, one of the trickiest problems in digital image processing is autonomous segmentation. A robust segmentation technique goes a long way towards successfully solving imaging challenges where individual item identification is necessary.

1.4 CLASSIFICATION OF IMAGES:

There are 3 types of images used in Digital Image Processing. They are

1. Binary Image
2. Gray Scale Image
3. Colour Image

1.4.1 BINARY IMAGE:

A binary image is a computer image where each pixel can have one of two possible values. Any two colors can be used, although black and white are the most common pairing for a binary image. The color utilized for the object or objects in the picture is the foreground color; the background color is used for the remainder of the picture.

1.4.2 GRAY SCALE IMAGE

An image that is digitally represented as grayscale contains solely intensity information, with each pixel's value representing a single sample. This kind of image, sometimes referred to as black-and-white images, is made up only of grayscale (0-255) hues, which range from black(0) at the lowest intensity to white (255) at the highest.

1.4.3 COLOUR IMAGE:

A digital image that contains color information for every pixel is called a (digital) color image. The color that each pixel appears in is determined by a certain value. Three digits that indicate the color's breakdown into its three basic hues—Red, Green, and Blue—qualify this value.

This can be used to represent any color that is visible to the human eye. Each of the three primary colors' constituent parts is represented by a number between 0 and 255. For instance, the codes for white will be R = 255, G = 255, and B = 255; for black, they will be (R, G, B) = (0,0,0); and for bright pink, they would be (255,0,255).

To put it another way, an image is a massive two-dimensional collection of pixels, or color values, each coded on 3 bytes, which stand for the three main hues. This makes it possible for the image to have 16.8 million distinct colors, or 256x256x256, in total.

Known by another name, RGB encoding, this method is specially designed with human perception in mind. As can be seen in the above image, colors are represented by three bytes that indicate how they break down into the three primary hues.

A mathematician would find it obvious to understand colors as vectors in a three-dimensional space where each axis represents one of the fundamental hues right away. As a result, the majority of geometric mathematical concepts—such as norms, scalar products, projection, rotation, and distance—will be useful to us when dealing with our colors.

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2. BLOCK DIAGRAM

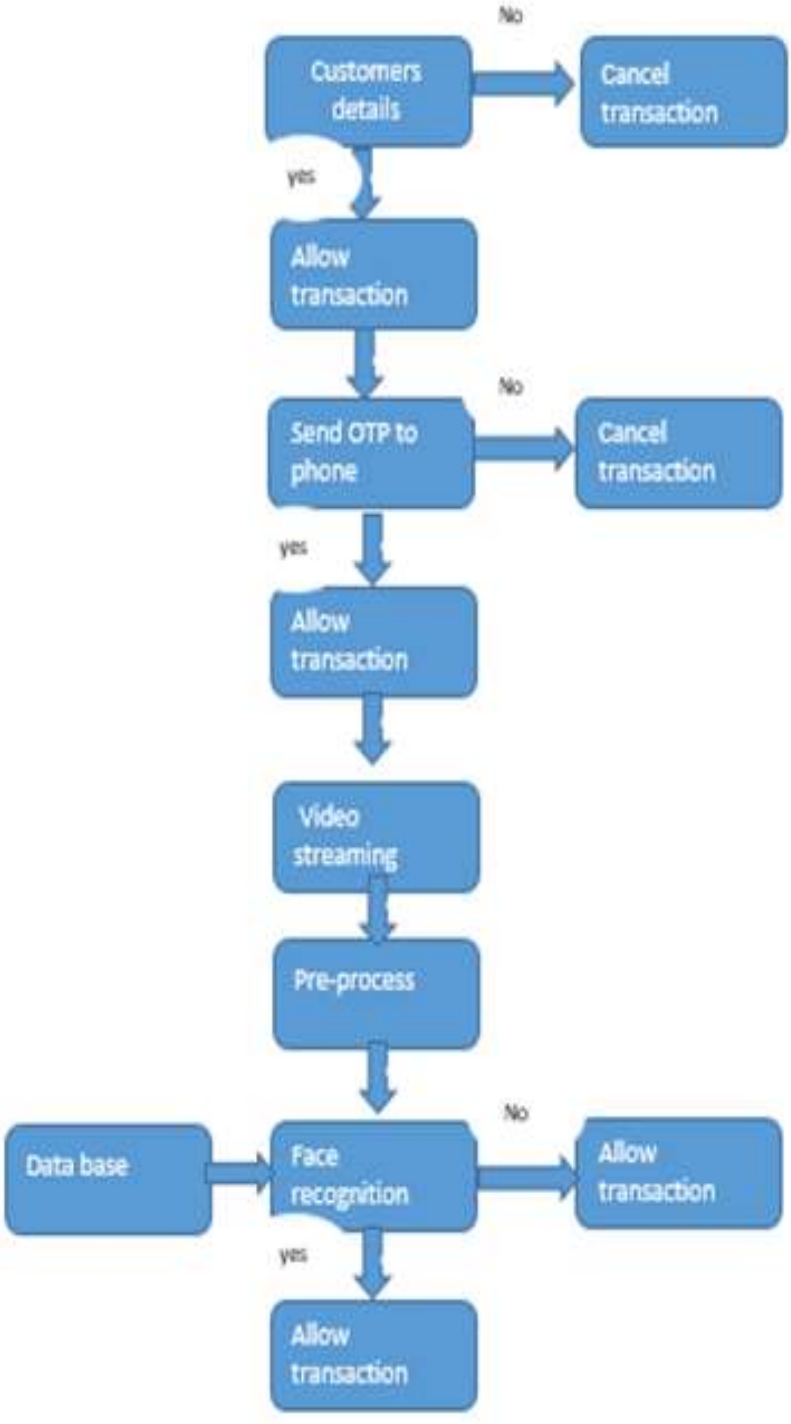

Figure 2: Block diagram

3. RESULT

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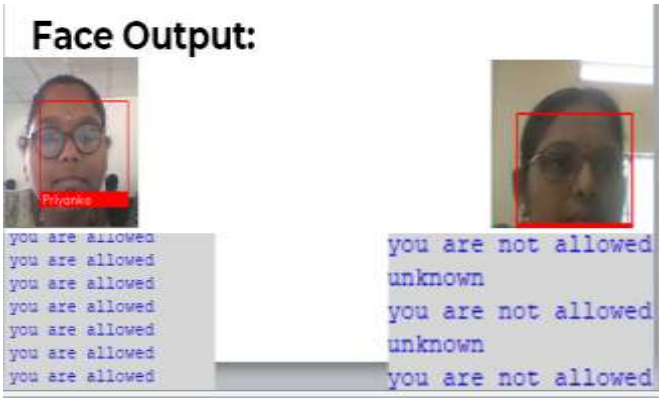

Figure 3: Output of the Project

In the above figure the customer details are correct and the person in front of the ATM then they are allowed for the transaction and if the person in front of the ATM is unknown then they are not allowed for the transaction. This process goes on for the other members also. Some of the examples are given below.

Figure 4: Transaction Allowance 1

Figure 5: Transaction Allowance 2

The above figures 4 & 5, the output showing two different person's transaction allowances which contains named box around her face and the allowance for the transaction.

4. CONCLUSION

To successfully execute this project, you would need expertise in computer vision, deep learning, cryptography, and hardware integration. It's also important to consider ethical implications, data privacy, and legal regulations related to biometric data and financial transactions [10]. Testing and validating the security measures thoroughly are crucial to ensure their effectiveness in real-world scenarios. Additionally, keeping the project updated with the latest advancements in technology and security practices is essential to stay ahead of potential threats.

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