Develop and Design Of the ATM Banking Security System Through Image Processing And GSM Communication

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ABSTRACT:
ATM - originally designed for WAN communications, but quickly adapted for LANs as well, ends this historical separation and forms a universal platform for data communication, In both ATM LAN AND ATM WAN networks the data transport is achieved via connection-oriented communication paths, which are set up though high-speed switching systems. These ATM switches perform the cell routing from the input ports of the switch to the destination port in real time and in parallel for the ports. ATM can handle all of today's data services (telephone, data, video-broadcast and interactive) in an efficient way ATMs have become very popular with the general public for their availability and general user friendliness. ATMs are now found in many locations having a regular or high volume of consumer traffic. For example, ATMs are typically found in restaurants, supermarkets, Convenience stores, malls, schools, gas stations, hotels, work locations, banking centers, airports, entertainment establishments, transportation facilities and a myriad of other locations. ATMs are typically available to consumers on a continuous basis such that consumers have the ability to carryout their ATM financial transactions and/or banking functions at any time of the day and on any day of the week..

KEYWORDS: *ATM, LAN,* LPC2148 , MATLAB, MMS , PCA algorithm , Voice Announcer, WAN

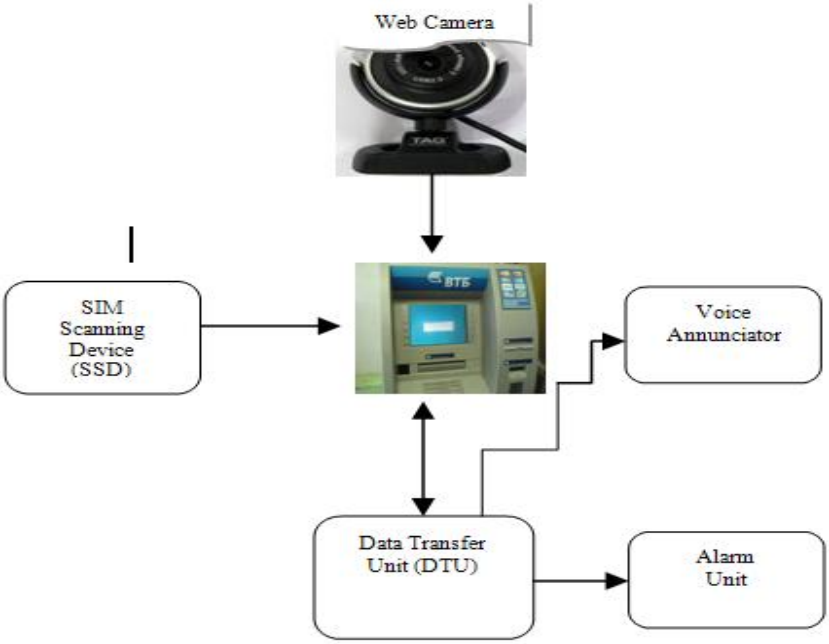
I. INTRODUCTION

3G Technology have to be created the new generation ATM machine which can be operator without the ATM card. By using this system ATM machine is going to operate by using our SIM in the mobile phone. When we insert our SIM in the reader unit of the ATM machine it transfers the mobile to the server. In server we can collect the related information of the mobile number (i.e.) the users account details, their photo etc. the camera presented near the ATM machine will capture the users image and compare it with the user image in the server using MATLAB. Only when the image matches it asks the pin number and further processing starts. Otherwise it will send the sms to owner mobile and it asks do you want continue or not If he will reply YES means it move for the further transaction if reply is NO means it give indication to the particular ATM . So by using this system need of ATM card is completely eliminated we can operate the ATM machine by using our SIM itself. By using this system malfunctions can be avoided. Our transaction will be much secured. One more application can also be added in this system for helping the blind people. In the existing system all the transactions are done through keyboard only. It may be difficult for blind people so we can also add voice enunciator to indicate each and very process to the blind people. It that enables a visually and/or hearing impaired individual to conveniently and easily carry out financial transactions or banking functions

II. SCALABILITY AND MODULARITY

ATM networks can be implemented on any one of number of transfer media. until now the network standards have been strictly defined right down to the physical level (Ethernet, FDDI, and so on).for ATM networks this is not the case .there is thus no explicit specification as to which physical medium ATM cells

should be transferred over, or at what speed in addition, ATM based networks can be to accommodate new users without the bandwidth available to existing users being restricted as a result. It is simply a matter of adding more connection modules to the ATM switch serving the users. so that ATM can be used be used is the transmission mechanism in practically all areas of data communications .this makes ATM equally suitable for local and wide area traffic.



"Figure 1 Block diagram of 3G ATM"

III. DESIGN IMPLEMENTATION

The Design implementation is of two types
A) Connection-Less Authentication System and B) MMS-Based Authentication System

3.1 Connection-Less Authentication System

A onetime password (OTP) is generated without connecting the client to the server. The mobile phone will act as a token and use certain factors unique to it among other factors to generate a one-time password locally. The server will have all the required factors including the ones unique to each mobile phone in order to generate the same password at the server side and compare it to the password submitted by the client. The client may submit the password online or through a device such as an ATM machine. A program will be installed on the client's mobile phone to generate the OTP.

3.2 MMS-Based Authentication System

In case the first method fails to work, the password is rejected, or the client and server are out of sync, the mobile phone can request the one time password directly from the server without the need to generate the OTP locally on the mobile phone. In order for the server to verify the identity of the user, the mobile phone sends to the server, via an MMS message, information unique to the user. The server checks the MMS content and if correct, returns a randomly generated OTP to the mobile phone. The user will then have a given amount of time to use the OTP before it expires. Note that this method will require both the client and server to pay for the telecommunication charges of sending the MMS message.

IV. STATISTICS

The entire subject of statistics is based around the idea that you have this big set of data, and you want to analyze that set in terms of the relationships between the individual points in that data set. I am going to look at a few of the measures you can do on a set of data, and what they tell you about the data itself.

V. CHOOSING COMPONENTS AND FORMING A FEATURE VECTOR

In general, once eigenvectors are found from the covariance matrix, the next step is to order them by eigenvalue, highest to lowest. This gives you the components in order of significance. Now, if you like, you can decide to *ignore* the components of lesser significance. You do lose some information, but if the eigenvalues are

small, you don't lose much. If you leave out some components, the final data set will have less dimensions than the original. To be precise, if you originally have _ dimensions in your data, and so you calculate _ eigenvectors and eigenvalues, and then you choose only the first {eigenvectors, then the final data set has only {dimensions. What needs to be done now is you need to form a *feature vector*, which is just a fancy name for a matrix of vectors. This is constructed by taking the eigenvectors that you want to keep from the list of eigenvectors, and forming a matrix with these eigenvectors in the columns.

VI. PCA FOR IMAGE COMPRESSION

Using PCA for image compression also know as the Hotelling, or Karhunen and Leove (KL), transform. If we have 20 images, each with . 4 pixels, we can form. 4 vectors, each with 20 dimensions. Each vector consists of all the intensity values from the *same* pixel from each picture. This is different from the previous example because before we had a vector for *image*, and each item in that vector was a different pixel, whereas now we have a vector for each *pixel*, and each item in the vector is from a different image. Now we perform the PCA on this set of data. We will get 20 eigenvectors because each vector is 20-dimensional. To compress the data, we can then choose to transform the data only using, say 15 of the eigenvectors. This gives us a final data set with only 15 dimensions, which has saved us _.o1 of the space. However, when the original data is reproduced, the images have lost some of the information. This compression technique is said to be *lossy* because the decompressed image is not exactly the same as the original, generally worse.

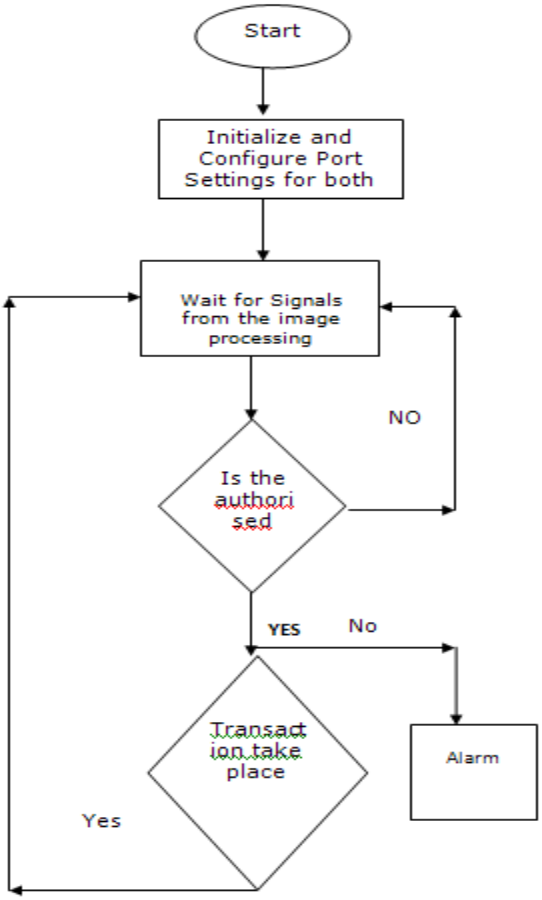
VII. IMAGE RECOGNITION

Image recognition is composed of two parts: classification and validation. The classification can be done somewhat easily by statistics of dimensions and pattern features of each type of image. On the other hand, validation is very difficult because we cannot obtain counterfeits that might appear in future, while we can collect plenty of genuine images. Moreover, statistics for a two-class (genuine and counterfeit banknotes) problem has less power because counterfeits could not actually be collected. Our approach is therefore to carefully select observation points at which a physical feature has a small deviation amongst genuine banknotes and looks difficult to imitate.

VIII. WIRELESS COMMUNICATION

A GSM modem can be an external modem device, such as the Wave com FASTRACK Modem. Insert a GSM SIM card into this modem, and connect the modem to an available serial port on your computer. A GSM modem can be a PC Card installed in a notebook computer, such as the Nokia Card Phone. A GSM modem could also be a standard GSM mobile phone with the appropriate cable and software driver to connect to a serial port on your computer. Phones such as the Nokia 7110 with a DLR-3 cable, or various Ericsson phones, are often used for this purpose.A dedicated GSM modem (external or PC Card) is usually preferable to a GSM mobile phone. This is because of some compatibility issues that can exist with mobile phones. For example, if you wish to be able to receive inbound MMS messages with your gateway, and you are using a mobile phone as your modem, you must utilize a mobile phone that does not support WAP push or MMS. This is because the mobile phone automatically processes these messages, without forwarding them via the modem interface. Similarly some mobile phones will not allow you to correctly receive SMS text messages longer than 160 bytes (known as "concatenated SMS" or "long SMS"). This is because these long messages are actually sent as separate SMS messages, and the phone attempts to reassemble the message before forwarding via the modem interface. (We've observed this latter problem utilizing the Ericsson R380, while it does not appear to be a problem with many other Ericsson models.) When you install your GSM modem, or connect your GSM mobile phone to the computer, be sure to install the appropriate Windows modem driver from the device manufacturer. To simplify configuration, the Now SMS/MMS Gateway will communicate with the device via this driver. An additional benefit of utilizing this driver is that you can use Windows diagnostics to ensure that the modem is communicating properly with the computer. The Now SMS/MMS gateway can simultaneously support multiple modems, provided that your computer hardware has the available communications port resources.

DEVELOPMENT CHART



"Figure 2. Flow Chart"

IX. STANDARD DEVIATION

To understand standard deviation, we need a data set. Statisticians are usually concerned with taking a *sample* of a *population.* To use election polls as an example, the population is all the people in the country, whereas a sample is a subset of the population that the statisticians measure. The great thing about statistics is that by only measuring (in this case by doing a phone survey or similar) a sample of the population, you can work out what is most likely to be the measurement if you used the entire population. In this statistics section, I am going to assume that our data sets are samples 2 of some bigger population. There is a reference later in this section pointing to more information about samples and populations.

"Figure 3. GSM smart modem"

X. CONCLUSION

All the functions of the ATM, the authors are now concentrating on developing the intention recognition mobile based processing and alert module This paper presents a novel architecture that can be used as a means of interaction between mobile phone, ATM machine and a Banking application for the purpose of withdrawing cash. The proposed design; the secure M-cash withdrawal allows the use of mobile phones as a tool of interaction and provide flexibility through a robust identity management architecture. The first part of the architecture is the process of being implemented and all the process involved has been analyzed and justified where possible

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