SIM Based Automation of Inter-Networked Banking and Teller Machine Operations using FPGA

A.Vijay Papi Reddy and N.Pandu Ranga Reddy

Abstract: **Automated teller machines (ATMs) are standard devices generally employed by people to hold out a spread of non-public and business money transactions and/or banking functions. ATMs became very talked-about with the final public for his or her accessibility and general user friendliness. ATMs are currently found in several locations having a daily or high volume of client traffic. For instance, ATMs are generally found in supermarkets, , malls, schools, hotels, work locations, banking centers,airports, recreation institutions, transportation facilities and a myriad of alternative locations. ATMs are generally accessible to customers on endless basis such customers have the power to carry out their ATM money transactions and/or banking functions at any time of the day and on any day of the week.**

Existing ATMs are convenient and simple to use for many customers. Existing ATMs generally offer directions on associate degree ATM video display that are browse by a user to produce for interactive operation of the ATM. Having browsed the video display directions, a user is ready to use and operate the ATM via information and data entered on a data input device. But the downside within the existing system is that the user ought to carry their ATM card while not fail. However in several cases we have a tendency to forget it. Thus solely we have a tendency to design a system that helps North American country to use the ATM machine while not the ATM card.

During this planned system we've got created the new generation ATM machine which may be operator while not the ATM card. By victimization this method ATM machine are often operator by victimization our SIM within the transportable. After we insert our SIM within the reader unit of the ATM machine it transfers the mobile to the server. In server we will collect the connected info of the mobile variety (i.e.) the users account details, their pic etc. the camera given close to the ATM machine can capture the users image and compare it with the user image within the server victimization MATLAB. Only the image matches it asks the PIN and more process starts. Otherwise the method is terminated. Thus by victimization this method want of ATM card is totally eliminated we will operate the ATM machine by victimization our SIM itself. By victimization this method malfunctions are often avoided. Our dealing are going to be a lot of secured. Application also can be added during this system for serving to the blind individuals. Within the existing system all the transactions are done through keyboard solely. it should be troublesome for blind individuals thus we will conjointly add voice enunciator to point every and extremely method to the blind individuals. It that permits a visually and/or hearing impaired individual to handily and simply do money transactions or banking functions.

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I. DESIGN IMPLEMENTATION

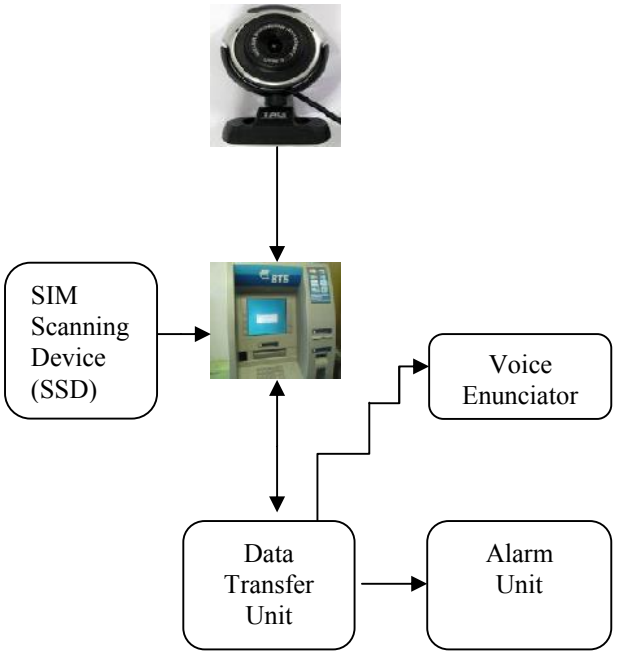

Fig 1: 3G ATM Block Diagram

II. OVERVIEW OF THE SYSTEM

A. Connection-Less Authentication System:

A onetime password (OTP) is generated while not connecting the consumer to the server. The itinerant can act as a token and use sure factors distinctive thereto among different factors to come up with a one-time countersign regionally. The server can have all the desired factors together with those distinctive to every itinerant so as to come up with an equivalent countersign at the server facet and compare it to the countersign submitted by the consumer. The consumer could submit the countersign on-line or through a tool like Associate in Nursing ATM machine. A program is put in on the client's itinerant to come up with the OTP.

B. SMS-Based Authentication System:

In case the primary methodology fails to figure, the watchword is rejected, or the consumer and server area unit out of synchronies', the portable will request the just one occasion watchword directly from the server while not the

necessity to come up with the OTP domestically on the portable. so as for the server to verify the identity of the user, the portable sends to the server, via AN SMS message, info distinctive to the user. The server checks the SMS content and if correct, returns a willy-nilly generated OTP to the portable. The user can then have a given quantity of your 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 SMS message**

III. PCA ALGORITHM

A. Statistics:

The entire subject of statistics relies round the concept that you have got this massive set of information, and you would like to analyses that set in terms of the relationships between the individual points in this knowledge set. I'm getting to investigate many of the measures you'll do on a group of information, and what they tell you concerning the info itself.

B. Standard Deviation:

To understand variance, we'd like a knowledge set. Statisticians are typically involved with taking a sample of a population. To use election polls as associate example, the population is all the folks within the country, whereas a sample could be a set of the population that the statisticians live. The nice factor concerning statistics is that by solely measure (in this case by doing a phone survey or similar) a sample of the population, you'll be able to estimate what's possibly to be the measure if you used the whole population. During this statistics section, i'm aiming to assume that our knowledge sets are samples two of some larger population. There's a reference later during this section inform to a lot of info concerning samples and populations. I might merely use the image to visit this whole set of numbers. If i need to visit a personal range during this knowledge set, I'll use subscripts on the image to point a particular range There are variety of things that we will calculate a few knowledge set. As an example, we will calculate the mean of the sample. I assume that the reader understands what the mean of a sample is, and can solely provide the formula: All this formula says is "Add up all the numbers so divide by what percentage there are". Sadly, the mean doesn't tell U.S.A. lots concerning the info aside from a kind of middle purpose. as an example, these 2 knowledge sets have precisely the same mean (10), however are clearly quite totally {different completely different}: therefore what's different concerning these 2 sets? It's the unfold of the info that's different. The quality Deviation (SD) of a knowledge set could be a live off however unfolded the info.

C. 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 fewer 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.

D. 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

E. Wireless communication:

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves.

A GSM modem can be an external device or a PC Card / PCMCIA Card. Typically, an external GSM modem is connected to a computer through a serial cable or a USB cable. A GSM modem in the form of a PC Card / PCMCIA Card is designed for use with a laptop computer. It should be inserted into one of the PC Card / PCMCIA Card slots of a laptop computer. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate. As mentioned in earlier sections of this SMS tutorial, computers use AT commands to control modems. Both GSM modems and dial-up modems support a common set of standard AT commands. You can use a GSM modem just like a dial-up modem.

F. FPGA:

A field-programmable gate array (FPGA) is an microcircuit designed to be organized by a client or a designerwhen manufacturing—hence "field-programmable". The FPGA configuration is mostly specified employing a hardware description language (HDL), just like that used for AN application-specific microcircuit (ASIC) (circuit diagrams were antecedent wont to specify the configuration, as they were for ASICs, however this is often more and more rare). Modern FPGAs have massive resources of logic gates and RAM blocks to implement complicated digital computations. As FPGA styles use in no time IOs and bifacial information buses it becomes a challenge to verify correct temporal order of valid information at intervals setup time and hold time. Floor coming up with permits resources allocation at intervals FPGA to satisfy these time constraints.[1] FPGAs are often wont to implement Any logical perform that an ASIC may

perform. the power to update the practicality when shipping, partial re-configuration of a little of the style[2] and therefore the low non-recurring engineering prices relative to AN ASIC design (notwithstanding the widely higher unit cost), provide benefits for several applications

IV. WORKING PROCEDURE

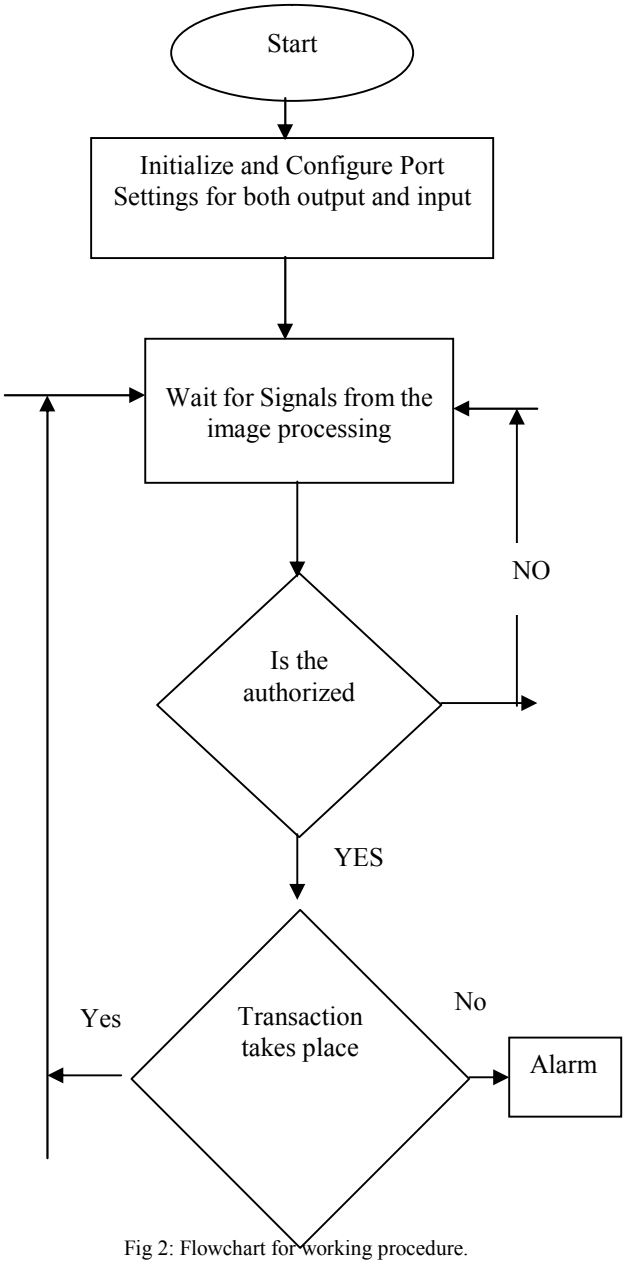

Fig 2: Flowchart for working procedure.

V. RESULT

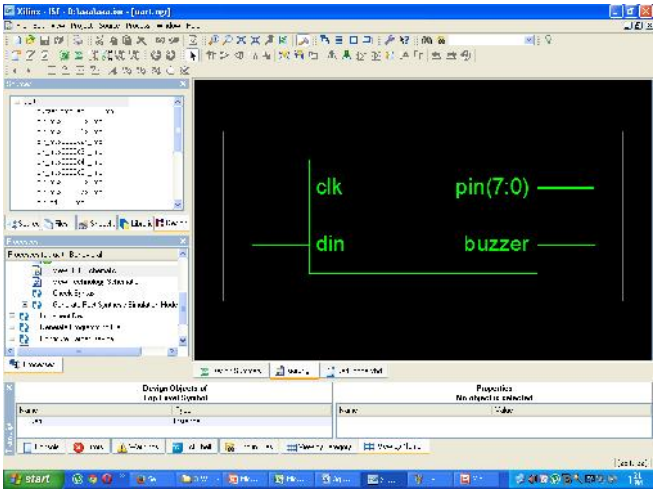

Fig 3: Schematic Diagram of VHDL code

Fig 4: Technological schematic

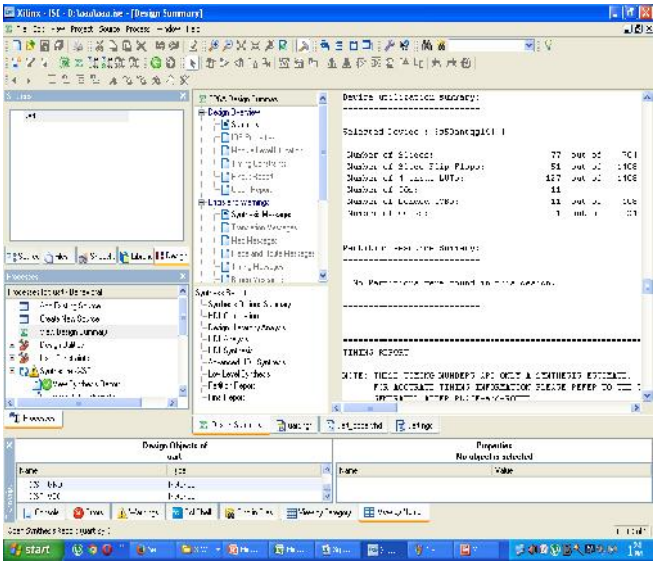

Fig 5: Synthesis report

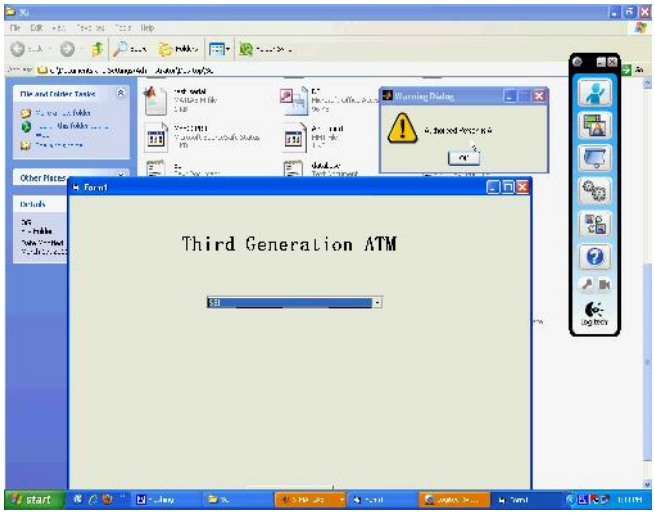

Fig 6: Option to Choose a Bank if Person is Authorized

Fig 7: Asking Pin Number for corresponding bank

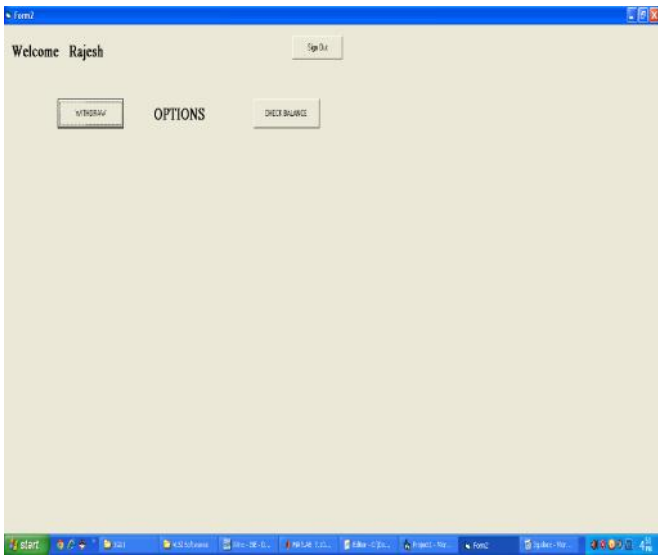

Fig 8: Asking for choosing options

Fig 9: Cash Withdraw and Check Balance Options

CONCLUSION

All the functions of the ATM, the author's currently concentrating on developing the intention recognition, mobile primarily based process and alert module.

This paper presents a unique design that may be used as a method of interaction between portable, ATM machine and a Banking application for the aim of retreating money. The planned design; the secure M-cash withdrawal permits the employment of mobile phones as a tool of interaction and supply flexibility through a strong identity management design. The primary a part of the design is that the method of being enforced and every one the method concerned has been analyses and even wherever attainable.

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