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Cyber Security System in Financial Sector Using FPGA Implementation

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Description

Automated teller machines (ATMs) are well known devices typically used by individuals to carry out a variety of personal and business financial transactions and/or banking functions. ATMs have become very popular with the public for their availability and general user sociability. ATMs are now found in several locations having a regular or high volume of customer traffic. For instance, ATMs are typically found in restaurants, superstores, Convenience stores, shopping mall, schools, gas stations, hotels, work locations, banking centers, airports, entertaining establishments, transport facilities and a myriad of other locations. This has added new competences and features, though most of the time, the executions are registered and networking is not always possible. Yet there is an increasing demand for advanced banking, where appliances respond automatically to changing environmental conditions and can be easily controlled through one common device. This paper offerings a possible solution whereby the user controls devices by employing a central Field Programmable Gate Array (FPGA) controller to which the devices and sensors are interfaced. Control is transferred to the FPGA from a mobile phone through its GSM interface. ATMs are typically available to consumers on a continuous basis such that consumers have the ability to carry out their ATM financial transactions and/or banking functions at any time of the day and on any day of the week. FPGA, GSM, Face reorganization, SIM, ATM.

Programmable Gate Array

The new generation ATM machine which can be operate without the ATM card. In this system ATM machine can be operator by using our SIM card and Face identification. When we insert our SIM in the reader unit of the ATM machine it transfers the mobile to the server. In server we can gather the related information of the mobile number the user's particulars of Bank account and their photographs etc. This paper presents a possible solution whereby the user controls devices by employing a central Field Programmable Gate Array (FPGA) controller to which the devices and sensors are interfaced. According to increasing development of technology and in order to approaching most citizen services are presented electronically using clever electronic cards. On the subject of this statistic, people have numerous smart cards which are increasing in number every day. In the face of so many advantages, these cards have various disadvantages such as multiplicity, difficult to carrying, inaccessibility of card readers in many places, waiting in the lines of ATMs, etc. In this paper we will present a new method named as multipurpose smart SIM card in order to resolve these problems. The Recommended SIM card, worked based on the mobile database architecture that we will discuss about this architecture and location dependent queries processing in it. Then we will study the difficulty of finding the nearby and best unoccupied ATM as a case study and at last we will propose a method to authenticate users in this system. Existing ATMs are convenient and easy to use for most consumers. Existing ATMs typically provide directions on an ATM display screen that are read by a user to provide for collaborative operation of the ATM. Having read the display the commands, a user is able to use and operate the ATM via data and information pass on a keypad. However the drawback in the existing system is that the user must carry their ATM card without fail. But in many cases we fail to recall it. So only we designed this system which services us in the ATM machine without the ATM card.

In this proposed system we have created the new generation ATM machine which can be operator without the ATM card. By using this scheme ATM mechanism can be operated using our SIM and Face identification. When we insert our SIM in the reader unit of the ATM machine it transfers the mobile to the server. In server we can gather the related information of the mobile number the user's particulars of Bank account and their photographs. The camera presented near the ATM machine will capture the user's image and compare it with the user image in the server using MATLAB. Only when the image matches it requests the pin number and further operations will starts. Otherwise the process will terminate automatically. So by using this system necessity of ATM card is entirely eliminated. Here we can operate the ATM machine by using our SIM card itself. Using this system we can avoid malfunctions. Also our transaction will be greatly secured. Additionally more application can also be added in this system. Here we can implement multiple bank account details into one ATM and we can use one ATM card for withdrawing our different bank accounts. Also Another one application of this system is to find the nearest ATM center which is working properly. The VHDL code was simulated and synthesized finally it was implemented in FPGA successfully. During the examination we find out that the face detection using Mat lab execution, There It proves to us that the detection algorithm can detect the face and the ATM was operated successfully using Visual studio. Also the embedded smart banking security system is executed.

Transmission System

Error corrective coding is used to enhance the efficiency and accuracy of information transmitted. In a communication transmission system, data is transferred from a transmitter to a receiver across a physical medium of transmission or channel. The channel is generally affected by noise or fading which introduces errors in the data being transferred. Error-correcting code is a signal processing technique used for correcting errors introduced in the channel. It is done by encoding the data to be transmitted and introducing redundancy in it such that the decoder can later reconstruct the data transmitted using the redundant information. The information source is a digital source. If it is not, it will be converted to digital. The digital source output u is sent to an encoder to generate encoder output x which is modulated and then transmitted over the physical channel. The decoder will make

a best guess of the original information u based on the received signal y which is distorted by the channel. A major concern in coding technique is control of errors so that reliable communications can be obtained, is as close to u as possible. There are many coding schemes available. Turbo code is the most exciting and potentially important development in the coding theory in recent years. This powerful code is capable of achieving near Shannon capacity performance. There are many papers discussing the Turbo codes. The first one is related to the Maximum, since then, researchers around the world have investigated the performance and design of Turbo codes. Both serial and parallel concatenated Convolutional codes have been studied.

Simplification called the max-log-MAP algorithm (Additive MAP Algorithm). A further simplification of log MAP is offered by the modified soft-output Viterbi algorithm (SOVA) which works in a sliding-window SISO decoding algorithm. In this paper we are evaluating the BER performance of Turbo codes used in IS-2000 CDMA reverse or forward link under Additive White Gaussian Noise (AWGN) and slow fading channels. In addition, this paper presents more accurate approximation in the modified Turbo code decoding algorithm under slow Rayleigh fading channel and corrects the error in the decoding algorithm under AWGN channel presented. A system model of Turbo code is introduced, as an example, IS-2000 CDMA system is briefly discussed, then focus on a general Turbo encoder which consists of the RSC encoder, interweaver, and puncturing. Convolutional codes cabe used to encode a continuous stream of data, but in this case we assume that data is configured in finite blocks - corresponding to the interleave size. The frames can be terminated. the encoders are forced to a known state after the information block. The termination tail is then appended to the encoded information and used in the decoder.