

Intelligent Mini ATM System

Pranav P. Patil¹, Siddhart T. Antre², Bhushan B. Yadav³, Hrishikesh S. Matkar⁴
^{1, 2, 3, 4}Department of Information Technology, ^{1, 2, 3, 4}Sandip Institute of Technology & Research Center
Trimbak Road, Nashik, Maharashtra-422213
info@sandipfoundation.org

Abstract- This paper proposes a new portable intelligent mini ATM system which is going to enhance both Security and User Experience. The old ATM use Windows XP as the operating system instead of that we are using Linux operating system which is latest Ubuntu 18.04 LTS. Security Updates for Linux are released all the time because of the highly advanced community who work on Linux every day. Some smart features like Nearby ATM, Cash on the Go, identification of the users, ability to select the Note of their choice and making payment option available in the ATM. Some additional features like detecting skimming devices and using CCTV camera present in the ATM location for preventing robbery. This New ATM will be Secured and more convenient. It Will Benefit the Bank to handle the Rush Hours were everybody is standing in the line of ATM for cash. With this new System Cash Withdrawal Process will be quick and secured. And Users will be not frustrated. This ATM system seeks to be a proactive measure to prevent all the risks associated with the ATMs.

Keywords- Automated teller machine (ATM), Security, Artificial Intelligence, Raspberry Pie, Linux.

1. INTRODUCTION

The Invention of automate teller machines (ATM) or automated has proven to be an important invention or technological advancement. ATM is an electro-mechanical machine that is used for making financial transactions from a bank account. These machines are used to withdraw money from personal bank accounts 24x7. Since ATMs are easily available with reservoirs of cash, this is 21st Century and we are still using the old ATM which is using that worn out mechanism and using unstable Windows XP. Microsoft officially stop supporting windows XP and security patches are not being provided this makes the ATM Vulnerable [1]. This leads to hacking and some major attacks on ATM networks due to which user's money is stolen, transferred etc. Banking System has lost billions of money due to this now it's time to make ATM Secured and Provide better features. Now we know all the problems and there is not much solution for these problems in the market. But we are trying to develop a new ATM System [3].

We are making ATM Portable and available to the Banks so it will be secured and banks will handle the rush hours easily and users will be able to withdraw money faster. We are using Linux OS instead of Windows XP because this Linux is more secured and we can develop software which is more user friendly than previous one [3]. Users will be able to easily use the new ATM with this all new UI and some advanced modes which is new in this ATM. Intelligent features will be available to ease the withdraw process and provide users with some new important features. The brand new portable design of this ATM helps in lots of ways. Maintenance can be easily done no extra time and money is needed to maintain the ATM machine [4].

Previous ATM's needed maintenance regularly the cost was slightly high. This new system does not need Maintenance that often in fact once in three months the maintenance is required and nearly at no cost. Talking about electricity i.e. power [2]. The power required for this new system is low electricity consumption will be low. This way the ATM Machine will be not taking so much energy than previous one. The system will perform effectively and be able to do all operations with some additional features which will provide users some important functions [1].

2. LITERATURE ANALYSIS

In banking industry, e-services are revolutionizing the way business is conducted. Electronic based business models are replacing conventional banking system and most banks are rethinking business process designs and customer relationship management strategies [5]. It is also known as e-banking, online banking which provides various alternative e-channels to using banking services i.e. ATM, credit card, debit card, internet banking, mobile banking, electronic fund transfer, electronic clearing services etc. however, as per e-banking scenario ATM and mobile banking are most acknowledged than other channels. Automated Teller Machine (ATM) refers to a machine that acts as a bank teller by receiving and issuing money to and from the ATM account holders/users [3]. ATM means neither avoids traveling with money nor any time money, but certainly implies both. ATM cards are fast replacing confounding withdrawal forms as a convenient way of getting your money from banks. In way, they are rewriting the rules of financial transaction. A smart person no longer needs to carry a wallet-full of paper money; rather, what he/she needs to do is to fish out an Automated Teller Machine [2].

Using an Automatic Teller Machine, customers can access their bank accounts. ATM were originally developed as just cash dispensers; they have evolved to include many other bank related functions such as Purchasing, Postage stamps, Lottery tickets, process you can change the language depending on the machine [1].

An automated teller machine (ATM) is an electronic telecommunications device that enables the customers of a financial institution to perform financial transactions without the need for a human cashier, clerk or bank teller. In ATM booth a customer is identified by inserting an ATM card containing a chip that contains a unique card number and security information. Customer has to enter a personal identification number (PIN) to authenticate him [2]. An ATM card lets the customer to access bank accounts for making various transactions such as cash withdrawal, checking the balance, and even depositing the money. Moreover, each ATM booth provides 24/7 facility that enables anyone to access it anytime anywhere [1]. His intention is not to define ATM booth but to focus its necessity in our daily life. Banks are nowadays establishing a good number of booths for their customer's well-fare. Even many people have one or more ATM cards which they use when money is needed [4]. With these ATM cards, customer can also deposit money in fast tracks of the bank. However, in the context of Bangladesh, these ATM booths and fast tracks of different banks have not been mapped in our country. So, customer will not be able to know the locations of ATM booths or fast tracks at any unknown place here in this country if customer needs to withdraw cash or deposit money. Sometimes someone may need money in any emergency situation and he has to know the location of ATM booth for money transaction [3]. But ignorance of these booths locations may result not having the access of ATM booths or fast tracks for money transaction during any urgent situation. Tourist and new comers of any area in our country may also face the same difficulty for not knowing the locations of ATM booths or fast tracks since they do not know the surroundings of that area. location based services provided by smartphones for accessing ATM booths or fast tracks wherever we are or wherever we go in this country [5].

The ATM machine heavily rely on the network. collapse of network will cause havoc in ATM machines.

3. MATHEMATICAL MODEL

ATMST A (S, s, F,) where,
S is a set of valid states that forms the domain of the ATM, S = (s0, s1, s8) where the states are,

- s0 = First State,
- s1 = System,
- s2 = Welcome,
- s3 = Check PIN,

- s4 = Input withdraw amount,
- s5 = Verify Balance,
- s6 = Verify bills availability
- s7= Disburse bills
- s8 = Eject Card;

where,
is a set of events that the ATM may accept and process, = (e0, e1, e10)

where,
e0 = Start,
e1 = Insert Card,
e2 = Correct Pin,
e3 = Incorrect Pin,
e4 = Request max,
e5 = Request ζ max,
e6 = Cancel Transaction,
e7 = Sufficient Funds,
e8 = Insufficient Funds,
e9 = Sufficient bills in ATM,
e10 = Insufficient bills in ATM; s is the start state of the ATM, s = s1(Welcome); F is a set of ending states, F = s1;
is the transition function of the ATM that determines the next state of the FSM, si+1,
on the basis of the current state si and a specific incoming event ei, i.e.,
si+1 = (si, ei), where,
=f: S S

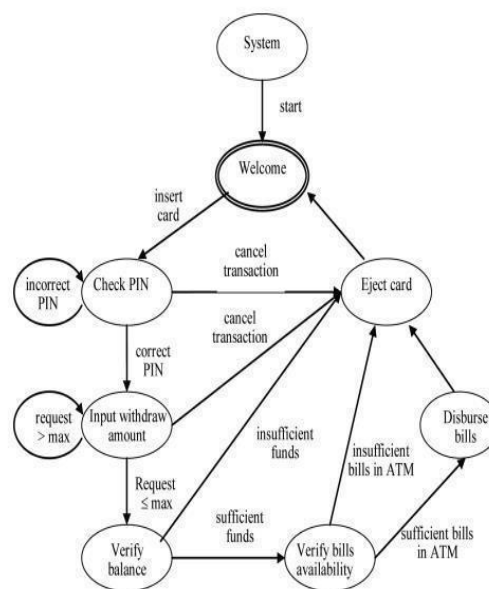


Fig. 1 Transition diagram of Automated Teller Machine

4. ALGORITHM

The algorithm developed for the system operates in real time. At first, any user is identified as a valid/invalid user based on some pre-assigned security codes given to a valid user. The system recognizes an authentic user through the account specifications and security PIN. below. They are to be numbered consecutively within the contribution.

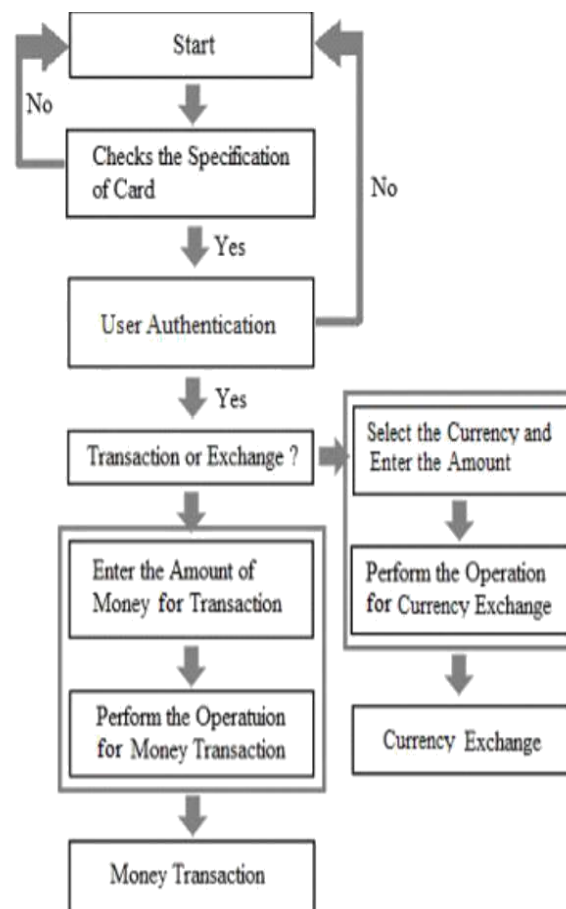


Fig. 2 Algorithm of the Automated Teller Machine

After identifying a valid user, his/her required operations are executed by some dedicated routines. Besides from performing the typical tasks, e.g., balance inquiry, instant cash withdrawal or money transaction, the developed H-ATM can also exchange between currencies. The database associated with H-ATM can adjust the currency exchange rate from the bank's central database in a daily basis. If trouble occurs at any step in overall

operation, the H-ATM stops executing tasks and calls for troubleshooting to fix it again.

Develop New Improved ATM Machine which have Portable Design. Old ATM takes so much Space our new ATM Machine is more than 50 percent smaller than previous one with state of the art Design. Following are the Components of Front Load: - Touch Screen Display- 7 Inch Display for Users to do all the Transactions in ATM. Capacitive touch screen display is used to reduce the response time

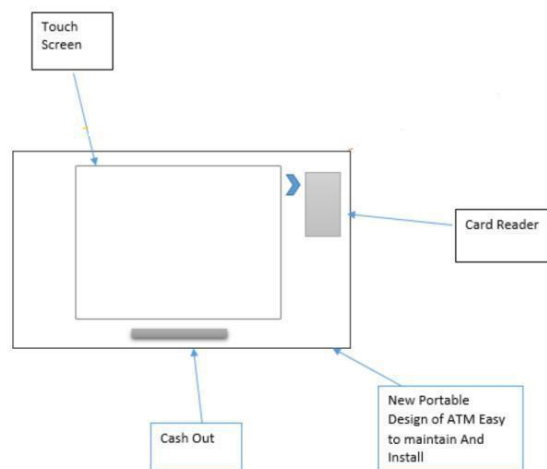


Fig. 3 Simplified Design of New Portable ATM

5. CONCLUSION

Intelligent Mini ATM System in Which Linux OS is used instead of Windows XP because of Security Issues. Touch Screen Display is used for all Operations instead of old screen and Keypad. New Portable design is made for easy accessibility. New Interactive user Interface for User so they can easily perform the operations and Speaker with smart assistant whenever a problem will arise to the user. Hence we are Developing New Next Generation ATM Machine which is portable in Design and Using Most Secured OS Linux to protect users and Banks from the ongoing attacks on ATM network systems. also Providing Additional Intelligent Features to help both Banks Users of ATM to enhance the Transactions making them quick and Secure. Ensuring that no threats will cause failure in transaction and keeping the cash stashes safe.

6. PROPOSED SYSTEM

An ATM system is a real-time front terminal of automatic teller services with The support of a central bank server and a centralized account database. This paper models an ATM that provides money withdraw and account balance management services. The architecture of the ATM system, as shown in below Figure, encompasses an ATM CPU, a system clock, a remote account database, and a set of peripheral devices such as the card reader, Touch Screen Display, Speaker, cash cartridges, and cash Dispenser. Combining all These Above Components we will.

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