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SURVEY ON CARD LESS TRANSACTION USING EMERGING TECHNOLOGIES

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Abstract : *As new innovation comes in the society individuals are eager to utilize the innovation which is useful to them. Individuals are more relies upon machine which commit less error and use to carry on with a luxury's life. In future the Wi-Fi will get replaced by Li-Fi to transmit the data. The innovation is changing the world. But in present an ATM is used for withdrawing the cash, it makes user to withdraw cash anytime any were. The security which is given to ATM cards for e.g. RSA like cryptographic algorithms provided for user authentication. As ATM card users are increasing the frauds are also increasing and to give security to credentials the technology is also changing such as cards are replaced by card less.*
Keywords - *ATM, Security, Card less, Credentials, Li-Fi, RSA, Electromagnetic Spectrum.*

1. INTRODUCTION

In current time the innovation is growing so quickly that the every nation is known with the development of technology. Technology is changing the way of imagination. In upcoming years individuals can transmit the data through light. In which Harald Hass successfully demonstrated that the information can transmit through light which is known as li-fi. As li-fi gives more speed than Wi-Fi. Wi-Fi is the present technology however in future there will li-fi which will utilize for transmission of the information. The innovation is changing in different fields, for example, transportation, smartphones, and banks and so on. ATM cards are presently used but after demonetization people started using ATM card more those who does not know how to use ATM card they also learn and started using ATM cards as user are increasing so frauds are also increasing and to give security to the cards technology is using different ways of technique such as cards are getting replaced via card less, for example, Samsung pay, google wallet in which we can pay from smartphones. The payment methods also requires cryptographic methods for authentication of user to prevent any third party personal from retrieving confidential information. Most widely used cryptographic method today is RSA as it provides encryption and decryption of message in relatively less time as compared to other cryptographic algorithms.

2. LITERATURE REVIEW

2.1 Wireless Communication using Li-Fi Technology [1]

This paper describes the Li-Fi technology. Li-Fi stands for Light-Fidelity. Li-Fi is transmission of information through an LED light bulb by sending information through a LED light that varies in intensity faster than the human eye can follow. D-light, introduced by Harald Hass can be utilized to deliver information rates higher than 10 megabytes per second. Information can be send by varying intensity of LED light bulb such that each intensity transmits some information.

Li-Fi can transfer information with data rates up to 10-50 Mbps, using which one can easily transfer Hugh amount of data in the blink of an eye. This data transfer can be done in a very secure manner as data is transmitted through light and light cannot travel through solid objects.

2.2 Development of transceiver using flashlight & camera in VLWC [2]

This paper describes how the bit codes are transmitted from one mobile to another using technology called as Li-Fi. Flashlight of one mobile is used for transmission of information and the information is retrieved using camera of second one. Flashlight blinks while sending information from one mobile to another. The flashlight of mobile turns on for 1 in bit code and turns off for 0 in bit code.

Flashlight of mobile can provide transfer rate up to 750 bps by blinking because the intensity of flashlight cannot be changed. The camera of mobile can provide frame rate up to 60fps. Thus transfer rate is very less as compared to pure Li-Fi because of lack of hardware available in mobiles.

2.3 High sensitivity universal lifi receiver for enhance data communication [3]

This paper describes how the information is transferred from one computer to another using Li-Fi technology. An Arduino board can get attached to any computer by using USB cable. An LED light is attached to Arduino board at the sender side and a photo-resister is connected to Arduino board at receiver side. Then a data is first converted into respective bit codes and transmitted using LED light which is attached to Arduino board. Intensity of light is varied for transmission of information at sender side and it is received using photo-resister of receiver. Photo-resister is used to check sudden changes in intensity of light.

Arduino can be used to transfer information by changing the intensity of LED. Arduino is an external module with different variants like Arduino UNO, Arduino NANO, etc. with each of them having their own unique use over the other. Arduino UNO is very cheap and provides most of the basic requirements for lots of projects.

2.4 Environment monitoring system based on wireless networking using open source hardware [4]

This paper illustrates the working principle and applications of an Arduino board. Arduino board can be used as a tool for study and research works. Arduino board can provide a quick tool in development of VLSI test bench especially of sensors. Main advantages are fast processing and easy interface. Arduino board is a micro-controller that can be programmed easily using C or C++ language in the Arduino IDE.

Arduino board is integrated by different types of sensors. It is more convenient to use.

2.5 Modified RSA cryptography system based on offline storage and prime number [5]

This paper illustrates the working and benefits of modified RSA algorithm. The modified RSA algorithm is used for providing security for the data by using encryption and decryption techniques. The first public key algorithm provides security for transfer and saving of data over the system. Modified RSA algorithm is faster than traditional RSA algorithm. The modified RSA algorithm works with 3 prime numbers to make a modulus n which is obscure to decomposable by third party personal. The database system is used to deliver the key parameters for modified RSA algorithm.

Modified RSA algorithm is more efficient than old RSA algorithm. The large prime no. relies upon three factors it is hard to break the large prime no. into three as compare in existing RSA algorithm. It take the index value corresponding to Encryption & Decryption from the database table and exchange at the time of encryption and decryption instead of unique key Encryption & Decryption in this way modified RSA algorithm is more efficient than RSA algorithm.

2.6 LI-FI the path to a new way of communication, IEEE [6]

This paper illustrates the wireless data transmission by the use of light for data transmission called as visible light communication. The data is transmitted by changing the intensity of light. Light waves have wider electromagnetic spectrum range as compared to radio waves.

As the electromagnetic spectrum becomes continuously overcrowded due to increasing usage of Wi-Fi. To overcome this Li-Fi provides vaster electromagnetic spectrum. It is faster, safer, greener, better and heathier future for wireless communication system.

Volume 1, Issue 1 (2018)
Article No. 6
PP 1-6

2.7 Automated Teller Machine [7]

This paper illustrates benefits and challenges of the ATM system. ATM cards are used for transaction of money from one bank account to another bank account. Most of the people now more often use Cashless money for their transactions. ATM cards are also used to withdraw money from the ATM machine. Some frauds can take place during transaction with ATM machine like card cloning, pin pad overlay, spy camera, etc.

ATM cards users are increasing. Security in ATM card is lacking due to frauds like card cloning, pin pad overlay, spy camera, etc.

2.8 Double authentication in ATM machine to prevent fake ATM machine fraud [8]

This paper illustrates the use of ATM card transaction over traditional cash transaction in an ATM (Automated Teller Machine). Most of the people now more often uses Cashless money for their transactions. Cashless money includes ATM card transactions, online transactions, etc. ATM cards can be used for withdrawal of money from a bank account or transaction of money from one bank account to another. ATM cards are provided to authorize users by the bank with each of them having their own pin code for verification of user identity at the time of money transaction. Some frauds can take place during transaction with ATM machine like card cloning, pin pad overlay, spy camera; etc.

ATM cards are very useful for transactions as compared to traditional cash oriented transactions. ATM cards are easy to carry and use. Because of this the use of ATM system has rapidly increased in past few years which also lead to increase in ATM frauds. An ATM fraud brings distrust among ATM users as their contract with bank gets violated.

2.9 Data Encryption and Decryption Using RSA Algorithm in a Network Environment [9]

This paper describes the design of ATM system that improves the authentication of user while using ATM system. RSA (Rivest-Shamir-Aldeman) algorithm is used for encryption and decryption in ATM system for user authentication. Information is encrypted at sender side using public key provided to the sender and it is decrypted at receiver end using private key provided to the receiver. It is high speed encryption-decryption algorithm with 56 or 128 bit key lengths. An incorrect private key still decrypts the information but in different form other than original information.

RSA algorithm is widely used as it provides better encryption in less time as compared to other algorithms. If private key is not known then encrypted form of RSA algorithm can only be cracked by using brute force or by systematic guessing, both of which are infeasible.

2.10 Visible Light Communication using a Digital Camera and an LED Flashlight [10]

This paper illustrates the optimal communication through visible light using LED flashlight as a sender and a digital camera as the receiver. The data can be transferred by blinking of LED flashlight. The LED flashlight turns on for transmission of bit ‘1’ and turns off for transmission of bit ‘0’. The camera on receiver side receives the signal by observing the presence of the light spot on an intervening surface and converts it back to the binary signal.

Due to light transmission the image can be clear using camera as receiver side and LED as sender side.

Volume 1, Issue 1 (2018)
Article No. 6
PP 1-6

3. ANALYSIS TABLE

Table 1: Analysis Table

Sr. No.	Title	Technique/Methods	Parameter	Values
1	Wireless communication using LI-FI technology	Wi-Fi LI-FI	Speed Speed Bandwidth Efficiency Availability Power Security	150Mbps 10Gbps 10000 times wider than radio waves Highly efficient Light is available Consumes less energy Light do not pass through wall, so highly secure
2	Development of transceiver using flashlight & camera in VLWC	Flashlight Camera	Speed Light detection range (Height) Light detection range (Width) Resolution	450 bits/sec Height = 200 & 300 pixels Width = 300 & 400 pixels 640*480
3	High sensitivity universal LI-FI receiver for enhance data communication	Discrete multitoned modulation technique VLC	Speed Range	513Mbps 5meter
4	Environment monitoring system based on wireless networking using open source hardware	Arduino UNO R3 Micro-controller	Connector type Clock speed	USB 16MHz with auto reset
5	Modified RSA cryptography system based on offline storage and prime number	Modified RSA algorithm using 3 prime numbers	Speed Cost Security No. of prime numbers required	Faster than old RSA Requires less cost More secure than old RSA 3
6	LI-FI the path to a new way of communication	Electromagnetic Spectrum LED	Optical frequency Data rates	300GHz - 30THz 1Gbps using single phosphor-coated white LED,3.4Gbps using red-green-blue LED
7	Automated Teller Machine			
8	Double authentication in ATM machine to prevent fake ATM machine fraud	ATM	Card Skimming Card Trapping PIN PAD Overlay	Magnetic card information are compromised by a disguised card reader known as skinny device. Trap or jam the card by placed wired in card slot. Place a false plastic pin pad on original pin pad.

9	Data Encryption and Decryption Using RSA Algorithm in a Network Environment	RSA	Key length No. of prime numbers required Security	56 or 128bit 2 Highly secure
10	Visible Light Communication using a Digital Camera and an LED Flashlight	Raspberry Pi	Ram USB Ports Ethernet Ports	512 Mb 2 1
11	Sunrom Technologies	LDR	Cell Resistance Dark Resistance Dark Capacitance Rise Time Fall Time Voltage AC/DC Peak Current Power Dissipation Operating Temperature	400hm 1M Ohm 3.5pF 28ms 48ms 320 V max 75mA max 100mW max -60 to+75 Degree Celsius
12	Farnell Technologies	Arduino UNO	Microcontroller Operating voltage Input Voltage Digital I/O Pins Analog Input Pins DC Current per I/O Pin DC Current for 3.3V Pin Flash Memory SRAM EEPROM	ATmega328 5V 7-12V 14 6 40mA 50mA 32KB of which 0.5KB used by bo loader 2KB 1KB

4. CONCLUSION

Innovation is changing the method for security which is given to ATM cards for e.g. RSA like cryptographic algorithms provided for user authentication. The new ways are found to offer security to ATM cards and which makes client easy to withdraw the cash without losing the ATM cards i.e. by becoming card less or wireless. The wireless technology is now changing day by day as new innovations are becoming available in market. Li-Fi is one of them which provides faster, safer, greener, better and heathier future for wireless communication system. Recently this system is demonstrated by using Arduino board by Sir Harald Hass as Arduino board is very cheap and provides all basic necessities for the demonstration of Li-Fi technology. In future smartphone can use this technology to transmit secure information safely and more quickly as compared to other wireless methods like Wi-Fi.

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