

Smart Communication using RF Technology

Bhavana R. Jamkar¹, Pooja S. Patil², Shivkanya A. Waman³, Yogita D. Kharwade⁴

¹⁻⁴Information Technology Department, MET's Institute of Engineering, Adgaon, Nashik, 422003, Maharashtra, India

Abstract - Nowadays Security of data transmission is very important issue in Army, stations. Wired and wireless these are two types of communications. RF Technology is used for to transmit the data with wireless communication. There are several techniques for transmit the secured data. In Army station area is required secure communication. At the time information transmission between two army station was being hacked by terrorists, and enemies. we will mainly focus on the maintaining security between two army-station while transmitting data. Cryptography is a one of the techniques which can be used for secured transmission of data. There are A number of theory algorithms available for encrypting and decrypting data and many algorithms are being discovered. Number of theory algorithm is highly secure algorithm used for secured data in Army stations.

Keywords - RF Trans-receiver, cryptography, Encryption, Decryption, microcontroller.

I. INTRODUCTION

Communication security is the regulation to protect unsanctioned interceptors from accessing secured telecommunication data while still delivering content to the intended recipients. From the introduction of data communication techniques to today, encryption techniques have evolved drastically. Digital technology has effectively replaced old analog methods of voice encryption complex algorithms, data encryption has become much more secure and efficient. But now a day this is done with the help of new technology. In this project, we will mainly focus on the maintaining security between two army-stations while communicating data. To overcome the issues regarding hacking of the transmission code or data between the transmitters and receiver of the army stations, we are going to introduce the new technology, i.e. Secure communication between two army station with cryptography. With the help of this technology using microcontrollers, there will be communication with a secret key that will know to transmitter and receiver only so that the hacker won't be able to get the exact data of communication. No internet connectivity is required for the transmission of data from one station to another as in many places like mountains or forests, there is always a problem of the Internet range or no use of any other devices.

II. AIMS AND OBJECTIVE

To secure the secrets, we need to have a cryptosystem which is provably secure and it should give a great deal of security.

A highly secured system can be devised using an application of cryptography with Number theory algorithm.

To provide confidentiality using secret key methods and can also provide data integrity, authentication and non-repudiation cryptography can be used.

This paper is explaining how to communication is done between two army places without using internet.

III. LITERATURE SURVEY

[1] This paper explains how to improve the security of the Military kinds of network. The position of missile navigates as per user's requirement. On the base station user sends the co-ordinates through Based server. Encryption is done with RC4algorithm implementation for security purpose. The number of encryption and key generators provided by the system that uses Human Computer Interaction and Visualization technology.

[2] Security of data in army stations is a big issue today. Nowadays, systems are hacked at the time of information transmission between two army stations. Cryptography is a most important system developed for this purpose. There are different types of algorithms available for encryption and decryption of data. In this paper, explains multiple techniques of the security of data and poly alphabetic substitution algorithm.

[3] Nowadays, data transmission between two systems was being hacked by hacker There is, multiple techniques available for information transmission securely. In Défense point of view data security is the most important. Cryptography technique is widely used for secured data transmission. For encryption and decryption numerous algorithm is available. One of the strongest algorithm such a poly alphabetic algorithm is used for secured transmission of information between two systems. This paper explains, implementation of wireless data transmission between army stations using arm7 processor.

[4] For identification, authentication, securing and storing tip the little embedded devices like microcontroller are widely used. Security and privacy of microcontroller are of the foremost important. These devices rely upon cryptographic algorithm to make sure confidentiality and integrity of information and supply strong security to data. This paper explains the implementation of AES (advanced encryption standards) running inside a PIC 16F877A microcontroller.

[5] Wireless monitoring systems are currently a typical part of both industrial and domestic solutions. Just in case of business use, it should be a sensory system at some extent where its unattainable to implement a tough and fast line, or its necessary to repeatedly change the position, respectively, the position of the measuring probes. This is, specially, the monitoring of environmental parameters (temperature, humidity) in bulk materials, biomass, or agricultural crops in storage facilities. Devices that utilize wireless technology for communication include IoT devices additionally. The ost topic of the article is that the design and implementation of a secure one-way line.

[6] Disruption-tolerant network (DTN) technologies are becoming a successful solutions that allows wireless devices carried by a soldiers to talk with each other's and access the steer or a command reliably by exploiting storage nodes. variety of the challenging issues within the scenario are the enforcement of an authorization policy and so the policies update for a secure data retrieval.

[7] Security of knowledge in army stations is incredibly important issue. In early systems, at the time of knowledge transmission between two army stations, it may be hacked by terrorists, spies and enemies. There are two forms of communication like wired and wireless. Basically, wireless communication is mostly preferred over wired. But sometimes we'd sort of a secured wireless communication just in case of industries, companies etc. Data security is incredibly important especially from defence point of view. In military area secure communication is required. The messages send or received shouldn't be hacked. During this we used half duplex encrypted system so messages during this method cannot be hacked.HC12 Trans receiver is use for security, it uses special AT commands for providing security. The messages is send from any module and there's the choice that the message is either broadcast or can send to specific module.

IV.Architecture

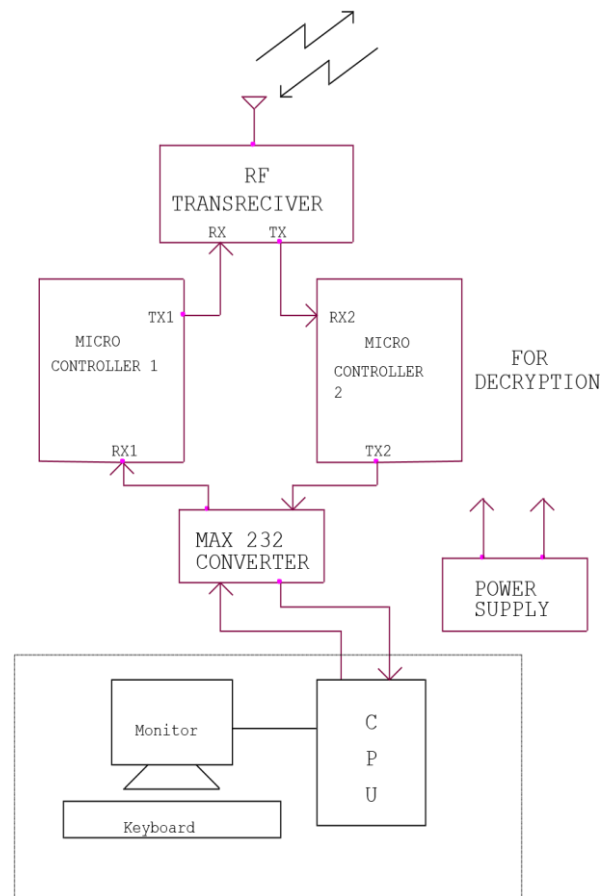


Fig.(a): -PC Side Communication

4.1 Block Diagram Description: - The above figure (a) shows the complete working block diagram of the system. The block diagram of system consists of Power Supply, Microcontroller, Computer, RF Trans-receiver, MAX 232 CONVERTER etc. There modules are used to describe the system properly. Microcontroller 1 and mcontroller2 are used for encryption and decryption respectively. RF TRANRECEIVER is used Transferring signals from transmitter to receiver station using RF signals. MAX 232 converter is used for converting the RS232 wave forms to TTL wave forms because computer is work on RS232 and microcontroller work TTL wave forms, it work as mediator between two different devices.

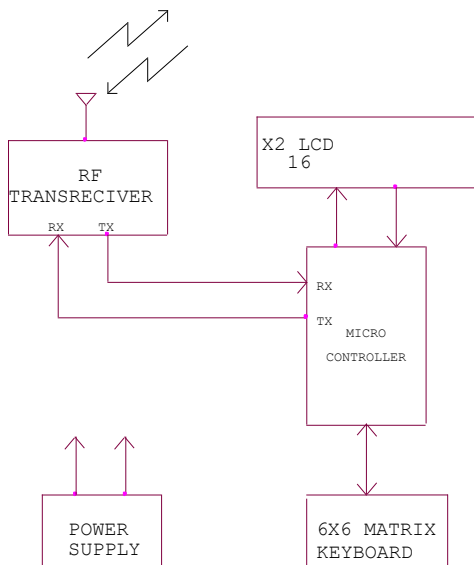


Fig.(b):-Diagram For Slave Station With OUT PC

4.2 Block Diagram Description: - In above fig(b) shows the working of receiver station. The block diagram consists RF Trans-receiver, LCD display, Microcontroller, Keyboard, Power Suplay. LCD display is used for displaying the messages which is typed by receiver or received messages from sender. Keyboard is used for typing the messages. RF Trans-receiver is used for transferring the messages using RF signals.



Fig(c).AT89s52 Microcontroller



Fig(d).RS 232 Converter

V. ALGORITHM

Encipher the following message using the key 19, 15, 22: there is a secret passage behind the picture frame

Answer:

To do this, start by Describing each letter of your plaintext by a number from 0 to 25 ('a' = 0, 'b' = 1, ..., 'y' = 24, 'z' = 25).

Do the identical for your key (unless, as in this case, it is already given by numbers). Then, write out the key over your plaintext like as you did for the letter-key. Finally, add the two numbers in each column. Is in the middle of 0 and 25, write down the similar letter.

If it is above than 25, directly subtract 26 from that and write down the letter that similar to the number you get.

"secret passage" becomes-: 19 07 04 17 04 08 18 00 18 04 02 17 04 19 15 00 18 18 00 06 04

We then write out the key similarly and put the message down.

KEY:	22 19 15 22 19 15 22 19 15 22 19 15 22
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MES:	18 04 02 17 04 19 15 00 18 18 00 06 04
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SUM:	40 23 17 39 23 34 37 19 33 40 19 21 26
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-26:	14 23 17 13 23 08 11 19 07 14 19 21 00
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LET:	O _X_R_N_X_I_L_T_H_O_T_V_A
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The whole answer is: OXRNXILTHOTVA

VI. PROPOSED SYSTEM

This paper explains, how to develop a wireless system for the security between two army stations using cryptography. This will help army officers to transfer the data securely using a secret key which will be known to

sender and receiver only.

The transmission data won't be able to hack without algorithm and secret key. Even if one among the two i.e. algorithm or secret key gets known to the adversary, no exact information will be leaked. Thus, maintains security provably.

For this, two controllers will be used at sender and receiver side for encryption and decryption respectively. Using number theory algorithm and secret key, data will be transferred safely from one army station to another.

Using RF trans-receiver, one can easily transfer data without internet.

VII. CONCLUSION

Cryptography is that the best method for data security Among the varied kinds of cryptographic techniques, Number of theory algorithm is that the best method. This paper will help to keep up the privacy and to stop any unauthorized person from extracting the data from the communicating. So, using this small concept, we will try to implement the algorithm for secured wireless communication over a long-distance using RF technology. This algorithm will help in obtaining the upper degree of security from terrorists, spies or the other harmful person. So, this method may be practically used to obtain important information from source to destination using RF signals.

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