Secure Data transmission using Li-Fi : By Rivest Cipher4 and Jumbled Word String Encryption Decryption Algorithm

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ABSTRACT

Light-Fidelity is the innovation which bolsters transmission of information through light. Different methods are utilized for encryption and decoding to help exceptionally anchor information transmission. In this paper, method for correspondence is utilized which underpins anchored information transmission utilizing Rivest Cipher 4 calculation alongside Jumbled Word String Encryption Decryption procedure at the sender's side. Muddled Word String Encryption Decryption is Jumbled Word String Encryption Decryption system. Information is sent through Light-Fidelity from sender to recipient in the wake of playing out its encryption. Muddled Word String Encryption Decryption calculation gives security while information is transmitted among Light-Fidelity gadgets. Information is contribution from the client. It is encoded utilizing Rivest Cipher 4 calculation. After this, Jumbled Word String Encryption Decryption calculation is connected which gives greater security to scrambled content. At that point, information is sent through the channel by means of Light-Fidelity implies. On the other framework at recipient side, plain information is repeated by applying methods for unscrambling i.e. switch of procedures connected for encryption at transmitter end. Information security is essential worry in this day and age which is tended to flawlessly utilizing system portrayed in paper.

Keywords : Light Fidelity, Wireless Fidelity, Security Key, Encryption and Decryption Technique, Virtual Light Communication.

I. INTRODUCTION

Light Fidelity empowers transmission of information at high speeds. The innovation is like the Wireless-Fidelity. Light Beams are utilized by Light-Fidelity for data transmission which is 100 times speedier than Wireless-Fidelity.The technology was invented by Harald Hass. He explained that transmission of binary value 1 ifLight Emitting Diodes(LED) is on and transmission of binary value 0 if Light Emitting Diodes is off takes place. The paper centers around secure transmission of information utilizing Rivest Cipher 4 calculation and Jumbled Word String Encryption Decryption calculation for encryption utilizing Light-Fidelity technology[1].

This paper uses Rivest Cipher 4 calculation for encryption of information to be transmitted. Muddled Word String Encryption Decryption calculation is additionally utilized for making information more secure. After encryption is done, information is transmitted between Light-Fidelity gadgets and unscrambling calculation is utilized with a particular decoding key at beneficiary.

II. RELATED WORK

In the present era, the smart phones are used and are available in everywhere. The today's scenario of using mobile phones, data is exchanged between two or more devices by having the connectivity through Wireless Fidelity (Wi-Fi), Bluetooth and hotspot. Data transfer through light by using RivestCipher 4 algorithm in encrypted and decrypted form.

Light-Fidelity requires observable pathway to be available for transmission or gathering of information, without of which correspondence might be deterred. Information transmission at high rates is a standout amongst the most urgent necessities of the present world. The innovation utilizes unmistakable light range for correspondence which does not have significant awful impact on human life. Light has greater thickness, 10000 times more extensive transfer speed than radiowaves[2]. Harald Haas has been displayed the novel methodology Light-Fidelity, to transmit the information through light enlightenment gadgets, for example, TVs, lights, street signs, business adboxes to advanced cells [3].

System Design Implementations

There are various methods which can be followed in the implementations of system designs as described below:

A. Encryption Method:
Information security is the essential issue while information transmission. So to give a security level while information transmission strategy, utilized encryption technique. In the encryption strategy diverse encryption calculation are utilizations to encode the information. In the encryption calculation ASCII character or string is changing over in the figure content. At that point on one can't recognize the first ASCII character or string information.

B. Light-Fidelity:
Light-Fidelity is bi-directional remote empowered system innovation used to transmit information. The information is transmitted as obvious light utilizing the LED light source. The guideline of Li-Fi is very simple, when LED is on then it transmit '1' and when LED is OFF it transmit the bit '0'.

C. Programming outline Implementation:
Encryption is done at programming end utilizing the devices said as under:

(a). Microsoft Visual studio:
To plan the proposed framework application programming utilized C# programming dialect. C# permits to clients to create GUI application utilizing their ground-breaking devices. Various types of hardware have the distinctive sort usefulness. We can make secure and easy to use application in C# effortlessly.

(b). Proteus:
Proteus ISIS proficient join convenience with intense highlights to assist us with designing, testing and format of electronic circuits and microcontrollers outline. It is proficient for supporting both schematic catch reproduction and PCB outline. What's more, we can roll out improvements effortlessly in the circuit configuration by utilizing the schematic overhauling, changing in segment an incentive for parts and effectively include or erase new segment as indicated by our necessity in the planning stage.

(c). Serial Port Communication:
RS232 is correspondence convention utilized for information trade between the PC and gadgets. For association of fringe gadgets to PC, standard element utilized is a RS232 serial port. This standard characterizes the signs relationship between Data Terminal Equipment (DTE) and Data Communication Equipment(DCE).Computer act like as a DTE gadget and modem as a DCE gadget.

D. Hardware Design Implementation:
Proposed system hardware comprises of Transmitter and Receiver setup.

(a)Transmitter Part : In transmitter part the information is said to be transmitted by transmitting client's information from Light-Fidelity Device and this information is changed over to computerized flag type of zero's and one's. Once the information transmitted it achieves recipient side by means of obvious light correspondence methodology.

(b)Receiver Part: The utilization of getting part is to include client information that is transmitted effectively from the transmitting side.

III. PROPOSED METHODOLOGY

A. Proposed Algorithm Implementations:
The proposed system when data transmitted using the Li-Fi transfer device as well as encrypt the data using Wheel string manipulation algorithm. When we encrypt data using the encryption algorithms then possibility to identify actual data is less. In Wheel algorithm first we encrypt data using the RC4 algorithm and in second procedure we again encrypt data using the wheel operation that means original data is encrypted twice. RC4 algorithm is a symmetric encryption algorithm.

B. *Flow chart:*

a. Encryption Procedure:
The process of converting plain text into cipher text. It includes encoding of message signal to protect user information on internet can be protected by it, that is being sent between a browser and a server. It can be passwords, payment information or any other private information. Two types of encryption are as follows:

1. Symmetric key.
2. Asymmetric key.

Its advantage is that protection of confidentiality of data or information can be done either stored on computer systems or transmitted via any network.
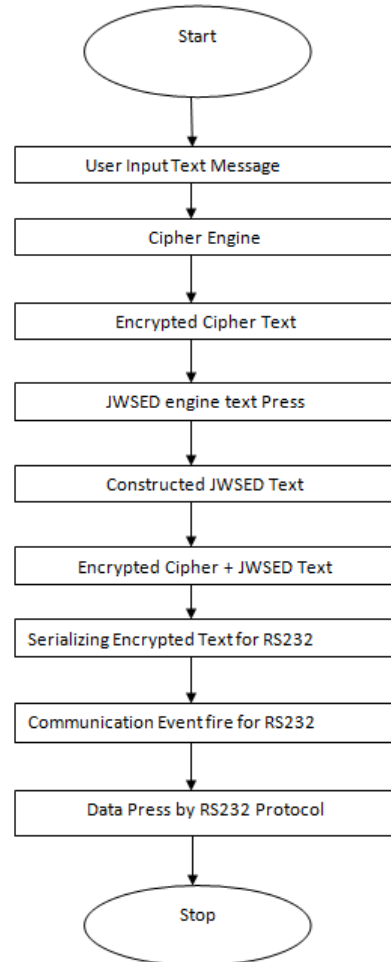
(i). Encryption Procedure:

Figure 1 : Proposed System Algorithm Encryption Procedure

Encryption is a process of converting plain text into ciphered text. Fig 1 represents the step by step flow chart representation for encryption process done at transmitter end.
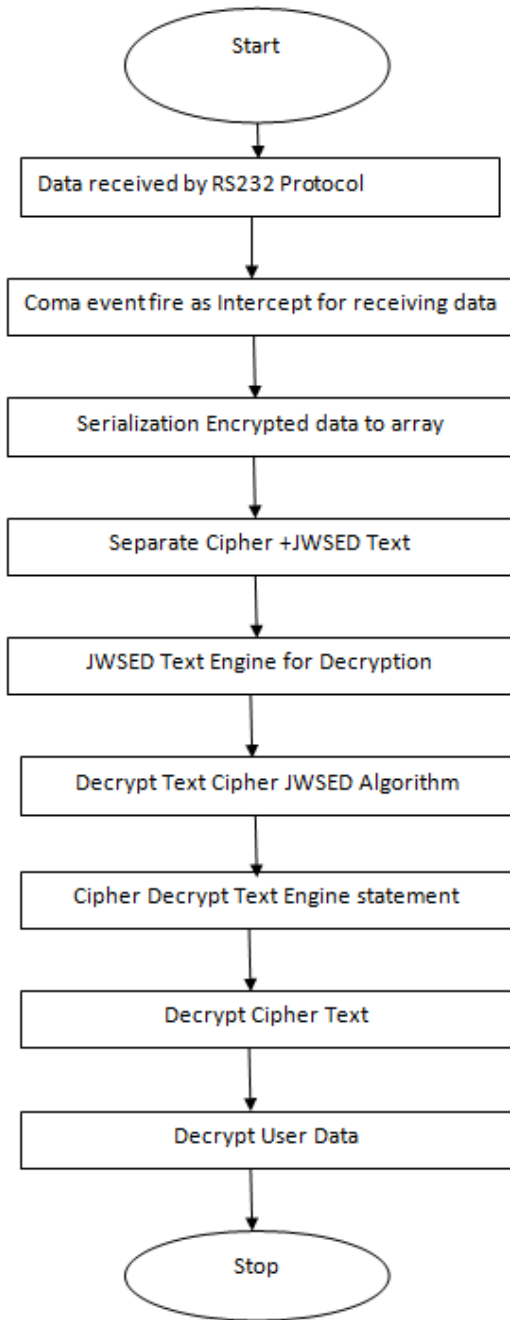
B. Decryption Procedure:

Figure 2 : Proposed System Algorithm Decryption Procedure

The process of converting cipher text into plain text and process of decoding text. It is the opposite of encryption.Figure(2) represents the step by step flow chart representation for decryption process done at receiver end.

Diagrammatic Representations

The algorithm is explained with the help of following example.

Step 1: User types the text message to be sent. Let user types the text "APPLICATION".

Step 2: Encryption is done for text message to be sent and JWESD algorithm is applied in a figure (3).
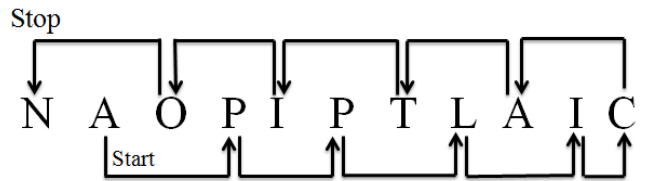

Figure 3 : Apply JWSED Encryption Procedure Algorithm

After applying algorithm, the word gets de-arranged in form of "NAOPIPTLAIC".

Step 3: The text after application of algorithm is sent on transmission medium.

Step 4: The text received at receiver is rearranged back to get original word (APPLICATION) after application of decoding technique.

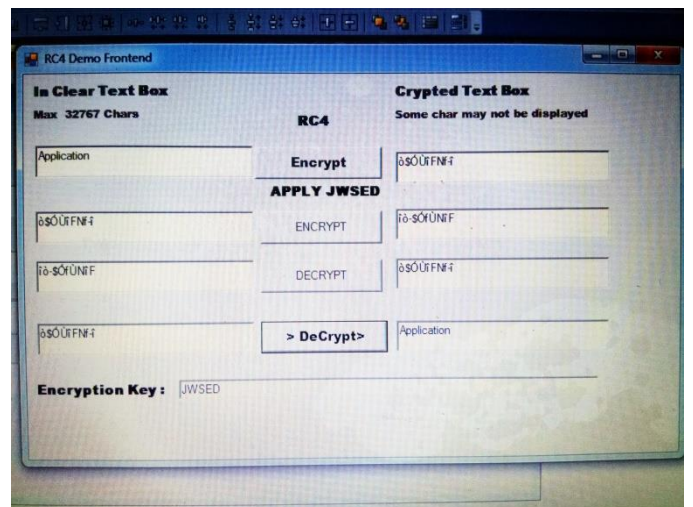Complete procedure of Encryption and Decryption Shown in figure (5).

Figure 5 : Encryption and Decryption Procedure

IV. RESULT

The consequence of Jumbled Word String Encryption Decryption and wheel scrambled calculation which is immersed in wheel string control calculation. The client points of interest send through RivestCipher4 calculation. The outcome is continue through wheel calculation by which information is safely transmitted through light. We need to send information through contribution to Rivest Cipher4 calculation, one key is encoded and other is decoded. After apply the Jumbled Word String Encryption Decryption calculation, Plain content is changed over into figure message in encoded frame at that point figure content can demonstrates the yield in unique shape in unscrambled process. Through RivestCipher 4 calculation, at that point Jumbled Word String Encryption Decryption by claim their encoded. RivestCipher 4 encoded information with their key then after Jumbled Word String Encryption Decryption calculation of course which is created Jumbled Word String Encryption Decryption byRivestCipher 4 calculation. On another framework, Plain information is equipped for conveying an information from first PC by LED then after this information is unscrambled by an application. Consequently, the plain information from first framework is decoded to another framework. Thus effective information is transmitted starting with one PC then onto the next framework fruitful.

Security increases, data bits are same with respect to other Rives-Shamir-Adleman (RSA), Advanced Encryption Standard (AES), Data Encryption Standard (DES) Algorithms.

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V. CONCLUSION AND FUTURE SCOPE

In the present situation, now a days, light is accessible all over the place and there is incredible breadth of its utilization with the development. This innovation can be make more helpful and develop so that to transmit the remote information just a light can be adequate. Remote Fidelity is a marvelous general remote extension district inside structures and Light-Fidelity is ideal for high thickness remote data scope in confined zone and for radio hindrances issues, so the two progressions can be other taking care of data autonomously and sending their disclosures at times back to surface. Notoriety of Light-Fidelity innovation expanding step by step, which make our correspondences more secure, quicker. What's more, our future condition cleaner and greener

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