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Wireless Communication

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Abstract:- This paper describe microcontroller based system which interface with PC to decode and encode the given user message. We have used Arduino UNO microcontroller. After the origin of wireless communication technology it has gain enormous popularity, and it offers a reliable medium for communication. Telegraphy using Morse code is one of the earliest methods used in field of electric communication. Generally, wireless communication means transferring the information from one place to another place which are not connected by any means of electrical network. Morse code speed is generally measure in Words per Minutes (WPM) or Characters Per Minutes (CPM), skilled person can often understand 40 wpm depending upon the length of words. Morse code is universally used for SOS, amateur radios, aviation navy and coast guard. This article provides a system which is useful for wireless communication which is much simpler mode of communication and reduces writing complexity.

Keywords:- *Morse code, LDR, Binary Search Tree, Arduino UNO.*

I. INTRODUCTION

Morse Code algorithm convert the text message into series of offs-on(Dashes and Dots) which can easily understood by person. It coverts message into dots and dashes, each Morse code represent either a text or prosing represented by unique sequence. Duration of dash is three times of duration of dot. It allows communication between authenticated users, if authentication fails the procedure is not completed. When the user enters the message it is converted into dots and dashes using Morse code generator depending upon the encoded message LED changes the intensity of light the intensity of light is capture by light sensors usually LDR, message is passed to Morse code generator which decodes it. After the successful transaction of message beep sound indicate delivery of message. Light has higher intensity, efficiency, as well as better visibility and performance quality than IR and Radio Spectrum, it also provide less noise ratio.

II. OBJECTIVE

The goal of these articles was as follows:

- To Find efficient way to learn Morse code.
- Identify and eliminate non value components of existing system.
- Provide a system which is cheap, efficient and fast.
- To overcome limitation of existing systems and low range of radio spectrum.

III. METHODOLOGY

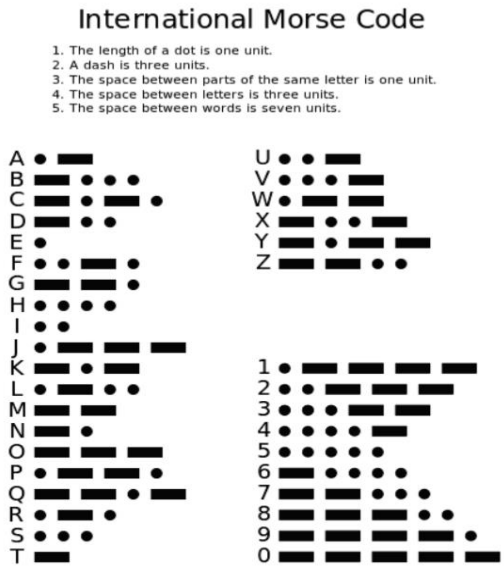

Fig 1:- International Morse Code

To increase efficiency of Morse code the most frequent letters are given smaller code such as letter E it is most frequent latter in English language hence it is given code a single dot i.e. (.). Most of the times binary search tree is used for better and faster understanding of Morse code.

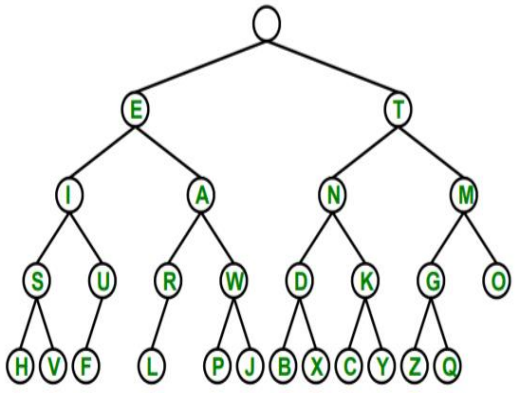

Fig 2:- Binary Search Tree(BST) representing Morse code

In BST left branch signifies dot in tree, and similarly right branch signifies a dash. Besides the root node, there are 26 nodes containing the capital letters of the English alphabet. Various algorithms are applied on the BST such as depth-first search algorithm, breathe first search algorithms in order to find the corresponding node.

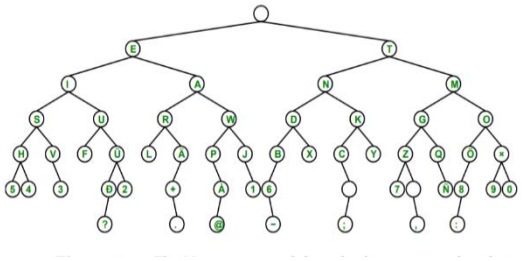

Fig 3:- Extended BST representing Morse code

The tree can further be extended to include digits, punctuation and non-English characters. This tree includes two extended levels and adds 10 digits, 8 punctuation characters, and 7 non-English characters to the 26 character original Morse code.

IV. EXISTING SYSTEM

The major issue in wireless communication is the limited of radio frequency spectrum which cause the field of optical wireless communication has been rapidly developed during the recent years. We studied the research paper "A Wireless communication using Bulb" proposed by Ashwini.B.Halakerimath and Sneha Vasudev. Dhage of Department of Computer Science and Engineering AGMRCET-Varur, Hubli, Karnataka, India, published in International Journal of Latest Trends in Engineering and Technology (IJLTET) Special Issue - IDEAS-2013. This system used a webcam to capture the intensity of light. The disadvantage is that webcam is expensive as well as easily hacked. Hence, using webcam to capture incoming light can lead to multiple dysfunctional ties.

V. PROPOSED SYSTEM

In our system instead of using of a webcam we have implemented a LDR sensor to capture intensity of incoming light because LDR sensors are economical and are more secure than the webcam.

VI. SYSTEM ARCHITECTURE

In our system we have used Arduino UNO which is open source microcontroller on to which breadboard I connected containing LDR sensor as well as LED .Our System is useful for text-to-light as well as light-to-text conversion.

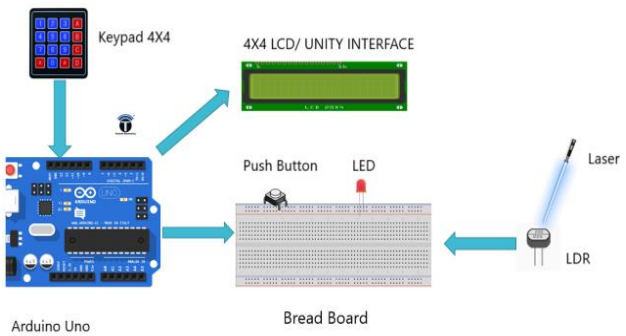

Fig 4:- System Architecture

VII. MODULE DESCRIPTION

Our system utilizes Arduino UNO microcontroller on to which breadbox board is connected .On breadbox Board we have installed LED light to display intensity, also we have include LDR sensor to encode the message. also it includes LCD screen through which the decoded message can be displayed.

VIII. APPLICATIONS

Our system can be used in various field such as navy, military and aviation field for navigation of flight and also for Air Traffic Control (ATC). Demand for spectrum is increases by 108% each year. Since it is not restricted to radio spectrum but visible light spectrum we have about more than 1000 times of the spectrum. Furthermore our system can be also be useful for emergency message encoding and decoding such as for SOS etc.

IX. CONCLUSION

In this paper we have provide summary on wireless communication which can be used for high range and more secure purpose. The input which is given gets converted into sequence of dots and dashes. Upon reaching the other side it again gets decoded. Therefore the communications is achieved without use of wire and also include lucid technology which is highly secured and economical.

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