Adaptive Communication between Dumb and Blind People

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Abstract—Generally dumb people use sign language for communication but they find difficulty in communicating with others who do not understand sign language. Mute people can use the gloves to perform hand gesture and it will be converted into braille lipi so that blind people can understand their expression. Using this project, dumb people can directly communicate with blind and normal people without hesitation. In transmission side, flex sensors are mounted on gloves, so signal is transmitted through RF ZigBee which is received by another circuit which will display code on LCD and design braille lipi using vibration motors. So that adaptive communication among blind, dumb and normal people can be done.

Keywords— Flex sensor, Vibration motor, RF ZigBee, Gesture, Braille lipi

I. INTRODUCTION

Aim of this project is to make communication easier for physically challenged people like dumb, blind and normal people.

In this gesture movement is converted into braille lipi for blind people and message will be displayed on LCD for normal people.

After analysing various aspects of different technologies and devices which are used for communication this idea is chosen due to its advantages like less power consumption, less losses, high efficiency, low noise, reliability, compactness, economical etc.

1. Conceptual definition of the system

At transmitter side ATmega328 microcontroller is used and at receiver side AT89C52 microcontroller is used. According to gesture movement of dumb people signal will be generated at transmitter side with the help of flex sensor. This signal will be converted from analog to digital by using Atmega328. This digital input signal from transmitter side will be transmitted to receiver side via RF ZigBee. Two RF ZigBee modules are used. One at transmitter side and another at receiver side. At receiver side signal will be received and will be transferred to AT89C52 microcontroller. According to it braille lipi will be generated using vibration motors and also message will be displayed on LCD for normal people.

1.1 Proposed block arrangement of the system

1.2 Working of the block diagram

1.2.1 Transmitter Side

At transmitter side, 4 flex sensors are attached with ATmega328 microcontroller. According to gesture movement resistance of flex sensor will be changed. This signal will generate input signal. This analog signal is passed to ATmega328 and it will be converted into digital form. This digital signal is transmitted through RF ZigBee to the receiver side RF ZigBee.

1.2.2 Receiver Side

At receiver side, input signal will be received at RF ZigBee. This input signal will be passed to AT89C52 microcontroller. This will generate braille lipi by using vibration motor for...
blind people. The message will also be displayed on LCD for normal people.

1.3 Explanation of block diagram

1) Flex Sensor: Flex sensor is one type of variable resistors. It works on the principle of variable resistance. According to it when sensors are bended value of resistance will be changed. When sensor is in straight position its value is maximum and when it is bended its value will be decreased. This will be used to generate the signal using gesture movements.

2) Vibration Motor: Coin type vibration motors are used to generate braille lipi. When supply is given motor will be vibrated. In coin type vibration motors power consumption is less with compared to other types of motors.

3) LCD (16*2): LCD has the ability to display numbers, characters and graphics. The display is interfaced to I/O port of microcontroller. The display is in multiplexed mode i.e. only one display remains on at a time. Within 1/10th of a second the next display switches on. In this way sequentially on and off display will result in continuous display of count due to persistence of Vision.

4) RF ZigBee module: The technology defined by the ZigBee specification is intended to be simpler and less expensive than other wireless personal area networks (WPANs), such as Bluetooth or more general wireless networking such as Wi-Fi. Applications include wireless light switches, home energy monitors, traffic management systems, and other consumer and industrial equipment that requires short-range low-rate wireless data transfer.

2. Figures and Tables

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Table 1: Cost Estimation
2.1 Advantages, Applications, Unique Features

2.1.1 Advantages

By using microcontroller circuit becomes compact, Less power consumption, Communication becomes easier, Cost is less, Wireless communication used is more economical than other types.

2.1.2 Applications

Used in communication, Used in schools for differently able people, Used in organizations of differently able people.

2.1.3 Unique Features

Less power consumption, Using microcontroller circuit becomes compact, Wireless communication used is most economical.

II. CONCLUSIONS

From this project we have concluded that by using microcontroller bulkiness of circuit is reduced and communication among blind, dumb and normal people becomes easier.

This project is very useful in communication among blind people, dumb people and normal people as it is very reliable, easy to handle and compact in size.

This system is advantageous as gesture is converted into two types:

1. Braille lipi
2. Text

REFERENCES

[6]. Electric Light & Power vol 17 issue12.