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RESEARCH ARTICLE

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HAND GESTURE BASED HOME APPLIANCES

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ABSTRACT

This system presents a model for Hand Gesture controlled user interface. This proposed system concern with real time to control and work various home appliances. The paper proposed a low-cost and small 3-axis wireless accelerometers based system to control the Home appliances using ARM7. The system is consists of two components: Gesture identifying and control module with Micro-electromechanical systems sensor and home appliances control. In the gesture identification module the main part of the system is ARM7. The MEMS sensor which is connected to hand is a xyz-axis accelerometer which having digital RF output that senses the gesture of the hand, i.e. according to the tilt of hand it gives voltages to ARM7. The home appliances control unit is controlled using LPC2138 controller. The proposed movements which achieved output: are on, off, up and down .here we get, the results of some tests performed with the controlled system are presented. Conclusion output show that the system can identified input gestures is fast to control home appliances. The users are able to perform most of the interactive processes in virtual environment by this accelerometer-based device.

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I. INTRODUCTION

- Gesture is a motion of arms or any other body part which are made to emphasize speech. gesture is also defined as an action or a remark made as a sign of attitude. a gesture can be divided into two different categories: dynamic gesture and static gesture. gesture recognition is movement of human motion by computing device. hand gesture can be detected by controller that contains accelerometers to sense rotating and acceleration of movement.
- The basic purpose of this system is to provide control for electronic devices with the help of hand movement. Thus, this system will act like a remote control for operating all the commonly electronic devices present in a daily use, but this will be achieved through hand gestures interface in order to support natural hand control.

- We are using gesture of hand as a remote to operate home appliances like lamp, fan etc. instead of using manually .Now a days, in every home all electronic equipment's like TV, CD player, air conditioner, DVD player and music system that can be operated with the help of RF module. We can also operate our hand like Remote for controlling home appliances. All these devices can be controlled by one trans receiver system.
- Now a days, it is impossible for living in a home and go for a day without interacting with the home appliances. Among the rising age of technology in the field of gesture recognition for hand gesture or human computer interaction many Techniques are done. Here the Hand mote is referred to as use of hand gesture recognition to control and work the home and office appliances that are operated through an RF module

II. PROPOSED BLOCK DIAGRAM:

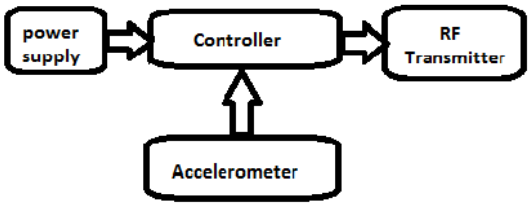


Fig:-Block Diagram of Transmitter

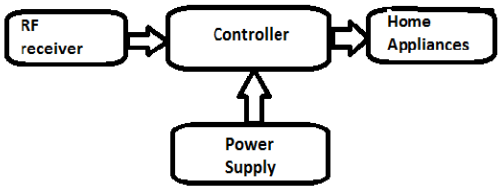
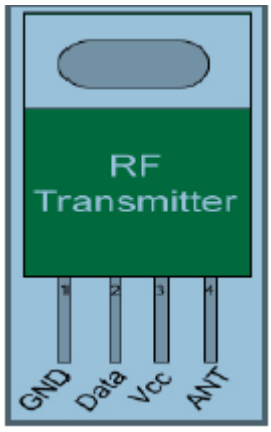


Fig:-Block Diagram of Receiver

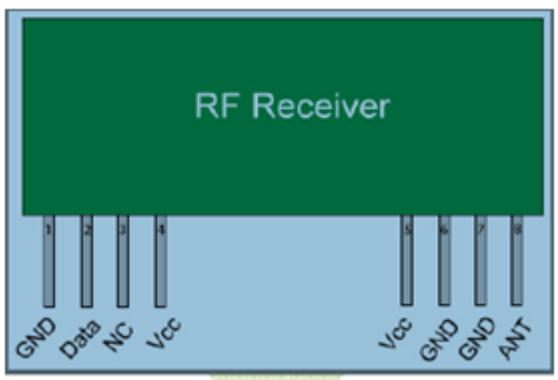
III. METHODOLOGY

A MEMS accelerometer based home appliances system is designed for visually challenged and partially paralyzed persons. The system comprises accelerometer, microcontroller, RF transmitter and receiver and the communication is through RF signals. The accelerometer senses the hand gestures and signals are transmitted to receiver section through RF transmitter. RF receiver accepts the transmitted data compares with the already stored gestures, only when the similar hand gestures are identified, then the home appliances are controlled. As shown in above block diagram, the detailed description of all blocks are given below.

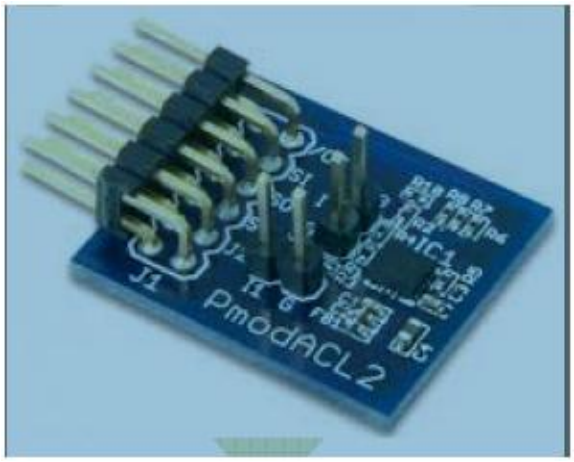
- RF Transmitter- The hand gestures are sensed using MEMS accelerometers placed on the hand of person. The sensed signals are given to the ARM7(LPC 2138) microcontroller that is powered by 5V. The signals from ARM7(LPC 2138) microcontroller is given to the RF transmitter. The RF transmitter operates at a frequency of 434 MHz, transmits the signal to the RF receiver.



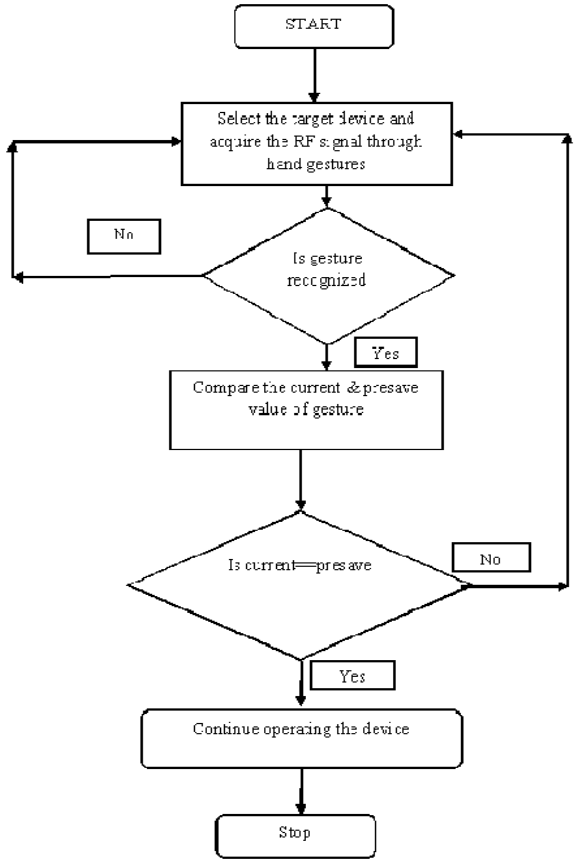
- RF Receiver- The transmitted signal is given to an RF receiver operating at the same frequency as that of the transmitter. The received signals are given to the LPC 2138 controller that compares the received and stored hand gestures, and then the signals are given to the home appliances to control them.



- MEMS Accelerometer: MEMS accelerometers shown in fig. are micro-electromechanical systems basically used to measure the static and dynamic force of acceleration. In the proposed work accelerometer sensors are used for interaction with home appliance using recognized hand gestures.



IV. FLOWCHART:



V. APPLICATIONS:

- It can be used in any IR device.
- To overcome situations where normal cabling is difficult and financially impractical.
- It can be used in home theatre system where short distance communication is required.
- Suitable for physically impaired people to operate the devices within the room.

VI. CONCLUSION

The main aim of this project is to develop such a system which will help physically impaired to control home appliances by hand gestures using MEMS accelerometer. This provides comfort and convenience for common users. RF technology is used for home appliances for physically impaired.

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