

Navigation of PowerPoint Presentation Using Hand Gestures

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ABSTRACT

Everyday communication with the hearing population poses a major challenge to those with hearing loss. For this purpose, an American Sign Language recognition system is developed using artificial neural network (ANN) and to translate the ASL alphabets into text. Hand gesture is a project in which slides can be controlled by simple hand gestures. The user needs to wear a gesture device which includes a sensor. The sensor will record the movements of hand in a specific direction which will control the slides in the manner we want.

KEYWORDS: Accelerometer, Gestures, Flex Sensor, LCD, PIC168F77, ZigBee.

1. INTRODUCTION

As we tend to all grasp that communication plays a really outstanding role in our human lives. Gestures play a major role in the daily activities of human life, in particular during communication providing easier understanding. In other words, Gesture recognition refers to recognizing meaningful expressions of motion by a human, involving the hands, arms, face, head, and body. Between all the gestures performed hand gestures plays an important role which helps us to express more in less time. Now a day, Human-Machine interface has gained a lot of research attentions employing hand gestures. During 2004, J. Mantyjarvi [1] introduced other applications which could be controlled by a gesture such as media players, remote controllers, robots, and virtual objects or environments. The S.C.W. Ong and S. Ranganath, in 2005 [2] introduces visual hand gestures which offers an interesting modality for Human-Computer- Interaction (HCI) applications. In this paper, a novel combination of techniques is presented for tracking and recognition of hand gestures in real, cluttered environments. The Abidhusain Syed, ZamrudTaj H. Agasbal, ThimmannagoudayMelligeri and BheemeshGudur [3] suggested the use of sensors in robotics. They are used to determine the current state of the system. They have put forth the idea of Flex Sensor Based Robotic Arm Controller Using Microcontroller. Robotic applications demand sensors with high degrees of repeatability, precision, and reliability. Bhavina Patel, Vandana Shah, RavindraKshirsagar [4]-In this paper suggested that "Speech" and "gesture" are the expressions, which are mostly used in communication between human beings. Learning of their use begins with the first years of life. In human communication, the use of speech and gestures is completely coordinated. In this project the idea of Gesture Recognition System for the handicapped people based on microcontroller is put forth. From the References [5][6] they work to the related project such as of gesture recognition that plays a key role. In this one of the method is glove based systems, the data gloves are used which can archive the accurate positions of

hand gestures as its positions are directly measured. The Data-Glove based methods use sensor devices for digitizing hand and finger motions into multi-parametric data.

II. PROPOSED BLOCK DIAGRAM

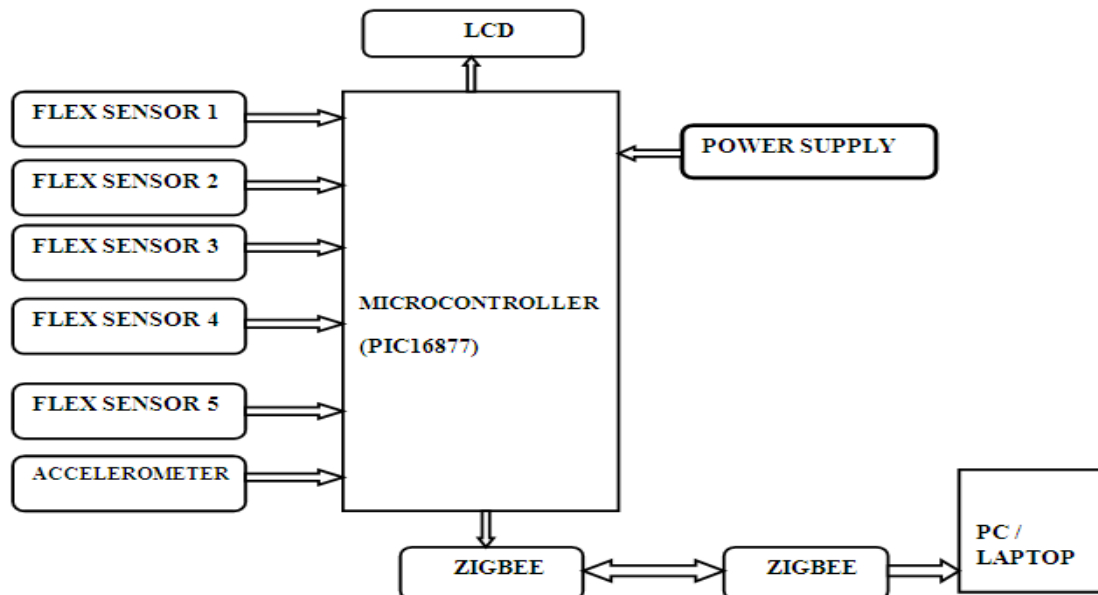


Fig.1. System Block Diagram

III. WORKING

The block diagram has two important parts: Gesture as transmitter and PC/LAPTOP as receiver. The gesture transmitter uses a wearable glove circuit. On the wearable glove circuit, we place the five flex sensors, one 3-axis accelerometer is used, PIC16F877 as a controller and a ZigBee will work as trans-receiver. The flex sensor produces the change in resistance value depending on the amount of degree bend of each finger and the corresponding hand movement, orientation is reported by the tri-axial accelerometer. Accelerometer sensor is used to detect the movement of the hand by tracking its position on the X, Y and Z axis. Switching to the next and previous slide is controlled by the gesture traced by the accelerometer. Different threshold levels of sensors are set for different actions.

The output of all the sensors is analog. It is given to the ADC of the PIC168F77 to produce equivalent digital signals. PIC168F77 receives signals from these sensors, processes it and send it to the ZigBee transmitter. ZigBee transmitter transmits this signal to the receiver part. ZigBee receiver accepts the signals and gives it to another controller that is PIC18F4550. This controller gives the data to the pc/laptop in which one application is running. The application used to control the operations of the ongoing presentation. LCD display operation which is done by gestures. The application controls the power point presentation, right click, left click and it will also display some alphabets based on the data received.

IV.RELATED WORK

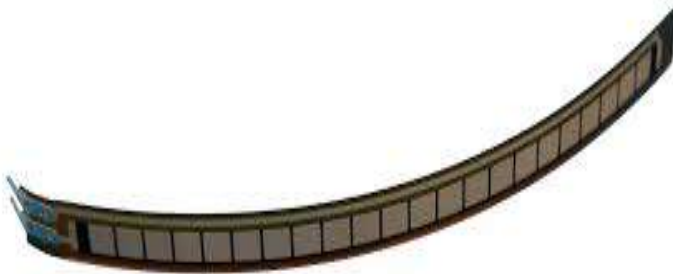


Fig.2.Flex Sensor



Fig.3.Handglove Equipped With Flex Detector

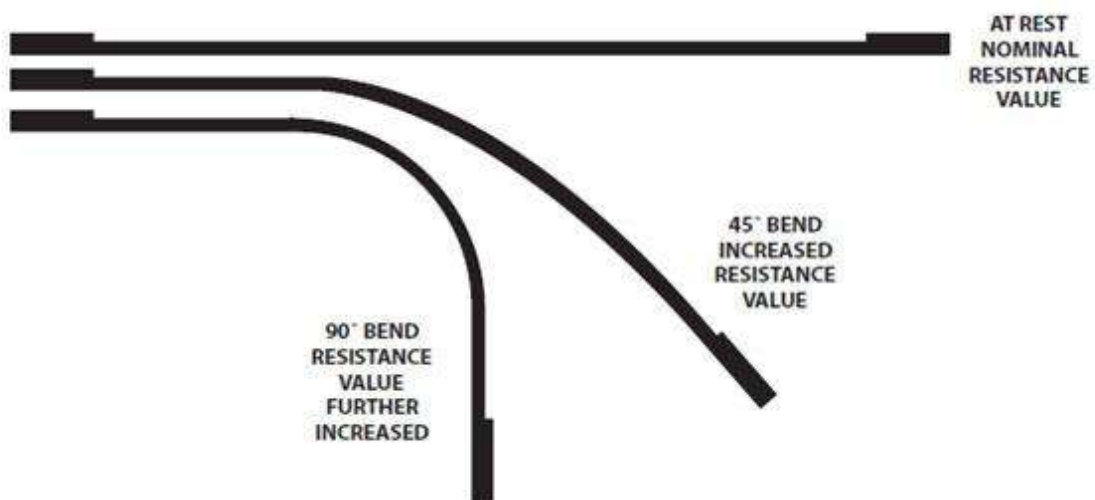


Fig.4. Working of flex sensor

Flex sensor are analog resistors, Sensors that changes the resistance depending upon on the amount of bend on the sensor. FlateResistance of Flex Sensor is 10KOhm, Flex Sensor bend upto60K to 110K Ohm. In fig.3. A glove circuit is designed with flex sensors. Fig.4. Flex Sensor at the rest their resistance value is normal around 10K Ohm. When flex sensor bend its resistance also increased gradually. Initially flex sensor range are fixed in programming for this project.

V.APPLICATIONS

It can be used for computer gaming. It is loaded with touch sensors on the thumb, the fingers and the palm. Another application can be in the field of fire extinguishing by fire extinguishers in a situation where members of a team can't even see each other, these gloves will be able to transmit signals via simple hand gestures. Using

gesture recognition, we can control the robot easily. Hand postures and gestures are used for controlling the Television device. In health and medical field also gesture technology is used.

VI. CONCLUSION

In this project the hand gesture will not work only as mouse but also as keyboard. Help in controlling power point presentation from a long distance. The controlling of power point presentations by hand gesture using flex sensor and employing PIC16F877. PIC16F877 programming can be done with an ease to suit the requirements. ASL (American Sign Language) used to type some alphabets. The hand talk system also teaches people to learn the ASL and it uses a glove to recognize hand positions and outputs the ASL on to a display. Use of gestures would make the presenter to handle the presentation more easily.

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