SPEAKING SYSTEM FOR DUMB PEOPLE AND REMOTE DEVICE CONTROLLING USING HAND GESTURES

S. Thiyagarajan

Department of Electronics and Communication Engineering
Sri Ramakrishna Institute of Technology, Coimbatore, Tamil nadu, India

V S.Nandhakumar

Department of Electronics and Communication Engineering
Sri Ramakrishna Institute of Technology, Coimbatore, Tamil nadu, India

K. Sudhan

Department of Electronics and Communication Engineering
Sri Ramakrishna Institute of Technology, Coimbatore, Tamil nadu, India

B. Vimal

Department of Electronics and Communication Engineering
Sri Ramakrishna Institute of Technology, Coimbatore, Tamil nadu, India

Abstract- **It has always been difficult to communicate between dumb people and normal people. Various methods for the benefit of dumb individuals have been developed by manufacturers all over the world, however they are not flexible or cost-effective. A smart speaking system based on hand motions and gestures has been developed to assist dumb people using Flex sensors, an accelerometer sensor, and a Raspberry Pi are used to implement it. When hand motions are made, the analog data from the flex sensors and accelerometer sensor is transferred to an ADC converter, which converts it to digital data and sends it to the Raspberry Pi, which analyses it and provides the desired output. The voice will be played for different accelerometer movements and home applications will be turned on and off using flex sensor movements allowing dumb people to communicate in an effective manner.**

Keywords – Speaking, Analog, Sensor, Accelerometer, Flex sensor, ADC converter.

I. INTRODUCTION

When dealing with persons who have unique needs, people become more understanding and patient. Work for the disabled should be made available since it would offer them with financial independence and a sense of fulfilment in life. Communication is the only means by which we may express our thoughts or deliver a message, however a person with a dumb nature finds it difficult to communicate with others. As a result, a person who has difficulty hearing and speaking is unable to compete in a race with a normal person. Visual communication is used instead of aural communication by people who can't hear. In general, deaf individuals communicate using sign language, but they have trouble communicating with others who do not comprehend sign language. As a result, there is a communication barrier between these two communities. A sign language is a language that uses hand gestures and other body movements, such as facial expressions and body postures, and is predominantly used by deaf people. There are a variety of sign languages available, including Indian and american sign languages. Normal individuals do not understand sign language. As a result, these individuals find it difficult to communicate with ordinary people.A smart speaking system thus helps sumb people to communicate effectively with help of hand gestures and make them access home applications in an easier manner.

II. PROPOSED ALGORITHM

An electronic glove has been designed for a communication interpreting system that enables dumb people to communicate with confidence. There are accelerometers and flex sensors that are employed and every square measure fitted with length of every finger .The flex sensor in the data glove will monitor the movement of the fingers, and the MEMS accelerometer will recognize the 3-axis moment of the hand.. The analog data is sent to an ADC convertor which sends digital data to the raspberry pi which in turn analyses the data and switches on the fan and light for different flex sensor movements and provide voice for different accelerometer movements.

BLOCK DIAGRAM
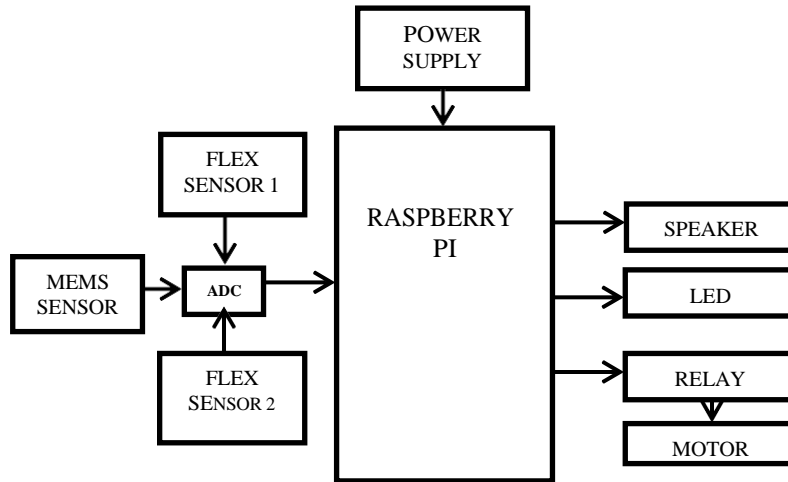
III. EXPERIMENT AND RESULT

High Granularity Interactive Potentiometer is used to adjust the values. Four potentiometers are used for two flex sensors and two MEMS sensors with x and y axis respectively. Each sensor has a specific range and when the value is not in the range, then the desired output is produced. Avirtual terminal box is used to see sensor values and the output that is currently been executed. Flex sensor values are used to switch on/off the dc motor and to switch on/off the LED. The MEMS sensor values are used to activate the buffer based on the desired values. The outputs are shown below.
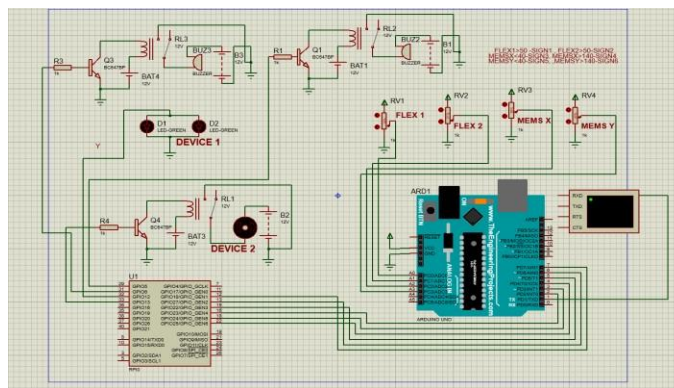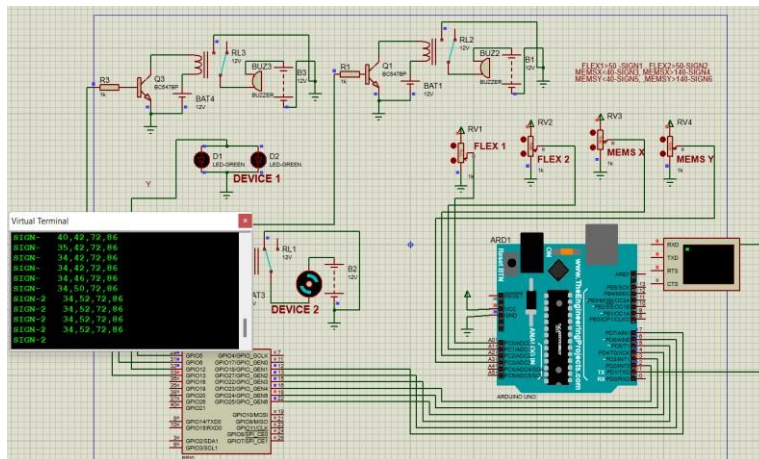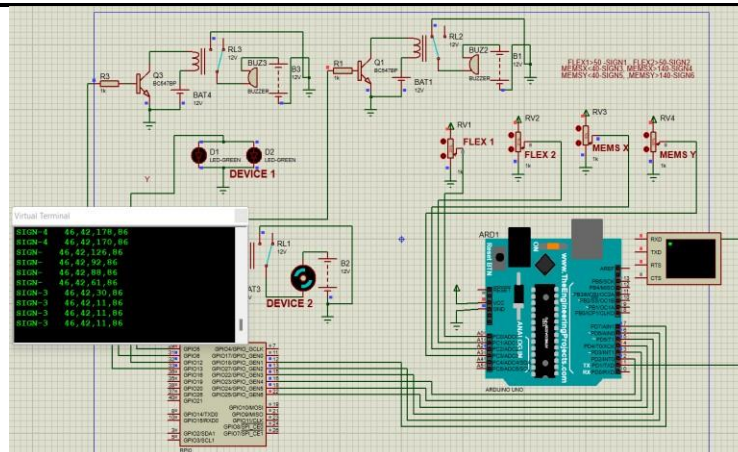

Simulation
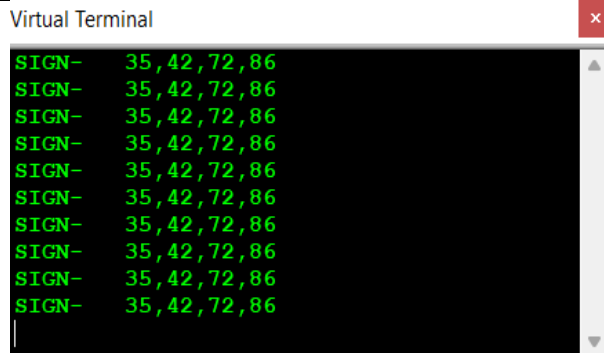
Virtual terminal
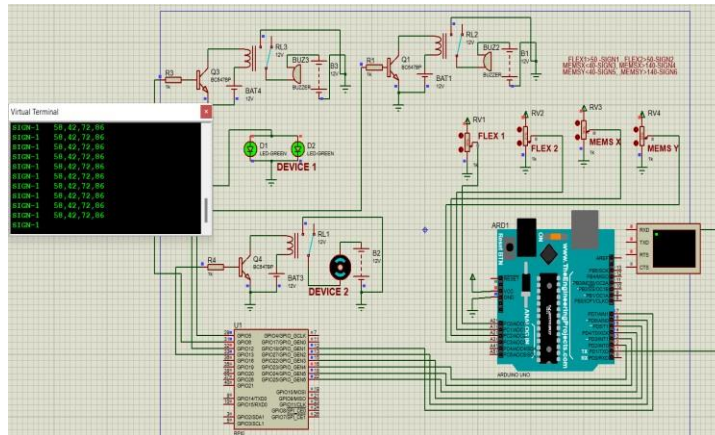
The first flex sensor(flex 1) value is adjusted using POT-HG(High Granularity Interactive Potentiometer) and when the value lies in a certain limit then the output(sign 1) is generated. So the device 1 which is LED is switched on. Virtual terminal box indicates that the sign 1 is generated.

The second flex sensor(flex 2) value is adjusted using POT-HG(High Granularity Interactive Potentiometer) and when the value lies in a certain limit then the output(sign 2) is generated. So the device 2 which is fan is switched on. Virtual terminal box indicates that the sign 2 is generated.

The first sensor (Mems X) value is adjusted using POT-HG(High Granularity Interactive Potentiometer) and when the value lies in the certain limit then the output(sign 3) is generated. So the buzzer is switched on. Virtual terminal box indicates that the sign 3 is generated and indicates the alarm

CONCLUSION

Sign language is used all over the world by the dumb people to communicate with each other. Sign language has crossed barriers because of its beautiful expressive characteristics. Sign languages, facial expressions and gestures have paved the way for visual articulation in art, drama, therapy, and a variety of other non-traditional situations. It has become a language for both the hearing impaired and the mute. This hand gesture based glove will help dumb people in easily communicating with others and also helps them in accessing home applications through hand gestures made with help of flex sensors and accelerometer sensor.

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