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Paper Authors

RANGAIAH L, ANKITHA MR, GEETANJALI B, DIVYANJALI GV, NISHA M



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ULTRASONIC GLOVES FOR DEAF, DUMB AND BLIND

RANGAIAH L¹, ANKITHA MR², GEETANJALI B³, DIVYANJALI GV⁴, NISHA M⁵

Dept. of ECE, Rajarajeswari College of Engineering,

rleburu@gmail.com, ankithanavya2299@gmail.com, nishamsaleem2898@gmail.com,

anju.divya99@gmail.com, geetanjali bhupalam12345@gmail.com

ABSTRACT: Sign language was the only way for the communication between disabled and normal people. Normal people felt difficulty in understanding sign language. To overcome this many devices were invented, which have certain drawbacks. In order to overcome those we are proposing a system entitled “ULTRASONIC GLOVES FOR DEAF, DUMB AND BLIND”. The scope of our project is to help disabled people in communicating with normal people. Gloves are fitted with flex sensors, gestures made will be converted into their respective word, if person falls down it will be sensed through the accelerometer and when if obstacle is sensed by the ultrasonic sensor in its range, and all these will be speak out through speaker and displayed on LCD and the same will be sent to guardian’s phone through TCP/UDP application using WI-FI module. Merits of this system is that it is cost effective, delay between gesture recognition is reduced.

Keywords: Sign language, deaf, dumb, blind, gloves, obstacle.

I. INTRODUCTION

Communication is an essential part of human lifestyles. Communication facilitates in mutual expertise and enables us to live in concord. For impaired humans, nonverbal communication is the handiest approach in which they could speak. This nonverbal strategy incorporates communication through signing, motions, and outward appearances. Generally hard of hearing and quiet individuals impart through hand signals and outward appearances while typical individuals don't know about this nonverbal correspondence. Debilitated individuals think that its hard to chat with the normal people inside the general public and the other way around. This is a top notch adventure in the public arena. It is required to structure an assistive gadget that can fathom this difficulty and

subsequently offer a strategy wherein debilitated people ought to talk.

In India, the huge of various categories of disabilities had been adopted within the Persons with Disabilities Act, 1995. “Blindness” refer to a circumstance where a person suffer from total absence of sight, Visual acuity no longer exceeding 6/60 or 20/200 (Snellen) in the better eye regardless of correction lenses, Limitation of the sector of vision subtending an perspective of 20 degree or woe. “Hearing Impairment” as defined inside the Act manner loss of sixty decibels or extra within the better ear in the traditional variety of frequencies. “Speaking Impairment” as defined inside the Act means someone who can not pronounce phrases in any language. According to the statistics provided from the census, following table may be deduced.

Type of Disability	Rural			Urban			Total
	M	F	P	M	F	P	
Visual	1.53	1.79	3.33	0.31	0.36	0.67	4.01
	46.15	53.85	83.27	45.97	54.03	16.73	
Hearing	1.41	1.16	2.57	0.34	0.33	0.67	3.24
	54.76	45.24	79.36	50.67	49.33	20.64	
Speech	0.94	0.56	1.5	0.3	0.17	0.47	1.97
	62.84	37.16	76.25	63.81	36.19	23.75	
Hearing & Speech	2.01	1.49	3.5	0.56	0.43	0.98	4.48
	57.42	42.58	78.07	56.66	43.34	21.93	

*Figures in second row in each field show percentages of total of that column

*Estimated Number of Persons with Disabilities (Millions)

Table1 – Approximate Disabled Persons in Millions.

Watching the insights it is required to build and plan a gadget which can give an attainable answer for these incapacitated individuals and permit them to speak with other person.

The project ambitions at growing a handy-device for mute or deaf humans to speak with ordinary people inside the society and additionally use of the same, as an alternative device for few gadget in regular human lives. The assignment particularly ambitions at fixing out the social problem through bridging the verbal exchange hole. The undertaking tries to provide a higher destiny for the mute and deaf human beings.

II. EXISTING SYSYTEM

The gesture recognition can be done in two ways, i.e., sensor based and vision based method. In sensor based systems, gloves are used which can achieve the accurate positions of hand gesture using flex sensors. In vision based method, the computer camera is an input device for various gestures of hands and figures. Be that as it may, in vision based method it includes huge measure of information and furthermore requires complex calculation and the expense of the framework is

extremely high because of utilization of Raspberry pi and Logitech camera.

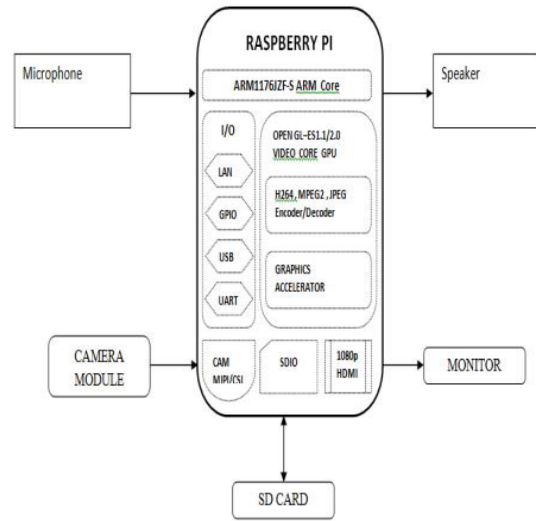


Figure1– Existing system block diagram

III. PROPOSED SYSYTEM

A. BLOCK DIAGRAM

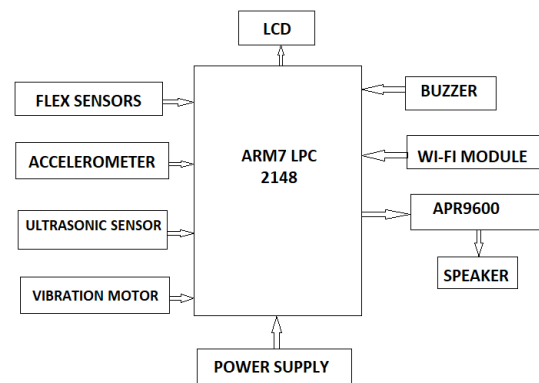


Figure2 – Proposed system block diagram

B. METHODOLOGY

Not too sharp individuals utilize communication via gestures to pass on their message to others. A glove fitted with flex sensor onto it is utilized to recognize the motions made by the individual. This glove gets enacted at whatever point specific motion is made. Motions made are changed over to proportionate electrical signals by the sensor. These signs are sent

to enter pins of the ARM cortex LPC 2148.

For various motions the signs are extraordinary. A scope of ADC values is allocated for each signal; the comparing word would be put away in the memory. At the point when the controller gets these signs it contrasts and the put away qualities and the relating word is chosen and the word is stood up of the speaker. The relating word is all the while shown on the LCD.

The ultrasonic module has two eyes like projections in front which forms ultrasonic transmitter and beneficiary. The ultrasonic transmitter transmits a ultrasonic waves which goes in air. This transmitted wave when hits any item inside its range (around 20 m) reflects back to the sensor. These waves are identified by beneficiary piece of the ultrasonic module and figures the separation between the item and the individual, and when the separation between them lessens vibration engine turns over vibrating showing the individual that there is some snag coming in his manner.

When the accelerometer crosses its threshold value, phrase “Fall Down” will be speak out through Voice module and text will be display on the LCD screen.

All these messages will be sent to mobile phone of the guardian or to the person who look after them through WI-FI module and UDP/TCP application in mobile phone.

IV. HARDWARE REQUIREMENTS

- Arm cortex lpc 2148
- Apr33a3
- Ultrasonic sensor

- Accelerometer
- Lcd
- Flex sensors
- WI-FI module
- Power supply
- Speaker
- Vibration motor

V. SOFTWARE IMPLEMENTATION

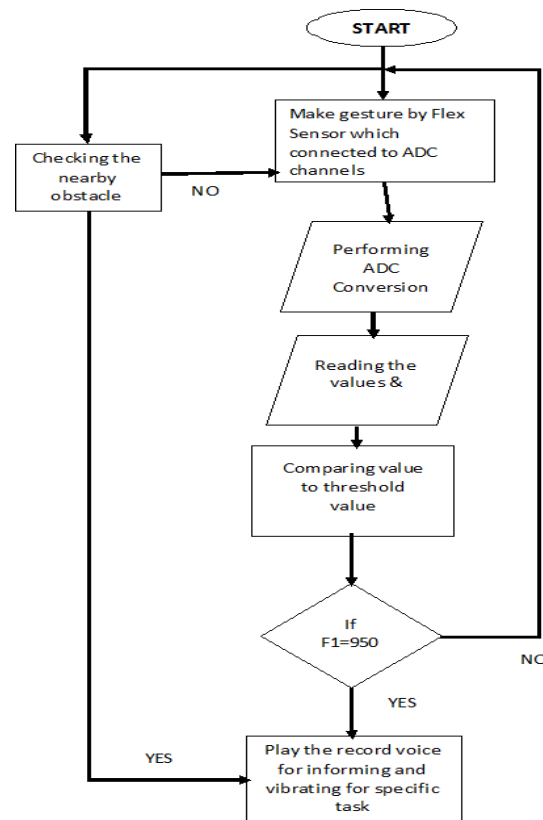


Figure3 - Implementation of the software design

VI. ALGORITHM

At the point when the gadget is power on then the motions is made. ADC values relating to signals are brought. Introduction of ADC ports of ARM7 LPC 2148 is done over and over and ADC Interrupts are empowered. Till the ADC change is finished controller is made to hold up in low force mode 0. For better exactness and so as to decrease the product upbraiding this procedure is reshaped

multiple times. Subsequent to impairing the ADC, the normal of 8 qualities is determined and is changed over to streamlined number. This ADC characterizes the point to which the joints are bowed, similar to straight, giving ADC esteem 450 or 900 Array of number is gotten and is put away in a variable reg_0 and all past procedure from beginning of ADC change is rehashed. The new number got is contrasted and recently put away one. On the off chance that both are same number, at that point it is static signal else it is dynamic motion. For static and dynamic images send message and address lines to Apr33a3 and LCD and is held up until the word to be spelt. Rehash the procedure if other motion is made.

VII. CONCLUSION

Gesture based communication is a technique utilized for correspondence by incapacitated individual. Here we are changing over gesture based communication into text and discourse so correspondence isn't restricted between them just, using information gloves correspondence hindrance between two distinct networks is wiped out. Utilizing information gloves crippled individual can likewise develop in their bearer and causes country to develop as level of incapacitated individual are millions in check. Improving their future, improving country.

VIII. FUTURESCOPE

On the off chance that we execute sensor to two hands it may expand quantity of words and may likewise be conceivable to make little proclamations. Including GPRS Tracking system to this module will help the guardian or the person who look after them to track their

location if the person is lost. We might also use this system as the server.

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