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ARM BASED COMMUNICATION AND SECURITY SYSTEM FOR DISABLED PERSONS

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Abstract: Communication is the vital thing that humans can perform, without communication we can't survive in this growing world. But for some disabled persons it is not an ordinary thing to do. They have to struggle a lot in order to communicate between themselves and with other people. Initially there are some traditional methods for communication for those disabled persons like American Sign Language, pictorial boards, Braille output etc. But they have not succeeded up to the mark. So we are going to provide an effective solution for this problem through our proposed methodology in an extend to that we are also providing security for those people. Whenever they are in any emergency condition their GPS coordinates will be sent to their relatives through GSM module. This is a portable technology which makes use of ARM7, flex sensors. In this way we are going to fulfill the communication gap for disabled persons.

Keywords: ARM7LPC2148, RS232C, LCD, GSM, GPS.

I. INTRODUCTION

In daily human life communication is the necessary thing to survive in this fast growing world. Without communication nothing will be happen. Normal people can easily communicate with others but for disabled persons it is a miserable thing. They have to face a lot of struggle for communication between themselves and with others. In present scenarios Day by day disabled persons are increasing rapidly. According to World Health Organization survey there are nearly 285 million people are blind, 300 million people are deaf, 1 million people are dumb. Although now a days technology has been growing at very faster rate, but no one is concern about this problem. They also want to live their life as a normal person does. But it is not happening, There are some existed methods for communication between those group of people. But no one is the effective methodology. Initially pictorial boards, American Sign Language, Braille output are used for filling the gap in communication they have succeeded up to some extent. This paper intended to provide a solution in cost effective manner and this is a portable technology. By using the proposed system we are going to provide basic necessary information messages can be displayed in LCD display as text and as voice in loud speaker. So the person having any form of disability can communicate with the normal and disabled persons. As there are Some existed Systems based on Fuzzy logic, Sharojan bridge, Braille output but they are of complex and costly. This paper 'Arm based communication and security system' is intended to provide an effective and low cost solution as a help to those disabled persons. The only thing they need to wear a glove with flex sensors.
Another major hurdle faced by disabled persons is security. Now a days in the society a normal person can't live their life peacefully, if you take a disabled person their lifestyle is more pathetic. So we are going to design a security system whenever those people are in emergency condition. They are unable to communicate with other people. For that reason we are going to provide an emergency button with glove whenever anything goes wrong they need to push that button then immediately in matter of seconds their GPS coordinates will be sent to their relatives. Then their relatives will help those people like wise our proposed system can serve as both communication and security system.

II. OBJECTIVES

This task is planned to have a successful model and overcome any issues in correspondence to help individuals experiencing blindness or deafness or dumbness or mix of imbecility and deafness.
This will utilize the versatile and wearable Technology to give a method for correspondence to in an unexpected way capable people.

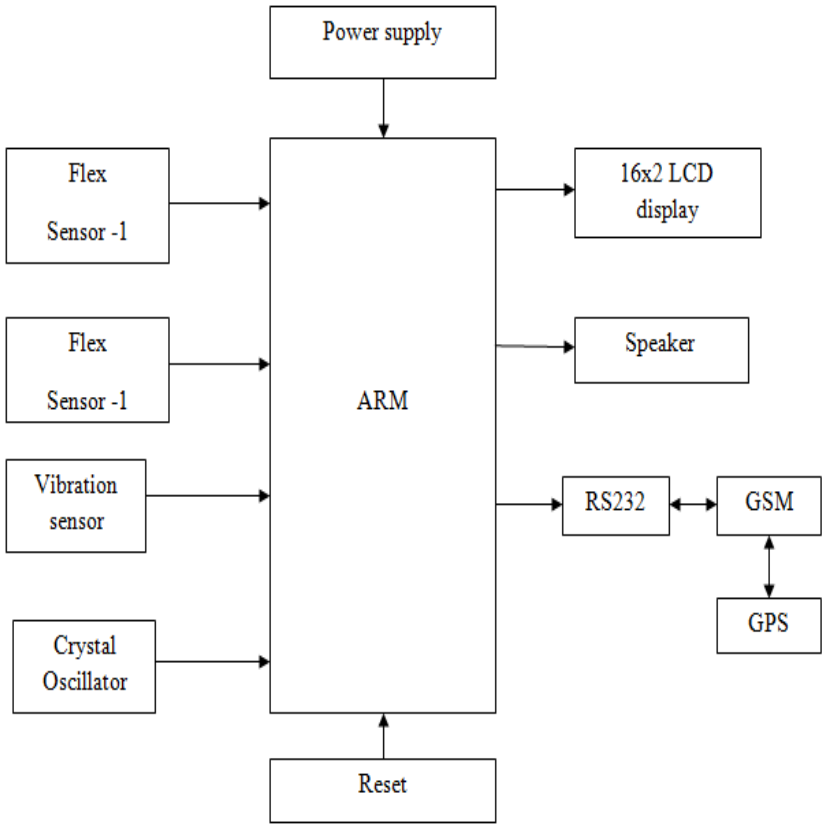
III.PRESENT USING TECHNOLOGY

HAND TALK GLOVE, BY RYANPETTERSON 2001:
The primary hand talk glove is implemented with sign language. Sign Language convertor is usually includes a kind additives, they may be a leather glove that has five bendy sensors sewn into it which monitor the location of the palms by measuring the electric resistance that will increase with the aid of the arms every time they got bended. a little microcontroller on the back side of the hand converts the change. The processor then reads the numerical values and

converts them into the letters which will appear on the display and as voice in speakers . the main drawback of this model became that processor always required for its functioning which made it much less transportable [1].

IV.PROPOSED SYSTEM

Voice direction framework is intended to support stupid and hard of hearing individuals just as for visually impaired individuals to speak with others. This framework utilizes transition and vibration sensor, LCD show, speaker, GSM and GPS. Flex sensors have been utilized to quantify the level of bowing of the fingers. A few directions are stacked by the indications of hand. The flex sensor are interfaced with the processor, as indicated by the sign, voice is aided speaker. On the off chance that individual tumble down, vibration sensor identifies it and showed in LCD show and The GPS directions will be send to predefined versatile client through GSM.



V. DESCRIPTION OF COMPONENTS:

1.ARM: The ARM abbreviation represents Advanced RISC machine and it is a 32-bit diminished directions set (RISC) microcontroller. An ARM processor is one of the group of CPUs dependent on the RISC (diminished guidance set PC) engineering. ARM makes 32-bit and 64-bit RISC multi-center processors. Arm is completely founded on the RISC engineering [2]. This methodology decreases the expenses of equipment and it will creates less warmth contrasted and x86 designs henceforth it is progressively proficient. It is having exceedingly improved guidance sets

2. FLEX SENSOR:

Flex sensors are utilized here for each finger and it quantifies the edge of bowing of fingers. These sensors are only resistive carbon components. When we twist our finger the sensor produces yield opposition in connection with bowing edge. The flex sensor's opposition changes dependent on the bowing of the fingers[2]. This adjustment in obstruction delivers a comparing yield voltage from the voltage divider circuit. The resistor and flex will shape as voltage divider circuit which partitions the info voltage by a proportion controlled by the variable and fixed resistors. Flex sensor is a variable resistor. The obstruction of the flex sensor will differs as per the curve of the segment.

3. VIBRATION SENSOR:

The estimation of vibration is an unpredictable subject. Vibration sensors are broadly utilized for estimating, showing, and breaking down direct speed, removal and vicinity and quickening. vibration estimation, you have to join a sensor that can distinguish vibration conduct to the machine that will be estimated in various ways utilizing Various sorts of vibration sensors that are accessible, however a sort called accelerometer is regularly utilized as it offers points of interest over different sensors since accelerometer will creates an electrical flag that is corresponding to the increasing speed of the vibrating component to which the accelerometer has been associated or appended.

4. L.C.D display:
A 16x2 LCD show is the fundamental and usually utilized in different gadgets and circuits. A 16x2 LCD can show 16 characters for each line and there are 2 such lines will be available. These are favored more than seven sections and other multi portion LEDs. The reasons are: LCDs are practical; effectively programmable and no constraint of showing unique and even custom characters, etc. Directions will be given to the LCD to complete a predefined task like instating it, clearing its screen, setting the cursor position, controlling presentation and so forth. The information register stores the information and shows on the LCD. The information is accessible as an ASCII estimation of the character that will be shown on the LCD [5].

5.GSM:
GSM was the cheapest and first digital cellular network developed after first generation (1G) analog cellular networks, and the GSM standard originally described as a digital, circuit-switching network for full duplex communication. GSM is a secure wireless system. GSM uses narrow band TDMA, which allows eight simultaneous calls at the same radio frequency [3]. The GSM network architecture consists of different elements such as MSC, AUC, HLR, VLR, etc.

6.G.P.S:
The Global Positioning System (GPS) is a satellite radio route framework used to decide the ground position of an item. It is a worldwide route satellite framework that gives geo area and time data to a GPS recipient on or close to the Earth. The GPS does not require the client to transmit any kind of information, and it works freely on any telephonic or web gathering, however these advances can improve the value of the GPS data. The GPS gives imperative applications in military, route needs of residents [3].

7. RS232
In RS232, the term RS represents prescribed defamed and the number 232 determines the variant. There are a few sorts of sequential correspondence frameworks that are intended to exchange the data over substantial separations through some assortment of data links. Sequential to be perfect with it. Fundamentally, long separation correspondence exchanges the data one piece at any given moment, subsequently the cost of the link will be decreased. In media communications, this RS232 port is a standard. It formally depicts the signs associating between information terminal gear (DTE) and information circuit ending hardware (DCE). Here, DTE is a work station and DCE fills in as modem. Communication most every now and again indicated to the RS232 port which is called as the sequential port, therefore several devices designed

SOFTWARE:
1.KEIL SOFTWARE:
The Kiel Development Tools are the professional software developer tools, however all levels of programmers can use them to get the most of the embedded microcontroller architectures that have been supported. Tools are developed by Kiel endorse the most popular microcontrollers that are distributed in several packages and configurations, and depends on the architecture [2].

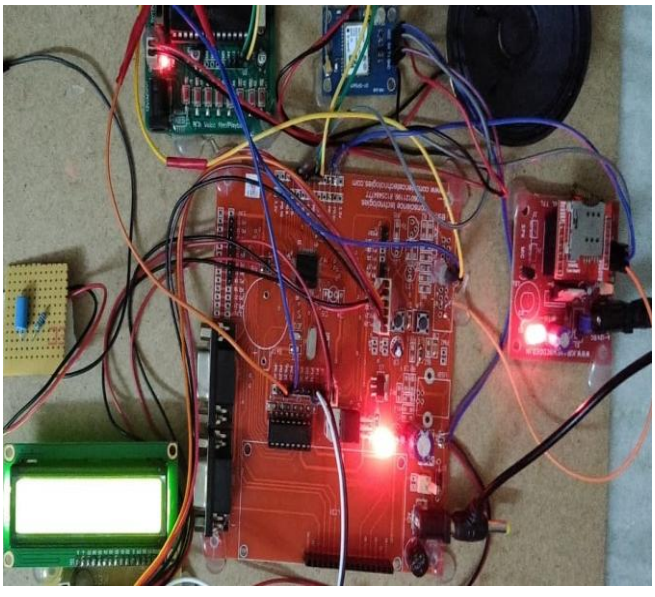
- **MDK-ARM**: It is a Microcontroller Development Kit used for several ARM7, ARM9, and Cortex-Mx based devices
- **PK166**: Kiel Professional Developer's Kit, for C166, XE166, and XC2000 devices
- **DK251**: Keil 251 Development Tools to be used for 251 devices
- **PK51**: Kiel 8051 Development Tools used for Classic & Extended 8051 devices

2. PROTEUS SOFTWARE :
The Proteus is an electronic circuit plan programming which incorporates a schematic structure, reenactment and Layout modules. Proteus is a reproduction and plan programming instrument created by Lab place for Electrical and Electronic circuit structure. It additionally have 2D CAD illustration highlight. while multisim programming can't do this element.

VI.METHODOLOGY:

The framework we are utilizing is a kind of wearable innovation. Most importantly, the yield and contribution of the framework is set to the ideal type of the client. Flex sensors are utilized to quantify the level of twisting of the fingers dependent on restricting opposition esteem will be fluctuated. A few directions are stacked by the indications of hand. The flex sensor are interfaced with the controller, as indicated by the sign, voice is aided speaker
Along these lines correspondence is going on between those individuals. The second thing is security for handicapped people for this reason, We are utilizing vibration sensor at whatever point if the individual tumbled down vibration sensor will identifies and shows as mishap recognized in LCD show, and the
data about GPS directions will be send
to predefined portable client through GSM

VII. RESULTS AND DISCUSSION:



Here the flex input is associated with the Arm LPC2148 for example the info side. GSM and GPS modules will be associated with ARM through RS232C port and max232 chip. Vibration sensor will go about as another contribution to the ARM. LCD show and speakers are going about as yield gadgets.

At whatever point flex sensors are twisted the opposition will be fluctuated and these obstruction esteems will be prepared in the ARM board, as of now predefined limit esteems will be put away in the product for a specific signal. At whatever point the obstruction esteems matches for a specific signal then specific order will be shown in L.C.D show and as voice in speakers.

VIII.CONCLUSION:

In this venture we have proposed the essential methodology of the framework which can be an exceptionally helpful device as a boundary of incapacities in correspondence of the general population experiencing any of the inability Blindness, Deafness and Dumbness and the mix of idiotic and hard of hearing. The individual can convey and exchange the message according to his capacity and want to different individuals. The hard of hearing and unable to speak can utilize these signals to transmit the messages rather than the Sign Language, and the yield is available as sound or typical content showed in LCD

LIMITATIONS :
In this undertaking we are utilizing the wearable innovation alongside a few Boards and hardware which makes the gadget somewhat cumbersome furthermore, huge. The impaired individual needs to convey the pack alongside them as and when it is required.

X. FUTURE WORKS :

There can be number of future headways that can be related with this task work and some of which are depicted as pursues: We are utilizing the ARM LPC2148 to make availability which can be utilized for long separation correspondence. In future some new way can be built up that can utilize the Internet availability highlight to make the network of the gadget better for longer separations. ARM Technology additionally gives Ethernet, WI-FI and Bluetooth support. Along these lines fuse these highlights to our gadget to make it fit for interfacing with some other gadget with WI-FI and Bluetooth support[6]. There can be more flawlessness in detecting the developments and signals by utilizing flex sensors with the goal that the message transmission can be made smoother. Since this is a kind of wearable innovation, we can consider small scale level progressions that can be embedded so the gadget can be made increasingly minimal, quicker and solid.

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