Smart Interaction System For Blind And Dumb

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Abstract

Science and Technology have made Human life addictive to comfort but still there exists an deprived group of people who are fighting for finding an different way that can make the process of communication easier for them. According to the research, about 285 million people in the world are blind and 1 million are dumb. Dumb-blind communication can be a tricky topic to tackle. Assistive technology leading to full participation of specially abled people in a technological society could turn this huge communication setback to productive comeback. Speech recognition application, reading machine, accessible computers and software applications are the main areas addressed throughout this paper with reference to the background technologies, architectures, formats, on-going research activities and projects. Gesture primarily based system is meant to produce the communication between dumb, deaf and blind people and their communication with the healthy person.
Keywords - *Blind and Dumb, Speech-Recognition device, Reading Machine, Accessible computers, Software applications.*

I. INTRODUCTION

Communication with visually impaired people is still a difficult scenario to deal with. But with technology supporting tons of opportunities, proposed plan could lower the obstruction. It depends on the need of building up an electronic gadget that can make an recognition of gesture based communication into speech so as to make the communication between the mute groups with overall population conceivable.

II. LITERATURE REVIEW

The analysis and some research have given suggestions clearly co-related to the innovations about the controlling of the signals in concern about the present population. Despite the information so as to there are individual observatory points as well as many focus to specify from the investigation, however this stereotype consider have additional keenness used for the accompanying classifications, because these are very important regions of movement based User Interface. It has been around thirty years of research and analysts have been working on motion based framework. The vast majority of these explores depend available motions. Coordinate control by means of hand stance is fast enough, however restricted in the range of Choices.

This survey tends to give an introduced insignificant exertion course of action which does in like manner in early-stage conditions without greatly multifarious nature. The same here is recognized through an assortment of sensors whose data is arranged and mapped to a particular attributes that can be controlled in the physical world. This system looks at the structure prototyped to access the mouse of a PC through movements and tilt of the wrist.

Sr. No.	Paper Title	Findings
1.	Speech Technologies for Blind and Low Vision People	Speech technologies and their applications that provide or augment access to the printed or electronic information.
2.	A Novel Approach for Communication among Blind, Deaf and Dumb People	Research on existing system studying technology like wearable device.
3.	Gesture Recognition Technique: A Review	Interpreting human gestures via mathematical algorithms.

		Different ways of gesture recognition.
4.	Sign Language utilizing Automatic Hand Gesture Robot Based on Microcontroller System	Implementation of microcontroller for recognizing hand gestures and its conversion. Wireless connection between the database and sensor gloves.
5.	Hand gesture remembrance and voice conversion system for dumb people	Artificial speaking mouth for dumb people. Conversion of hand gestures into voice.

III. CURRENT METHODOLOGY

In the earlier days the visually impaired people are catered to the basic learning's of the Braille system.
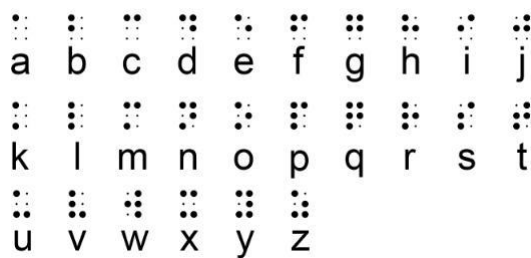

Fig. 1 Braille System

Braille is a tactile writing system used by people who are not able to see. It is traditionally written with embossed paper. Braille system users can read computer screens and other electronic supports using braille displays. They can write it with the original slate and stylus and also they can read it without assistance[4].

Fig. 2 Keyboard System

Keyboard is writing system for visually impaired people. It is compact, portable and east to use device. It does not require any different software installed onto computer.It can directly attached to computer through USB. Principal Braille keys and additional keys provide full cursor control, Ctrl and other functions.
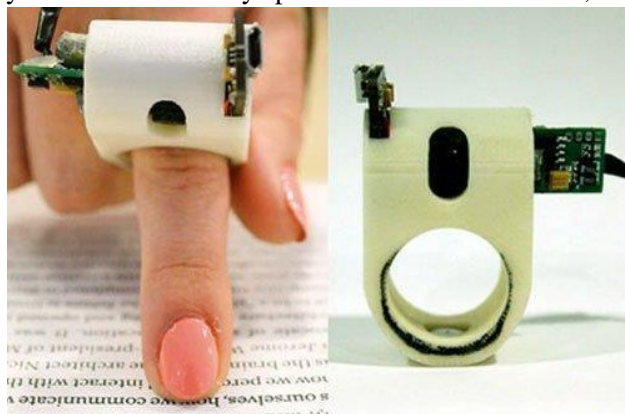
Fig 3.Finger Reader

The Finger Reader is a device that assists in reading printed text. It is a tool both for visually impaired people that require help with accessing printed text, as well as an aid for language translation[3].

Fig.4 Sign Language for Deaf and Dumb

Fig 4. shown is the basic form of gesture of all deaf and dumb people. By using this sign languages they can convey their message.

In the above said existing system has certain disadvantages which are as listed beneath
- In Braille system, it can induce harm to the surface which would be like scribbling with permanent marker over visual writing, and any injury to the finger would be like experiencing an eye patch on to a seeing person. So, Braille System is slightly, more susceptible to problems preventing any reading.
- In Finger reader the chief defect is it can only access to only English languages and could not able to make out.
- For the people with deaf and dumb the sign languages are the frequently used ones, but it could not be easily understandable by normal people
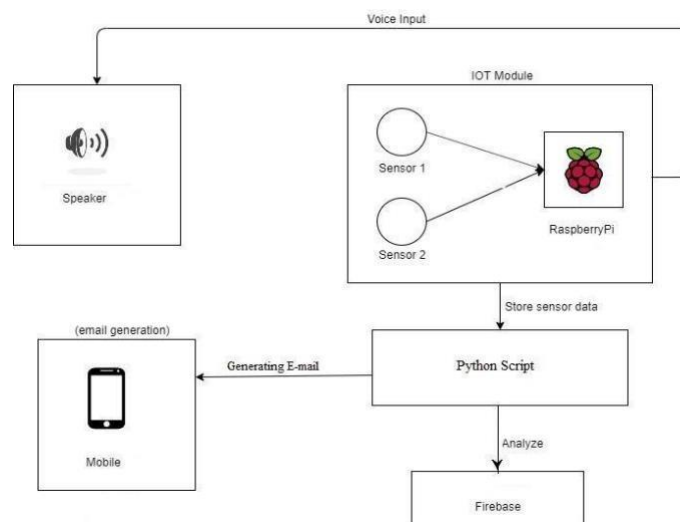

Fig. 5 System Architecture

The above proposed system states raspberry pi system over the current existing system .the system includes an iot module comprising of accelerometer sensors and raspberry pi. The sensor would capture the real time data related to hand gestures of the user. The raspberry pi is used as computing module which transfers data to the cloud and is embedded with python script with functionality to produce desired output. The output is expected to be an email and voice output[1].

The accelerometer sends the data to raspberry pi in support if the Wi-Fi module. The python script on raspberry has the adxl libraries to accommodate and understand the sensor data.

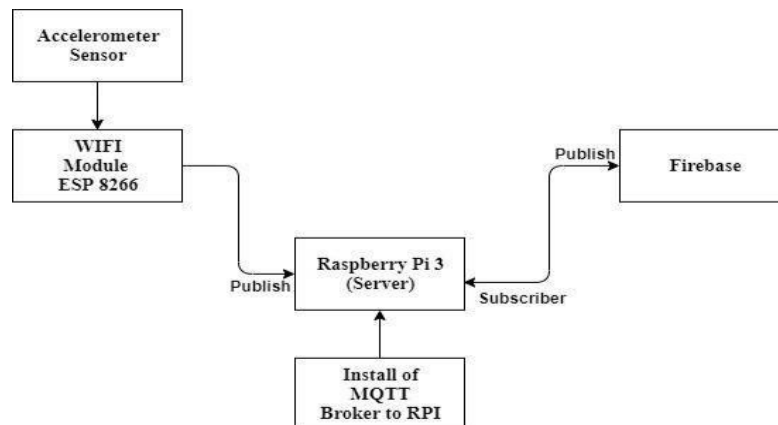## IV. PROPOSED DESIGN FOR SMART COMMUNICATION

Fig 6: Proposed System

This system converts the language in associate voice that's well explicable by blind and ancient people. The system and the gesture device are connected wirelessly via Wi-Fi modules. The wireless communication enables the user to interact with the system in a more friendly way. Gesture controlled robot is a system which has been controlled by simple gestures. The user needs to wear a device which includes a sensor. The sensor records the movement of hand in a specific direction which results in the voice output.

V. CONCLUSION

The proposed prototype will help visually challenged and mousy people to communicate with the society. The system is supposed to convert sign language into voice output and text to predefined image as email to the concerned person. The system is efficient, reliable and easy to use as the circuitry is simple. Future enhancement is to be done by additional investigation with a specific end goal to create improved form of the proposed framework. Framework would have the capacity to convey in both headings by precisely knowing the yield from a specific part. It will have the ability to make an interpretation of ordinary regional language to hand signals effectively. The picture handling some portion of the framework will likewise be altered to work with each condition. A test will be to perceive signs that include gesture and will providing assistance in usage of technology and application like Google Assistant. Reading out a Braille script or document with glove and converting it to English language based voice output

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