

GESTURE BASED VOICE MESSAGE SYSTEM FOR PATIENT

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Abstract - This paper aims to represent a mini version of gesture-based voice message system for patient with Arduino UNO. In this project the Arduino UNO working as a main processor chip, the flex sensors provide output accordingly fingers movements and ADXL335 provides accelerated output through gesture movements accordingly by patient. A primary goal of Gesture recognition research is to create a system for identify human gestures and to convey information for device control. Interface by processors using gesture of the human body, gesture hand movements. Using this technique, we able to read the actions of the human body and communicates with system in which the gestures as input to control devices or applications.

Key Words: Arduino Uno, MEMS Accelerometer, Flux Sensor and Push Buttons.

1. INTRODUCTION

Gesture recognition is the process by which the user interface with computers non-verbally or by just hand movements and human body gesture is determined by system to process the command to communicate with specific message. As physical gesture is powerful means of communication in day to day life. A set of physical gesture can compose entire language, as sign languages. This system makes the modest suggestion which is based on gesture input such a beneficial technique to convey the information and for device control with the help of gesture identification of human body. Research into the interaction between humans and computers and how effectively the system reacts with specified gesture movements by human. With the help of gesture reorganization, we implemented a system which can identify human gestures and make useful to convey information for device control. Current focuses in the field contain emotion recognition from the face and hand gesture recognition. Through, the identification and recognition of proxemics, postures, gait and human movements is also subject of gesture recognition techniques. Through, the identification and recognition of posture and human behaviours of physical movements is also the subject of gesture recognition techniques. The system is trained for identification of movements produce

by human and detection of gesture movements accordingly reacts without any mistakes. And we are able to interface human with computers as non-verbal communication as gesture reorganization technique.

2. LITERATURE SURVEY

1. The paper "Hand Gesture Recognition and Voice Conversion System using IoT" by Dr. A. Kishore Kumar. The proposed model About nine billion people at intervals the planet unit of measurement are dumb. The communication between a dumb and hearing person poses to be an important disadvantage compared to communication between blind and ancient visual people. The primary aim of this project is to introduce an issue that will efficiently translate language gestures to text and voice. The system consists of a house network (sensors and appliance actuators and camera to respect controller; raspberry pi microcontroller that communicates with a relay which is the user interface is used.
2. The paper "Hand Gesture Recognition Application for Physically Disabled People" presented by D. Vishnu Vardhan, P. Penchala Prasad, describes an IJSR project, Gesture recognition is the process by which gestures made by the user are used to convey the information or for device control. In everyday life, physical gestures are a powerful means of communication. A set of physical gesture may compose an entire language, as in sign languages. They can efficiently convey a rich set of facts and feelings. This project makes the modest suggestion that gesture-based input is such a beneficial technique to convey the information or for device control with the help of identification of specific human gesture Research into the uses of gesture in human computer interaction is embryonic, and we hope to have stimulated others to work out their ingenuity in developing effective gestures

3. The paper presented by Abhilasha C Chougule, Sanjeev S Sannakki, Vijay S Rajpurohit "Smart Glove for Hearing-Impaired". This paper elaborates about Sign language may be a natural method of communication between traditional and deaf-dumb folks. Linguistic communication is usually enthusiastic about hand gesture recognition. A gesture is also outlined as a movement, sometimes of hand that expresses a thought. Linguistic communication may be an outlined method of conveyance within which each word or alphabet is delegated some gesture. It's generally difficult for traditional folks to acknowledge the signs properly and perceive what they require to mention. For instance, allow us to take into account a situation within which a traditional person desires to speak with an individual United Nations agency is hearing impaired and he's far from him, then the person cannot speak to him/her simply.
4. The paper "GESTURE BASED ASSISTANCE SYSTEM FOR APHASIA PATIENT", presented by R. Jayasree, M. Aiswarya, R. Deepa, G. Dhanalakshmi in this paper they have designed Unexpected things happen at unexpected situation. Accident is one among them. In a sudden matter of time accidents may occur and are not expected at the moment. It may also tip to lose the vocal cord in the course of uncertain situation. The people who lose their vocal cord are known as 'APHASIA' people. Recovery from the situation is not so an easy process. The Primary difficulty faced by them at this stage is they cannot share their ideas. There the interaction between the normal people and the patient is affected, which may lead to reduce their communication and inbuilt a low self-esteem. Communication with aphasia patient is important in order to know their feelings. Normal people will face difficulty for simultaneous converse with these people. Then, gesture is the only mean through which speechless conversation will happen. It is the route through which sharing of the information or the current situation takes place. Gesture is an expression which harvests meaningful activity of the physical movement of fingers.
5. The paper "Hand Gesture to Speech and Text Conversion Device", by K. P. Vijayakumar, Ananthu Nair, Nishant Tomar. They have included modules for A huge portion of the global population has the inability of speaking either partially or completely. In India, around 2.78 percent of the total population are speech flawed [1] and a very small fraction of these are good in communicating with hand gestures. The possibility for a normal person knowing the sign language is very less. So, to reduce the communication gap, the research in the field of gesture to speech (G2S) system becomes more important. In recent years many researchers focused on hand gesture detection and developed many techniques in the field of robotics and artificial intelligence [2]. This project uses a similar ap- proach but tries to implement the idea distinctly and came up with an important application in the domain of IoT. The device helps a dumb person to communicate with the nor- mal person as well as a deaf person.
6. The paper "An Iot Based Automated Communication System for Paralyzed Patients Using Simple Hand Gestures" presented by Dr. M. Mohana, S. Priyadarshini, N. Sowmiya, G. Pavithra Devi. Numerous health monitoring systems are present which makes it easy for the doctors to monitor the patient vitals, but there aren't many systems that are used for the communication of the paralyzed patients, the proposed system helps to overcome these difficulties. This proposed system is to help the paralyzed patient to convey the basic requirements and emergency messages by just moving the finger to display the required message in order for the patient to be motivated as much as possible. It also consists of a beep sound to alert the attender when a message is displayed
7. The paper "Hand gesture recognition and voice conversion system for dumb people", by V.Padmanabhan, M.Sornalatha. It About nine billion people at intervals the planet unit of measurement dumb. The communication between a dumb and hearing person pos- es to be an important disadvantage compared to communication be- tween blind and ancient visual people. This creates an extremely little house for them with communication being associate degree elementary aspect of human life. A Dumb communication interpreter is also a tool that interprets the hand gestures to sensibility speech.
8. The paper "Patient Aid Message Notification System Based on Hand Movement Tracking and Haar-like Features", by Tanapat Ratchatorn Suree Pumrin Many leading-edge technologies Endeavor vital parts of human lives. The Human-Computer Interaction (HCI) is considered as an important approach for interaction between human and computer. This technique has been attracted more and more attention from researchers for decades. It encompasses multiple kinds of knowledge such as computer science, behavioural science, psychology, ergonomics, and designing. HCI has expanded to cover many forms of applications in the field of information technology including gaming, disaster and crisis management, human-

robot interaction, assistive technology, and medical system. This kind of monitoring system is useful since it helps the caregivers monitor patients without the need of staying with the patients all the time. It is also helpful for the patients who have a problem with communication.



Figure3: Flex Sensors

3. METHODOLOGY



Figure 1: Block Diagram

3.1 Arduino Uno:

Arduino Uno is ATmega329P based microcontroller board. It is widely popular for mini projects. In our project Arduino is I used to control forward, backward, left and right movement of vehicle. All the functions are preprogrammed in Arduino using Arduino IDE. After getting command from pi, the Arduino will send signal to motor driver circuit to take the appropriate movement instructed by Arduino.

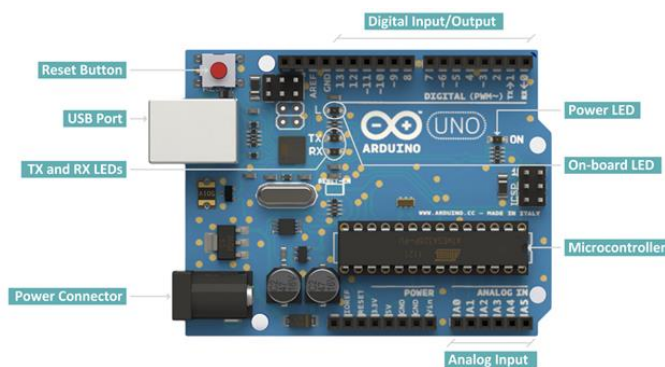


Figure 2: Arduino Uno

3.2 Flex Sensors:

A flex sensor or bend sensor is a sensor that measures the amount of deflection or bending. Usually, the sensor is stuck to the surface, and resistance of sensor element is varied by bending the surface. Since the resistance is directly proportional to the amount of bend it is used as goniometer, and often called flexible potentiometer.

3.3 ADXL335 Accelerometer:

The ADXL335 is a small, thin, low power, complete 3-axis accelerometer with signal conditioned voltage outputs. The product measures acceleration with a minimum full-scale range of ± 3 g. It can measure the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion, shock, or vibration.

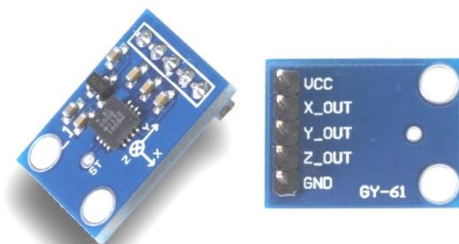


Figure 4: ADXL335 Accelerometer

3.5 HC-05 Bluetooth:

HC-05 Bluetooth Module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Its communication is via serial communication which makes an easy way to interface with controller or PC. HC-05 Bluetooth module provides switching mode between master and slave mode which means it able to us neither receiving nor transmitting data.



Figure 5: HC-05 Bluetooth

4. FLOWCHART

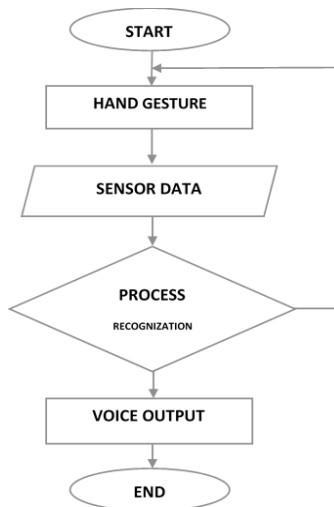


Figure 2: Flowchart

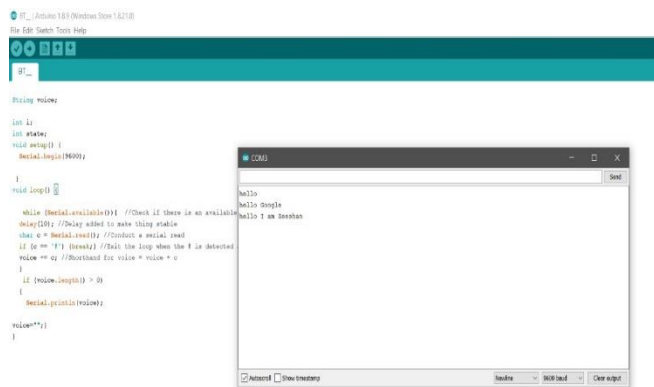
As the system starts all the sensors and hardware components gets activated and perform dedicated tasks.

1. Hand Gesture
2. Sensor Detection and Process
3. Vice Message

Here flex sensors for detection of fingers movement and ADXL335 for hand movements reorganization according to this the Arduino provides the wireless signal through the Bluetooth module (HC-05) which further received and produces voice message with the help of android based application in mobile-phone and gives voice messages according to gesture movements.

5. RESULTS:

Sensor Detected and give output in form of voice message:



We recognized the gesture movements of patient through sensors and produce voice message accordingly through Bluetooth module and mobile based application.

6. CONCLUSION

The proposed system is successfully created implemented and tested. The Arduino is trained for dedicated tasks to detect finger moments and gesture. In various testing done by us it is found that despite of using Arduino we tested various values of sensors in analog inputs and generate the output accordingly. The main function of serial communication of Arduino through transmitter of Arduino and receiver of bluetooth of HC-05 module and decoded by mobile based application. This paper clearly describes the working methodology of our gesture-based voice message system.

7. FUTURE SCOPE

There is huge scope of gesture reorganization systems in future world of Artificial Intelligence. This system also helps people to control the home appliances with the help of hand gestures. It can also suitable for observing the patients, their condition and give the appropriate output. In future the gestures can be made as user friendly and added or modifications by any other person. Researchers are going on development of hand gesture recognition using human nervous system. A system with more advanced algorithm than proposed and used in automation purpose with IOT.

8. REFERENCES

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