

## **Automatic Text and Sound Using Hand Glove for Disambiguated and Mute People**

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### **Abstract**

Deaf and dumb people can't express their feelings normally like other people. There is a person named Helen Keller who is deaf and blind, even though she is deaf and blind she always wanted to lose her deaf instead of blindness. They are in lack of confidence because of communication gap. These type equipment helps them to connect easily with people. All common people around deaf and dumb can't understand sign language. Here all people face problems. People like blood relatives or who stay always side by impaired people understand all their feelings. We can't say about all the situations sometimes those people may notice there for help at that moment common people other than their blood relatives can't understand their thoughts. By action of hand movement we can communicate with deaf and dumb people. Direction of the hand movement can be converted in to signal which is displayed in to text and voice.

**Keywords:** ArduinoUNO, MEMS sensor, Hand Glove, Speaker, LCD.

### **Introduction**

Deaf and dumb people use signs and facial expressions to communicate with others. In sign language hands are moved some specific directions which represent some signs. Here this hand glove will translate the gestures in to the text and sound form.

Need: - Now a days each person has own requirement to communicate with all others. This glove with a mems sensor have many benefits for communication between ordinary people and mute and deaf people. This hand glove helps the communication gap between all people. People with disabilities exist in our culture, and about nine million people worldwide are deaf and dumb. It has always been difficult to communicate between a deaf-mute and a regular person, but sign language has made it possible.

### **Problem statement**

Physical beauty is not something that anyone is born with physically perfect. Some people were born with birth defects in their body. Birth defects are anatomical differences in the body that may be affect almost any part or any sections of the body (e.g., the heart, brain, or foot). In this case, deaf and dumb people are involved. When they want to communicate a serious problem, but no one understands their sign language, they may use words. They need a different style of communication in order to communicate their entire range of emotions. As a result, this Digital Text and Speech Synthesizer was developed.

## Literature Review

Giancarlo Oregon [1], the main reason of writing this paper is for dumb and deaf people. They face so many challenges in this society. They used to communicate people with their sign language so here we brought an innovation idea for dumb and deaf people by using mems sensor we can make some changes in their daily life. This paper explains how much the hand glove is used for deaf and dumb people to expression all their emotions. Also explains how sign language is converted to speech and sound which reduces communication gap.

Nisha Advani [2] This paper described the difficulty in using sign language. All common people around deaf and dumb can't understand sign language. Here all people face problems. People like blood relatives or who stay always side by impaired people understand all their feelings. We can't say about all the situations sometimes those people may notice there for help at that moment common people other than their blood relatives can't understand their thoughts.

Sayed Faiz Ahmed [3], physically impaired people use sign language with the help of alphabets like asking for water or food and for many other things and now are implementing we are implementing hand.

The programme already dumped in micro controller. The message reaches voice module and the voice is heard through this speaker. Glove for this people. Movements of hands is called gestures which are read by the sensor named MEMS. Sensor takes the hand pressure to signal which is converted to text and sound.

Solanki Kumar [4], Deaf and dumb people's parents communicate in sign language with their children. This type of communication is found from 5th century. It's been difficult for common people to communicate with deaf and dumb. Many researches have been done on this. By action of hand movements we can communicate with deaf and dumb people. Direction of the hand movement can be converted in to signal which is displayed in to text and voice.

Priyanka Lokhande [5] Deaf and dumb people want to communicate with others in normal way. This hand glove with micro-electromechanical system sensor connects them with the world. MEM'S sensor is used to detect pressure in the fingers and converts to signal that is shown as text on lcd and voice is heard from speaker. Changing positions with hand glove is more important for sign language.

## Methodology

Gloves are used to find the hand movements made by deaf and dumb people and convert the sign language to speech and audio through a plane display and a voice module when the fingers are moved, the sensor recognizes the movement. After recognition the message is displayed on plane display. According to the code dumped in Arduino microcontroller the message is displayed. We can use smart phones for displaying the message. When they want to

communicate a serious problem, but no one understands their sign language, they may use words. They need a different style of communication in order to communicate their entire range of emotions. As a result, this Digital Text and Speech Synthesizer was developed. we are connected a wire to the Arduino which is attached with the mems sensor and that mems sensor is connected through the resistors of forty seven Kilohms are used. The difference in the resistance of mems sensor known by resistors with the hand motion. The value of the resistors gets changed when the sensor bends.

### Proposed Methodology

In the present situation difficulties faced by impaired people in communication with normal persons and they have feelings to communicate with people so that we are innovated a new system which is helpful to understand the basic communication with these people. They used sign language to express their feelings. Here we are using hand glove for these people these gloves will helpful and by changing the direction of hand we will get the voice and text. And hear by changing the direction of hand from flat position to 90 degrees we will get output. Hence now they can easily communicate with normal person. They can't talk but now using this we can communicate.

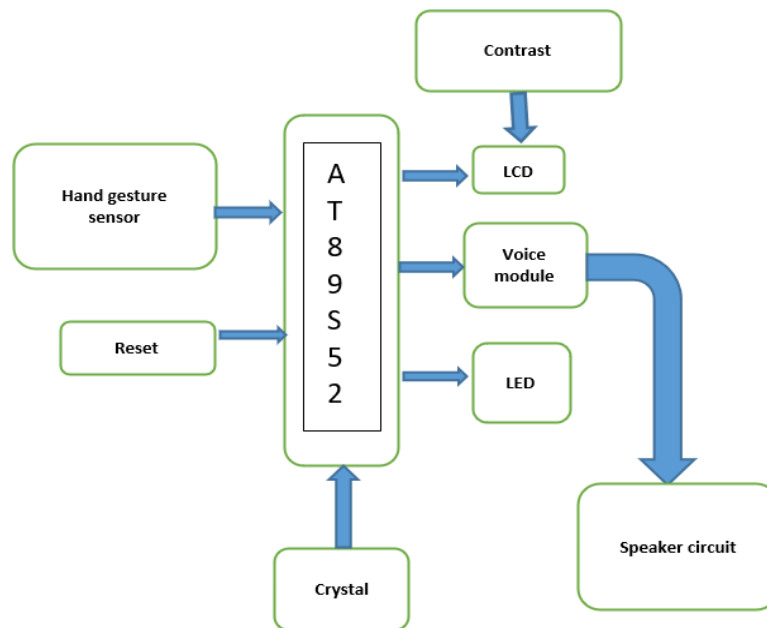


Figure 1: Block Diagram

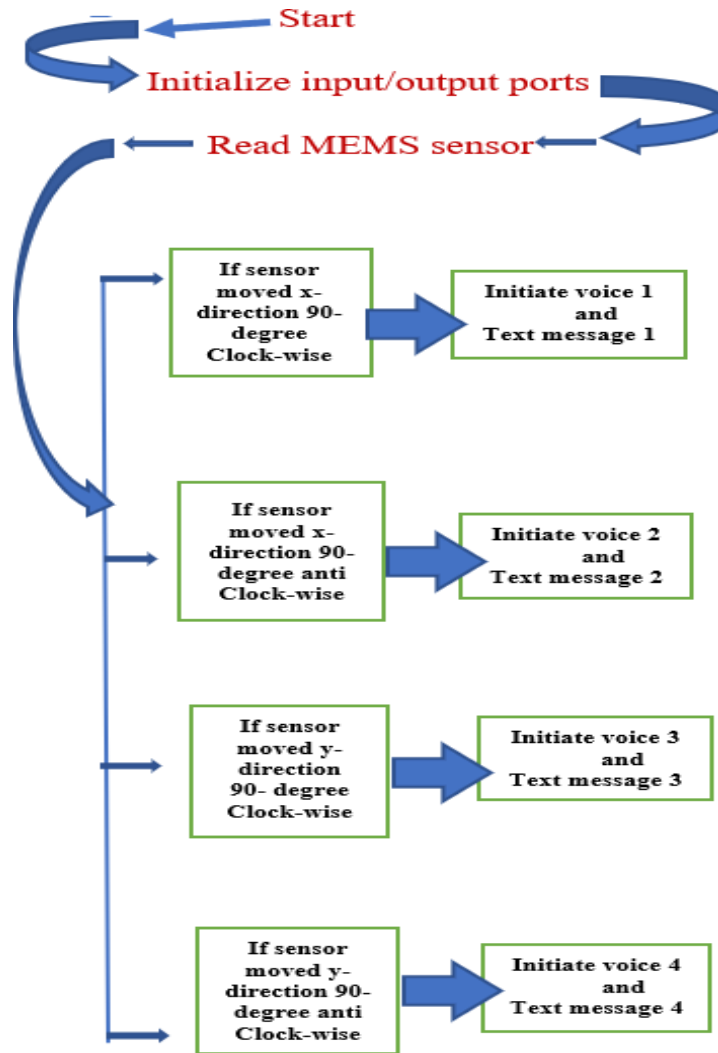


Figure 2: Flow Chart

### Algorithm

**Step 1:** Start the program

**Step 2:** Initialize the inputs

**Step 3:** MEMS read the information

**Step 4:** If sensor moved 90 degrees clock wise direction moves forward direction otherwise go to next iteration

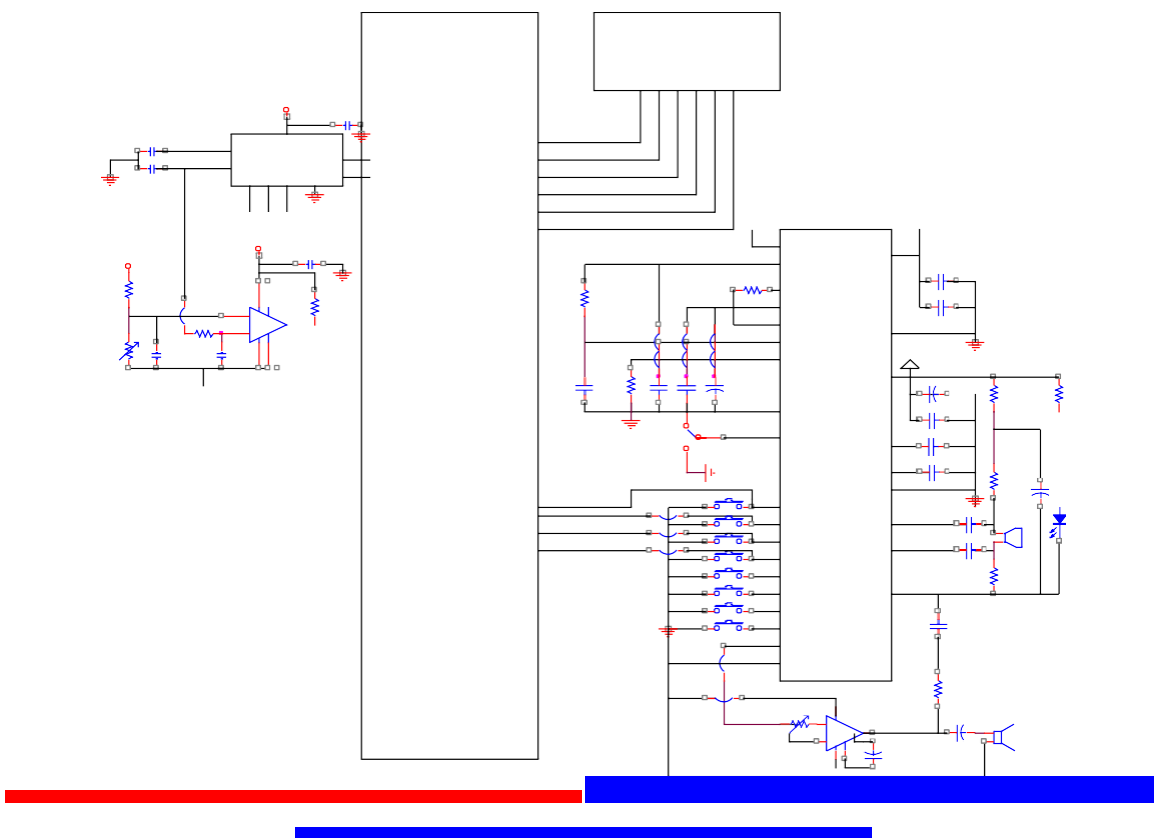
**Step 5:** If sensor moved 90 degrees anti clock wise direction moves downwards direction otherwise go to next iteration

**Step 6:** If sensor moved 90 degrees clock wise direction moves upward direction otherwise go to next iteration

**Step 7:** If sensor moved 90 degrees anti clock wise direction down ward direction otherwise go to next iteration

### Implementation

In this we are connected a wire to the Arduino which is attached with the mems sensor and that mems sensor is connected through the resistors of forty-seven Kilo ohms are used. The difference in the resistance of mems sensor known by resistors with the hand motion. The value of the resistors gets changed when the sensor bends. We have used a voice module or speaker in which the sound gets out or detected when a person gives a sign and this can be a connection with Arduino. The speaker will give the sound as before the sign is translated. A person may be alone in some situations like any needs so that he/she can make a sign which is particular with the other person can understand. In case of persons are alone in any situations the sensors are inserted on it that makes them to provide their needs.



**Figure 3:** Schematic view

## Components and Figures

### ARDUINO UNO

This Arduino uno contain 14 digital input pins and output pins and also contains 6 analog inputs pins. It is opensource micro controller.



**Figure 4: ARDUINO UNO**

### MEMS SENSOR:

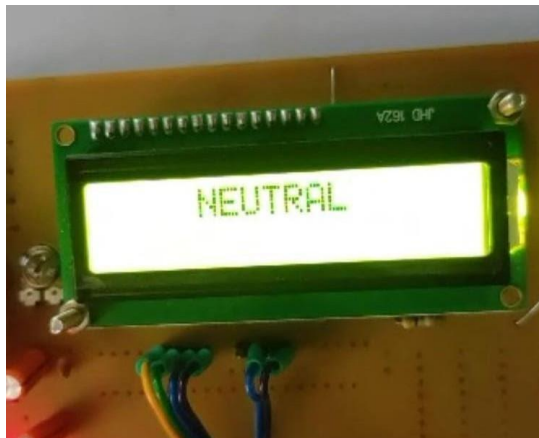
The MEMS (Micro Electro Mechanical System) which consists of a 3 axis which gives output based on three axis movement. This sensor records the physical gestures and the given message is displayed on plane display and the voice comes out of speaker. When any movement is occurs the MEMS sensor gives the output value.



**Figure 5: MEMS SENSOR**

### LIQUID CRYSTAL DISPLAY(LCD):

Plane display or liquid crystal display.This is commonly used in tv's and monitor. This uses a back light or reflector instead of emitting light directly. Here this plane display is used to show the messages.The LCDs have long life and a good operating temperature range.



**Figure 6: LCD**

### **VOICE MODULE:**

In voice module we record voice by keeping it in record mode. The recorded voice is played by keeping it in play mode. It contains four buttons in that we can store voice. The device is ideal for use in portable voice recorders, toys. And many other consumer and industrial applications. The signal is made to the speaker. The message record will continue until message pin released or full of this message, and the chip will playback "beep" tone 2 times to indicate the message record finished. If the message already exist and user record again, the old one's message will be replaced.

### **STEP DOWN TRANSFORMER:**

It is a type of transformer which converts high voltage to low voltage and also converts low current to high current.



**Figure 7:STEP DOWN TRANSFORMER**

### **HAND GLOVE:**

This is the hand glove used in this project. Different type of hand gloves are available outside. We can use according to our comfort.



### **VOLTAGE REGULATOR**

**Figure 8: HAND GLOVE**

A voltage controller may be a circuit that makes and keeps up a settled yield voltage, independent of changes to the input voltage or stack conditions. Voltage controllers (VRs) keep the voltages from a control supply inside a extend that's congruous with the other electrical components.

### **Future scope**

The project is designed only in English language. The main goal for future project is to include many of the local languages to shorten the difficulties.



**Figure 9: Hardware Setup**

## Conclusion

We conclude communication has become easier between deaf and dumb with all people. Many difficulties have been faced by us during preparation of the project. Challenges faced by deaf and dumb people have been reduced. The working of “AUTOMATIC TEXT AND SPEECH SYNTHESIZER USING HANDGLOVE FOR DISABLED AND MUTE PEOPLE” is fine. While Designing same as while constructing, greater care has been taken up to final stage. And while selecting the components we keep in mind about cost also. And also we developed the concept by innovating new things like lcd and speaker. And we have go through a large no of book to know about the data of the components. Finally this project makes us satisfy because it may be useful to the people who are physically disabled. And finally We conclude communication has become easier between deaf and dumb with all people. Many difficulties have been faced by us during preparation of the project. Challenges faced by deaf and dumb people have been reduced.

## References

- [1] Giancarlo Oregon, Antonio Legate, Giovanni Sago “ Bend Sensor Modeling for fast Signal Recovering in human Motion Analysis”, Published in Third International Conference on Sensor Device Technologies and Application, 2012.
- [2] Nisha Advani, Sayali Bora, Apeksha Bhat and Shubhangi Yerolkar, "A Survey on Communication Gap between Hearing and Speech Impaired Persons and Normal Persons", International Journal of Computer Science and Network (IJCSN), vol. 2, no. 6, pp. 32-36, December 2013.
- [3] Sayed Faiz Ahmed, Sayed Muhammad Baber Ali, Sh. Saqib Munawwar Qureshi, “Electronic Speaking Glove for Speechless Patients”, Faculty of Engineering Science and Technology Hamdard university of Information Technology, Hamdard University, Karachi, Pakistan, 2010 IEEE
- [4] Solanki Kumar, “Indian Sign Language using Flex sensor Glove” International Journal of Engineering Trends and Technology (IJETT)- vol.4, n0.6 June 2013.
- [5] Priyanka Lokhande , Riya Prajapati and Sandeep Pansare, "Data Gloves for Sign Language Recognition System", International Journal of Computer Applications (0975 – 8887) National Conference on Emerging Trends in Advanced Communication Technologies (NCETACT-2015),pp.11-15,2015.