

# Enabling Alternative Strategies for Populace with Speech Impairment

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**ABSTRACT** -For those who are deaf or mute, sign language is their primary form of communication. If a normal person wants to communicate with a silent or speech-impaired individual, they must either learn sign language or hire an interpreter. This mobile application is a complex system created to improve communication between the communities of the deaf and hard of hearing as well as between them and the general populace. There are modules in this smartphone application that teach sign language to users. A different approach to communication based on gestures is presented: a gesture vocalizer powered by Arduino and sensors. Application entails teaching people various word- and sentence-level methods. They might increase their confidence by attempting the test once the training period is over. Nevertheless, once their confidence is constructed, kids will be able to use the app to begin learning other languages. Last but not least, if they are unable to manage speaking, they can choose an alternative approach by utilising the glove. The signs are converted to text, image, and audio output once the glove has been enabled with a gesture movement. Making visual aids for the provided text is a part of the last stage.

## I. INTRODUCTION

Every human being needs communication as their primary means of thought and opinion expression. Therefore, it became extremely difficult for the illiterate and those with speech disability to communicate their ideas. Our plan is to create a smartphone application that uses various gesture tutorials to instruct and train persons with speech impairments. In this application, we offer a single solution to three issues. We concentrate on providing the people with instructional training, boosting their self-confidence by having them take

various tests, and helping them to learn new languages. In addition to this, we also provide them the choice of utilising a smart glove, which enables the person on the other end to correctly understand what they are attempting to say. Its modules is listed as follows :

- Training phase
- Testing Confidence
- Learning New Language
- Smart Glove based gesture
- Generating Visual boards

## II. BACKGROUND STUDY

**M.S.Kasar, AnvitaDeshmukh, Akshada Gavande Priyanka Ghadage, (2016)** For persons who have trouble speaking, software has been created that enables them to converse with others more effortlessly. In addition to this, we also provide them the choice of utilising a smart glove, which enables the person on the other end to correctly understand what they are attempting to say.

**Sudarshana Chakma, Sushith Rai S, Sushmita Pal, Uzma Sulthana K, H S Kala (2019)** We employed the fuzzy logic algorithm in this paper. To build fuzzy logic systems for various purposes, this library offers a set of tools and functions. It can be applied to a variety of tasks, such as decision-making, pattern identification, and control systems.

**Aastha Nagpal, K. Singha, Rakshita Gouri, Aqusa Noor, A. Bagwari (2020)** We utilised an Arduino Mega 2560 for this paper. It is a board for a microcontroller that uses the ATmega2560 (datasheet). It contains 16 analogue inputs, 4 hardware serial ports (UARTs), a 16 MHz crystal oscillator, 54 digital input/output pins (14 of which can be utilised as PWM outputs), a USB connector, a power jack, an ICSP header, and a reset

button. It comes with everything needed to support the microcontroller; to get started, just plug in a USB cable, an AC-to-DC adapter, or a battery. The majority of shields made for the Arduino Duemilanove or Diecimila are compatible with the Mega.

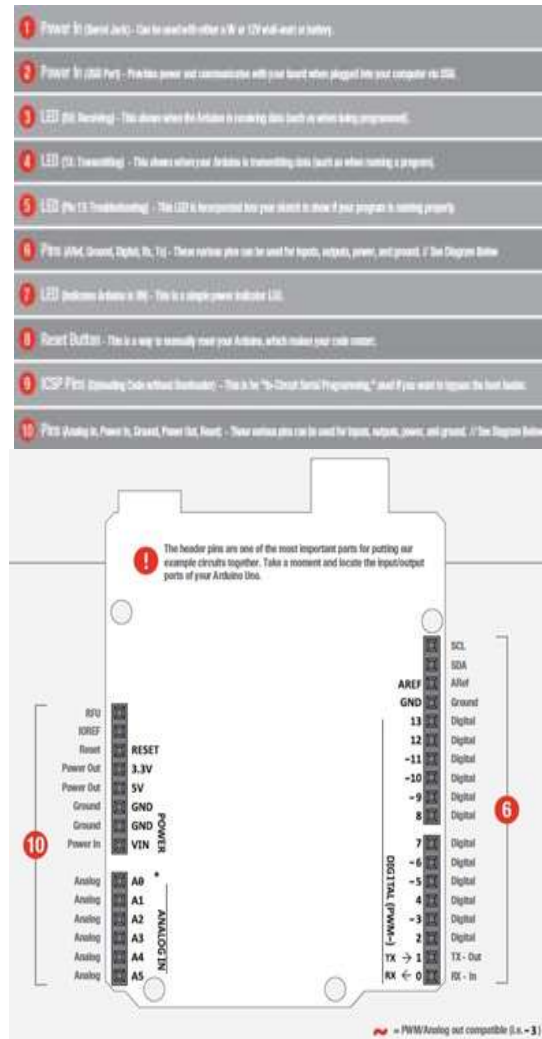
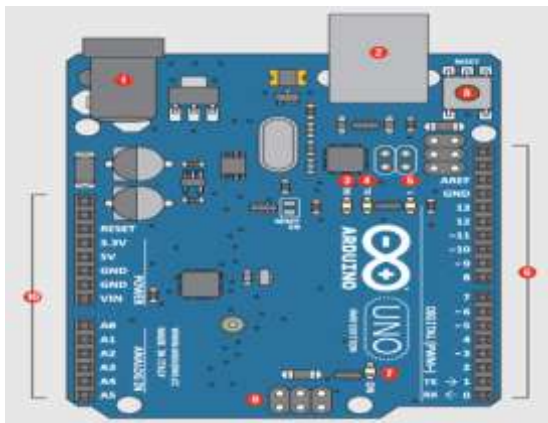
**D. Bajpai, U. Porov, G. Srivastav and N. Sachan, (2015)** Mutual authentication and a "new cypher algorithm" are used by the SD Card security system to guard against unauthorised access to the card's contents. There is also a non-secured access to the user's own stuff. This is built on a sophisticated, low voltage-operating nine-pin interface (Clock, Command, 4xData, and 3xPowerlines).

### III. MODULE DESCRIPTION

#### Arduino UNO



An easier way to incorporate electronics into cross-disciplinary projects is with Arduino, a single-board microcontroller. The hardware comprises of a straightforward open-source hardware board built on an Atmel 32-bit ARM or 8-bit AVR microprocessor. The software consists of a boot loader that runs on the microcontroller and a compiler for a common programming language.



**BREADBOARD :** A breadboard is used to create circuits and connect different sensors and actuators to the Arduino board.

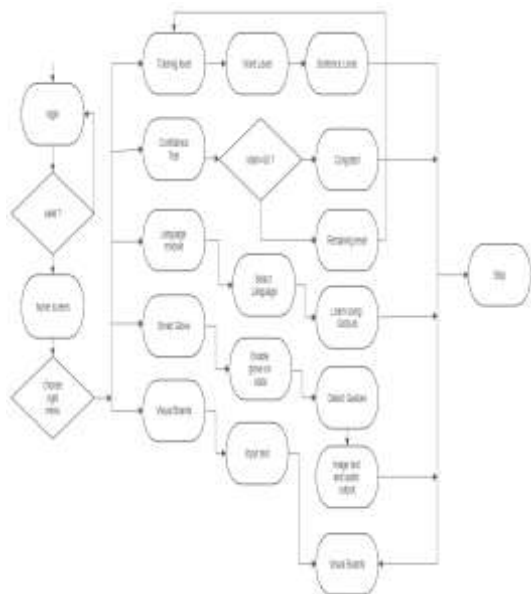


different instruction should be utilised.

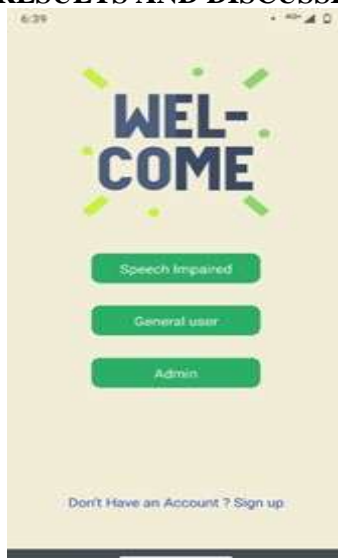
#### IV.METHODOLOGY

##### PROPOSED SYSTEM

Every person requires communication as a foundation to express how they feel and what they want, as well as their ideas and views. But, speaking their thoughts is challenging for those with speech difficulty. Thus, we suggest a Smart Education application with a hand glove to train them and give them the self-esteem and confidence they need to overcome this problem and freely speak with other people. With the use of various gestures, this programme teaches persons with disabilities to communicate freely.



#### V.RESULTS AND DISCUSSION



## VI. CONCLUSION

- When we think of dumb individuals, we think of those who are unable to convey their emotions through speech. They communicate through sign languages. Our idea is to use latest technology to translate those sign languages and provide audio output in the mobile device and the smart education application along with hand glove will train the people and helps them to communicate easily.
- If they are illiterates, they will be unable to comprehend the text. As a result, pictures would aid people in comprehending information clearly. This is also an e-learning platform for mute people.

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