

SVI Vasireddy Vidyasagar  
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## ECE DEPARTMENT VISION & MISSION:

### VISION:



To produce globally competitive engineering graduates through high quality education, to instil high standards of ethics and professionalism, and to bring out quality research in the frontier

Areas of Electronics & Communication Engineering.

### MISSION:



To impart high quality technical education to all students:

- To become active life-long learners with the necessary skills, competencies, and ethical values.
- To develop human resources with skills of creativity and research.
- To inculcate value-based, socially committed professionalism to the cause of overall development of students and society.

## NEWS & EVENTS

- Dr. K. Giri Babu, Professor and Dean of studies, secured a grant of Rs. Ten Lakh fifty thousand under AICTE MODROB scheme.
- Department of ECE started GATE 2021 video lectures by Expert faculty of ECE from Jan 2020.
- Department of ECE taken new initiation and started publishing TECHNO VOICE (a daily Technical letter) from 8-1-2020.
- ECE came up with another new initiation "VOICE Colloquium" from 31-1-2020.
- Two faculty members from VVIT attended AICTE MHRD IIC Innovation ambassador training series at MLR institute of technology, Hyderabad in Feb 2020.

## Faculty Achievements

1. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) “Tumor Segmentation by a Self-Organizing-Map based Active Contour Model (SOMACM) from the Brain MRIs” Journal Paper accepted for publication in IETE Journal of Research (Taylor & Francis), SCIE (SCI Journal), Impact Factor: 0.793, ISSN 0377-2063, June 2020.
  2. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) “Differential diagnosis of Interstitial Lung Diseases using Deep Learning networks” Journal Paper accepted for publication in Journal of The Imaging Science Journal (Taylor & Francis), SCIE (SCI Journal), Impact Factor: 0.846. ISSN 1368-2199, June 2020.
  3. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) “MR Brain Image Segmentation to detect White Matter, Gray Matter, and Cerebro Spinal Fluid using TLBO algorithm” Journal Paper accepted for publication in Journal of International Journal of Image and Graphics (SCOPUS, Web of Science).
  4. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) published a Journal paper “Segmentation of Magnetic Resonance Brain Images Using the Advanced Ant Colony Optimization Technique” in Journal of Biomimetic, Biomaterials and Biomedical Engineering, (Scopus Indexed), Vol.44, ISSN 2296-9845, February 2020.
  5. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) published a Journal paper “False Positive Reduction in Lung Nodule Detection using Patch based Convolution Neural Networks” in International Journal of Future Generation Communication and Networking, Vol.13, Issue 3, ISSN 2233-7857, 2020.
  6. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) published a Journal paper “Image Classification with MNIST data set using Convolutional Neural Network” in International Journal of Future Generation Communication and Networking, Vol.13, Issue 3, ISSN 2233-7857, 2020.
  7. Dr. K. Giri Babu (Professor & Dean of Studies, ECE) published a Journal paper “Blood Vessel Segmentation in Retinal Images Using Convolutional Neural Networks” in International Journal of Future Generation Communication and Networking, Vol.13, Issue 3, ISSN 2233-7857, 2020.
  8. Dr. Sk. Enaul Haq (Associate Professor, ECE) published a Journal paper “All optical OR/XOR logic gates using PhC based T-shaped waveguide with high contrast output to implement 3-bit binary to gray code converter” in Photonic Network Communications (SCI), vol. 31, Issue 1, ISSN 1572-8188, 2020.
- VVIT Organized Guest Lecture on “Advances in Image and Video processing” by Dr. M. Ratna Babu, Professor, SACET on 1-2-2020.
  - ECE Department in Association with IEEE student chapter organized Mini Project Expo on 6-3-2020.
  - CSE, EEE and ME Departments Re-Accredited by NBA up to 2023.
  - In Covid -19 pandemic time ECE department came up with 50 issues of VIOCE -HOME (Healing Ourselves and Mother Earth) from 25-3-2020.
  - Organized outcome based 3-Day online workshop on “Applications of Basic python and libraries” from 18-5-2020 to 20-5-2020.
  - ECE in association with EEE Dept. organised outcome Based 3-Day online workshop on “IOT- The world of opportunities” on May 2020.

9. Mr. SK Riyazuddin (Associate Professor, ECE) published a Journal paper “Load Balancing by Diversified Quality Factors based Handoff (DQFH) in Wireless Cellular Networks” in International Journal of Communication systems (IJCS), SCIE Indexed, Wiley Publishers, ISSN: 1099-113, Vol.05, Issue.12,2020.
10. Mr. SK Riyazuddin (Associate Professor, ECE) published a Journal paper “Optimal Load Balancing by Adaptive Data Transmission through Time Vary Scheduling in Wireless Cellular Networks” in International Journal of Test Engineering and Management (TEM), Scopus Indexed, ISSN: 0193-4120, 2020.
11. Mr. SK Riyazuddin (Associate Professor, ECE) published a Journal paper “Poised Scheduling of Flash Crowd Cellular Traffic in LTE and LTE-A for Optimal Load Balancing” in journal of International Journal of Advanced Science and Technology (IJAST), ISSN: 2005-4238.
12. Mr. K.Vasu Babu (Associate Professor, ECE) published a Journal paper “An octagonal star shaped flexible UWB antenna with band-notched characteristics for WLAN applications” in Journal of Instrumentation (SCI), VOL. 15.
13. Mr. K.Vasu Babu (Associate Professor, ECE) published a Journal paper “Design and performance analysis of tri-band wang shaped MIMO Antenna” in BJIT- International Journal of Information Technology, (Springer-SCOPUS Indexed) , VOL. 45.

## Student Achievements

1. R. Mohan Mani Kanta, M V Chaitanya, K M Ganga Prabath, K Teja of third ECE secured First prize in project Expo 2020 at VVIT.
2. M. Lakshman, M. Sai Krishna, M. Srikanth, M. Rama Krishna of second ECE secured first prize in Project Expo 2020 at VVIT.
3. AV Pavan Kalyan, C Veerabhadhrudu, Ch H S L Narayana, G Pavan Kumar of third ECE secured Consolation prize in Project Expo 2020 at VVIT.
4. Three students of ECE secured participation in ‘Anveshana’ Science and Engineering fair at Hyderabad on Feb 2020.
5. M. Sai Prakash of Final ECE Represented VVIT and Judo Team of JNTUK in All India Inter-University National Championship at Chatrapathi Shahuji Maharaj University, Kanpur.

## Student Contribution

1. 10 Issues of VOICE HOME published by Student editors, ECE from 4-5-2020 to 12-5-2020.
2. UIF students and volunteers organized UIF Regional meet at VVIT Campus on Feb 2020.

- One-week Online FDP on “Recent Trends and research areas in applied VLSI and Advanced communications” organized by ECE from 8-6-2020 to 12-6-2020.
- A Two-day online workshop for lab technicians on “Understanding Arduino with real time projects” organized by the research centre department of ECE on 22 and 23 June 2020.
- 15 students of VVIT placed in Sutherland.
- 21 students of ECE placed in DXC Technologies pooled campus drive.
- VVIT Got grade AA from SWAYAM-NPTEL, IIT Madras.
- R.Nivas, IV ECE selected as an Intern and communications team lead at “Wiki Conference India”
- VVIT tie-up with Coursera L4G and provided free access to online professional development programs to staff and students.
- J. Lakshmi Narasimha Reddy, II ECE Attended Wikimedia “Train the Trainer” workshop at Mumbai.

## SPEAKING SYSTEM FOR APHONIC PEOPLE USING HAND SIGNS

It's very difficult for mute people to convey their message to regular people. Since regular people are not trained on hand sign language, the communication becomes very difficult. In emergency or other times when a mute person travelling or among new people communication with nearby people or conveying a message becomes very difficult. Here proposed a smart speaking system that help mute people in conveying their message to regular people using hand motions and gestures. The system makes use of a hand motion reading system equipped with motion and flex sensors along with a speaker unit. This system is powered by a battery powered circuitry to run it. An Arduino is used for processing the data and operating the system. The system consists of around 10 stored messages like "need help", "where is the toilet/washroom" and so on that help mute people convey basic messages. The system reads persons hand motions for different variations of hand movement. It also consists of a trigger sensor in order to in date that the person wishes to activate the system and speak something. This ensures the system does not speak when the person is just involuntarily making hand motions. The Arduino processor constantly receives input sensor values and then processes it. Now it searches for matching messages for the set of sensor values. Once it is found in memory this message is retrieved and is spoken out using text to speech processing through the interfaced speaker. Thus, we have a fully functional smart speaking system to help mute people communicate with regular people using a simple wearable system.

An IOT based speaking system for aphonic people by using Indo American sign language. 'Gesture' as key thing in this project. Sensors in the glove pick up gestures and are processed in ARDUINO NANO R3 board. The TALKIE library is used to convert the text to speech.



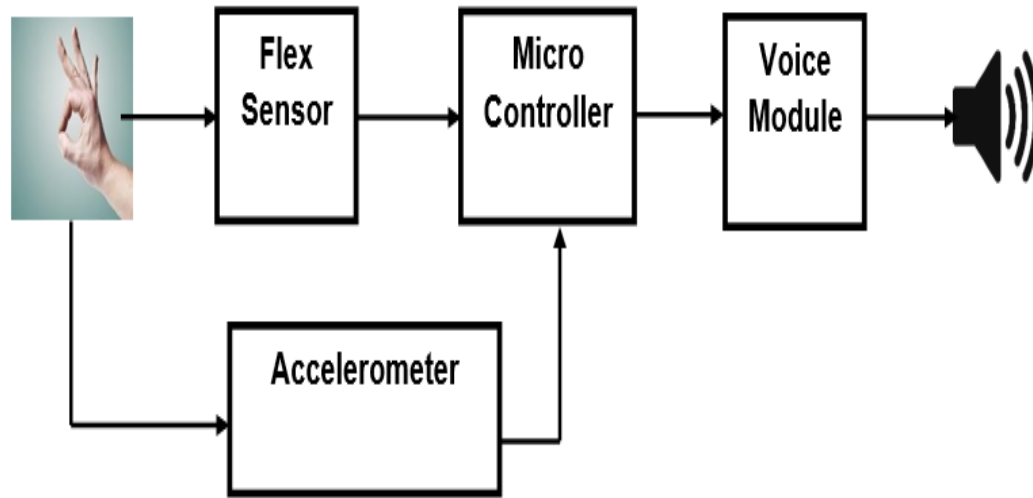


## Hardware Requirements

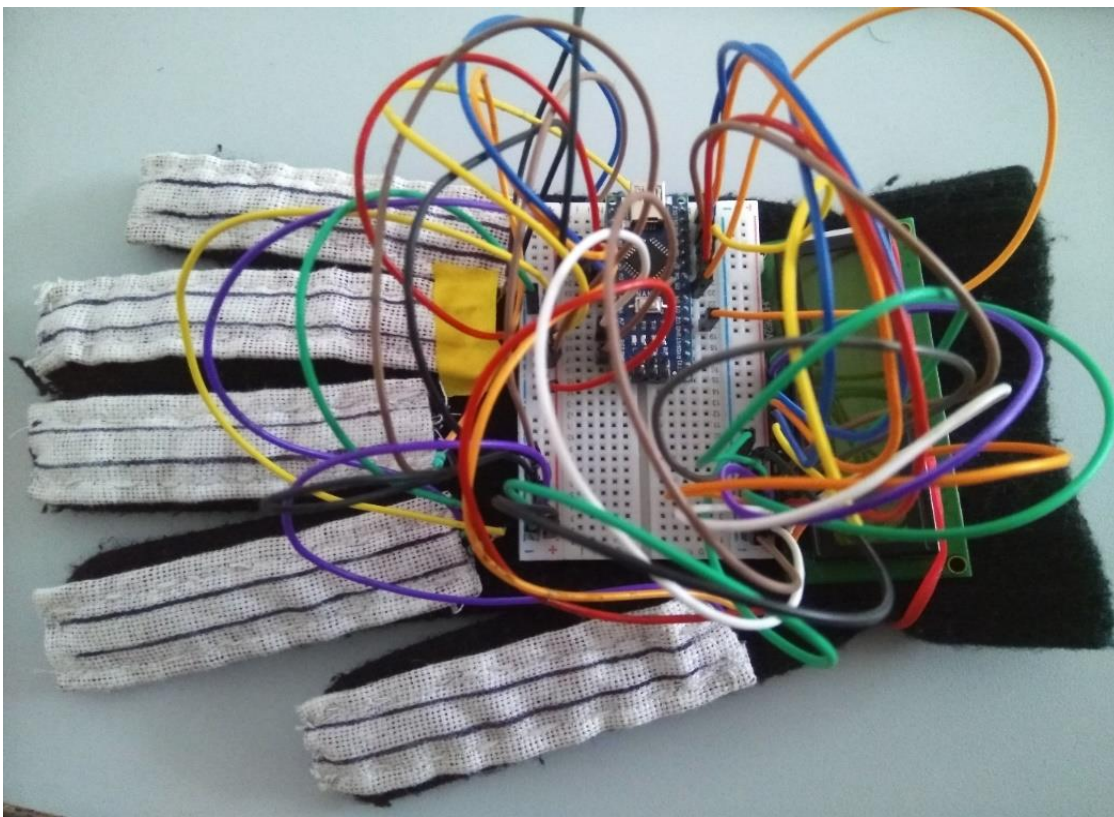
- AURDINO nano r3, Flex Sensor, LCD Display, Gloves, Speaker, Resistors

## Software Requirements

- MC programming language: Aurdino IDE



*Block diagram of proposed sensor based system*



**Fig: Hardware Implementation**

**FLEX SENSOR:** A simple **flex sensor** 4.5" in length. As the **sensor** is flexed, the resistance across the **sensor** increases. By combining the **flex sensor** with a static resistor to create a voltage divider, you can produce a variable voltage that can be read by a microcontroller's analog-to-digital converter.



**Fig: FLEX SENSOR**

**Arduino NANO Version 3** is the open source smallest Embedded Development board launched by Arduino based on Atmega328 SMD Package Microcontroller. It is a Surface mount Breadboard Friendly board integrated with Mini USB Port. DC Power Jack is not available on this Board, so power can be given through Mini USB Cable. It automatically senses and switch to the higher potential source of power, there is no need for the power select jumper.



**Fig: Arduino Nano**

**LM386 Amplifier Board:** This board acts as a small Mic and loud speaker system which amplifies the output from the Arduino board to an understandable voice. It removes the noise from the output voices. It gives us loud and clear voice without any interrupting signals.



**Fig: In built LM386 Amplifier Board**

**TALKIE LIBRARY:** It is a software implementation of the Texas Instruments speech synthesis architecture (Linear Predictive Coding) from the late 1970s / early 1980s, as used on several popular applications:

- ❖ Texas Instruments TI-99/4A Speech System expansion
- ❖ Atari arcade games (eg. Star Wars series, Indiana Jones, Gauntlet)
- ❖ Talkie comes with over 1000 words of speech data that can be included in your projects. Most words only take a fraction of a KB, so you can add plenty.
- ❖ Vocab\_UK\_Acorn - a male UK English voice. 165 words related to home computing. 16K bytes in total. Data originally part of Acorn Computers Speech Synthesiser, and famously voiced by BBC's Kenneth Kendall.
- ❖ Talkie sets up a special very high speed PWM, so audio can be taken directly from pin 3 with no other filtering. Note that Talkie uses Timers 1 and 2 for this purpose, which may conflict with PWM outputs or other libraries.

## EXPERIMENTAL SET UP WITH RESULTS

This project contains three different modes like Mode 1,2 & 3.

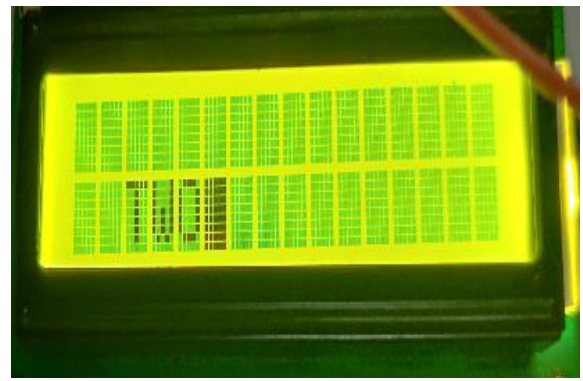
- When Mode 1 is activated and give the particular hand sign of a number it displays and spells that particular number.
- When Mode 2 is activated and give the particular hand sign of an alphabet it displays and spells that particular alphabet.
- When Mode 3 is activated and give the particular hand sign of an emergency words it displays and spells it.

**Mode 1:** In this mode digital pin 4 acts as input and if it is given to the digital pin 5 then the loop enters into the number section in the program. For numbers there are 9 different hand signatures.





**Symbol**

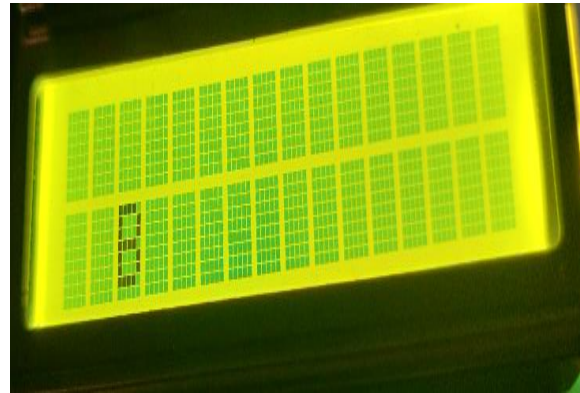


**Output**

**Mode 2:** In this mode digital pin 4 acts as input and if it is given to the digital pin 6 then the loop enters into the alphabet section in the program. For alphabets there are 26 different hand signatures.



**Symbol**

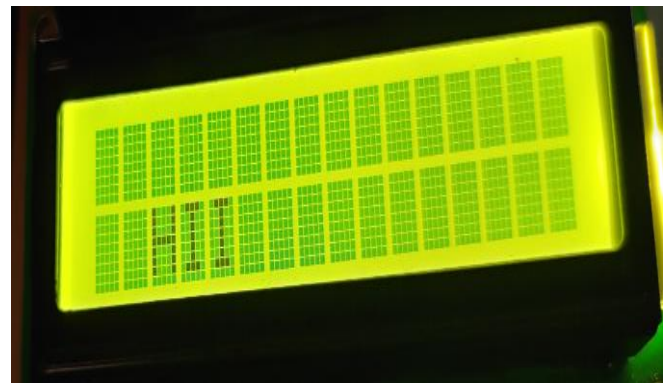


**Output**

**Mode 3:** In this mode digital pin 4 acts as input and if it is given to the digital pin 7 then the loop enters into the Emergency words section in the program. For emergency words there are minimal different hand signatures.



**Symbol**



**Output**

**Conclusion:** The prototype of speaking system for Aphonic people using hand signatures in American Sign language which is common throughout the planet. It is more reliable, versatile, less expensive, easy to use and portable. This will be most helpful to the special persons in the society who lost their trust towards others can be rebuilt in them. During this experiment we faced many problems that we would like to improve using the current technologies like wireless transmissions or through mobile applications. If we include the current technologies then the circuit is complicated and expensive. So, we would like to propose this prototype with a minimum cost, just by including talkie and TTS library into the software which solves the communication problems between normal and special persons.