REAL TIME COMMUNICATION SYSTEM POWERED BY AI FOR SPECIALLY ABLED

SUBMITTED BY

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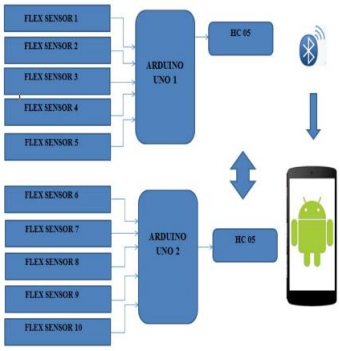
LITERATURE SURVEY

SL NO	BLOCK DIAGRAM	ALGORITHM / METHODOLOGY/ SOLUTION	OUTPUT	FEATURES	DRAWBACKS
1	 Fig. 1. Block diagram of Proposed System	There are two main category of gesture recognition system. Vision based System and Sensor based System. Vision based system consist of a camera which is used to capture the image or video of sign gestures and this captured image or video is sent to image processing unit. Through image processing technique, captured content is processed and features are extracted and trained using static images. By using various image recognition algorithms the corresponding sign gestures are recognized. sensor based system is used to recognize Indian Sign language and convert it into speech and text in English and Malayalam language and display it on Android phone.	 Fig. 8. Gesture O recognized TABLE I VOLTAGE READING CORRESPONDS TO LETTER OR WORD 	Letter or Word	Thumb Value	Index Value	Middle Value	Ring Value	Pinky Value
C	3	3.17	3.05	>4	3.35
I	3.24	3.32	3.10	3.79	<3
O	3.14	3.18	3	>4	3.38
V	3.24	<3	<3	3.8	3.39
L	<3	<3	3.11	>4	3.4
ALL THE BEST	<3	3.31	3.10	3.82	3.39	 TABLE II VOLTAGE READING OF HAND GESTURE MADE BY TWO HANDS 	Letters	A	B
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Left Thumb Value	3.01	3.14
Left Index Value	3.29	3.18
Left Middle Value	3.11	3
Left Ring Value	>4	>4
Left Pinky Value	3.35	3.38
Left Thumb Value	<3	3.02
Right Index Value	3.2	3.01
Right Middle Value	3.2	3
Right Ring Value	3.5	3.5
Right Pinky Value	3.38	3.30 | TABLE III PERFORMANCE EVALUATION OF HAND GESTURE RECOGNITION SYSTE |	1	2	3	4	5	6	7	8	9	10	Accuracy (%)
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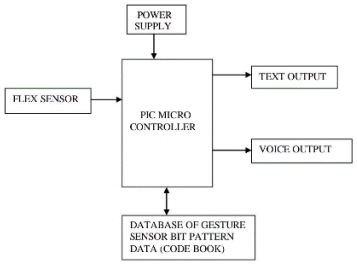
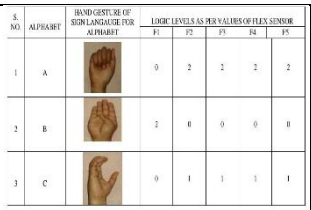
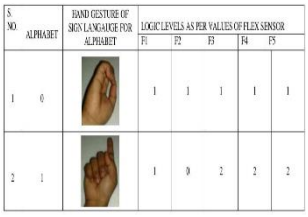
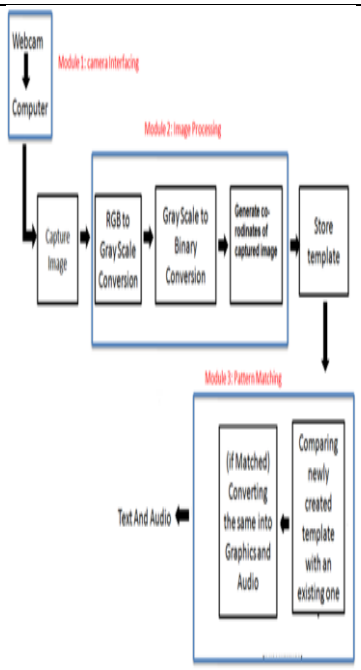
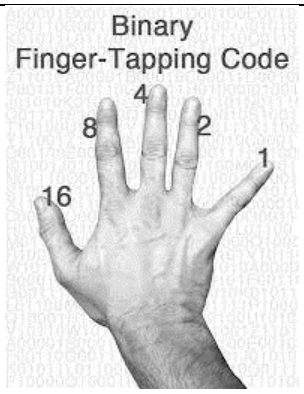
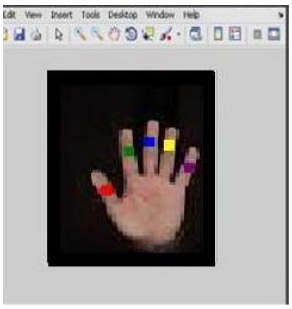
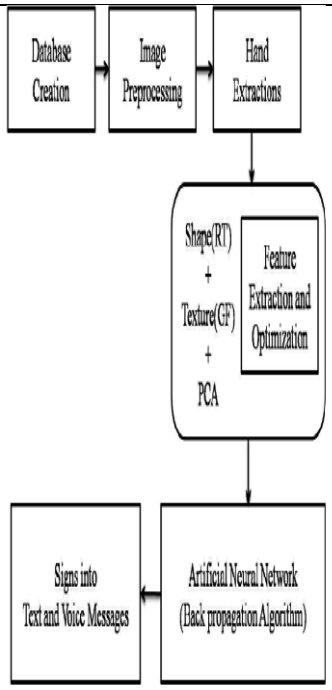
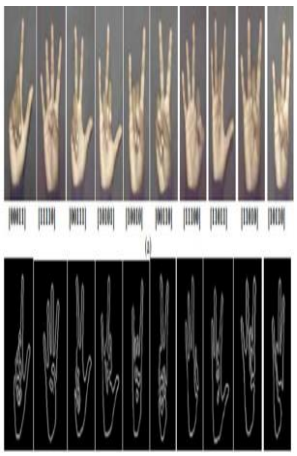
A	✓	✓	✓	✓	X	✓	X	X	✓	✓	70
B	✓	✓	X	✓	✓	✓	X	✓	✓	✓	80
C	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	90
I	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100
L	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100
O	✓	X	X	✓	✓	✓	✓	✓	✓	✓	80
V	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100
ALL THE BEST	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	100		1.It convert Sign language with the help of Flex sensor, microcontroller and display it on Android phone using Bluetooth module HC 05. 2.It shows the recognition of alphabets in both Serial monitor of Arduino IDE and Android phone when it is gestured by user. 3.It calculates the voltage reading corresponds to each Flex sensor and then modify it in the code. It is based on Indian Sign Language.	The gloves are cost effective and able to translate sign gesture into text in English and Malayalam language only. This work cannot be extended to converts sign language to text and speech in other Indian Languages like Hindi, Tamil.

2		First,The technological requirements and limitations for using hand postures and gestures are described by discussing both glove-based and vision-based recognition systems .Second,The various types of techniques used in recognizing hand postures and gestures are compared and contrasted. Third, the applications that have used hand posture and gesture interfaces are examined. Then it will help the deaf person to communicate with others by typing text on LCD screen through hand gestures. The design aims to produce a product to perform vibrations in six position of blind's person right hand. The text is converted into speech so that the blind person could hear and communicate. This technique can be used in various languages like Bengali, Hindi, Tamil, French, etc.	 Hand gesture of sign language for alphabet A,B & C with Logic Levels as per values of Flex Sensor.  Hand gesture of sign language for Number 0 and 1 with Logic Levels as per values of Flex Sensor	1.Angle Displacement Measurement 2.Bends and Flexes physically with motion device 3.Simple Construction 4.Temperature Range: -35°C to +80°C 5. Resistance Tolerance: ±30% 6.Possible uses - Robotics - Medical Devices	American sign language alone is used. It is not used for to communicate in mother tongue and also it can't able to show the other signs than alphabets and numbers.

3		The system consists of 4 modules. Image is captured through the webcam. The camera is mounted on top of system facing towards the wall with neutral background. Firstly, the captured Colored image is converted into the gray scale image which intern converted into the binary form. Coordinates of captured image is calculated with respect to X and Y coordinates. The calculated coordinates are then stored into the database in the form of template. The templates of newly created coordinates are compared with the existing one. If comparison leads to success then the same will be converted into audio and textual form. The system works in two different mode i.e. training mode and operational mode. Training mode is part of machine learning where we are training our system to accomplish the task for which it is implemented i.e. Alphabet Recognition.	  	1. It uses binary sign language . 2.It uses colors to distinguish the binary coordinates 3. It converts color images to binary code 4. It uses image processing technique to map the coordinates.	Not everyone knows the binary code system , therefore we need to find a language which is universally used and easy to implement.

4		The hand gesture recognition system consists of three major parts: palm detection, hand tracking, and trajectory recognition. It provides an overview of the hand gesture recognition process. The hand tracking function is enabled when the device senses an open hand in front of the camera; when the user finishes the gesture, the hand gesture classification based on HMM is disabled. The basic algorithmic structure for our process of recognition is the following: - - Detect the palm from the video and initialize the tracker with the template of hand shape. -Track the hand motion using a contour-based tracker and record the trajectory of the palm center. - Classify the gesture using HMM, which gives the maximum probability of occurrence of observation sequence.	 	1.It is essential to choose the right strategy; Machine-learning techniques are often used to do this. Machine learning is part of artificial intelligence (AI) 2. It describes the basic process of hand gesture recognition. - By using vision-based recognition, the computer captures the sign to find the gesture acquisition. 3. Feature extraction depends on the application. On D-talk, finger status, skin color, alignments of the finger, and the palm position are taken into consideration. 4. After features extracted, they sent to training and testing classification algorithms to reach the output.	The code is depending on skin color and contour to find the right sign. While building this system, there was only one issue. The system is very sensitive. It catches any element in the box. So, the user must be careful to have a blank background. The result was as below when the user signs a gesture, and the system will decide which sign reflect which website