Computerized Deaf, Dumb and blind communicator

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***Abstract*: One of the most precious gifts of nature to human breed is the ability to express himself by responding to the events occurring in his surroundings. Every normal human being sees, listen himself out. But there are some less fortunate ones who are deprived of this valuable gift. Such people, mainly the deaf, dumb and the blind relay on some sort of sign language for communicating their feelings to others. The deaf, dumb and the blind follows similar problems, when it's come to the use of computer. In the laptops and other processors based devices are an integral part of day to day life, efforts are requiring to be done for making the disables more independent in life. Our aim is to design a human computer interface system that can recognize language of the deaf and dumb accurately. This project intends to achieve the Real Time Communication between Deaf, Dumb and Blind. The problems that occur Deaf, dumb & blind are overcome. The communication between Deaf, Dumb has been designed to provide more comfort to disables.**

***Keywords*- ALCD, Microcontroller RENESAS RLRL78, Voice Reorganization Kit, FN-M16P MP3, Speaker, SD card, Speaker, Webcam, Matlab**

1. INTRODUCTION

This project would provide more comfort to disables. The concepts of image processing have been involved in this project for decoding the sign language used by the disables. The deaf people would understand the speech by voice recognition techniques. The voice recognition techniques are used to covert the speech to text. This text could be read by the deaf. The sign language is an important method of communication for Deaf-Dumb persons. As sign language is well Structured code gesture, each gesture has a meaning assigned to it. In the last several years there has been an increased interest among the researches in the field of sign language recognition to introduce means of interaction from human-human to human-computer interaction. Deaf and Dumb rely on sign language interpreters for communication.

2. PROPOSED SYSTEM

The propose system is able to recognize single handed gestures accurately with a single normal webcam using bare human hands and convert it into text and voice message. The system mainly includes camera, DB9 connector, speaker, microphone display. The camera is mainly used to capture the gesture from dumb. DB9 connector is used to interface controller with PC. Speaker is used to speak to out gesture input, given by deaf, dumb. Micro phone is used to give the voice data base. The voice data base viewed in the admin end of the LCD. At the output side speaker will speak out the message and LCD displays the message

3. SYSTEM IMPLEMENTATION

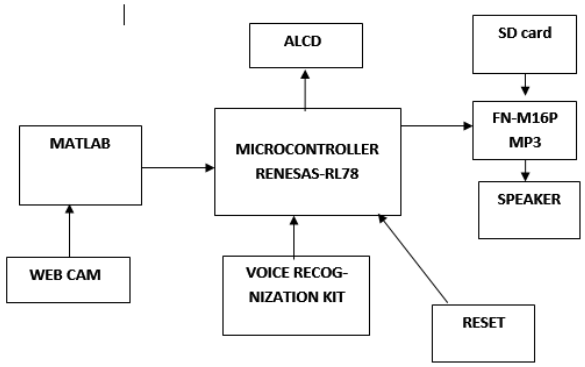

Fig 1: Block Diagram of computerized Deaf, Dumb and blind communicator

A. MICROCONTROLLER RENESAS-RL78

- General-purpose register: 8 bits 32 registers (8 bits 8 registers 4 banks)
- ROM: 512 KB, RAM: 32 KB, Data flash memory: 8 KB
- On-chip high-speed on-chip oscillator
- On-chip single-power-supply flash memory (with prohibition of block erase/writing function)
- On-chip debug function.

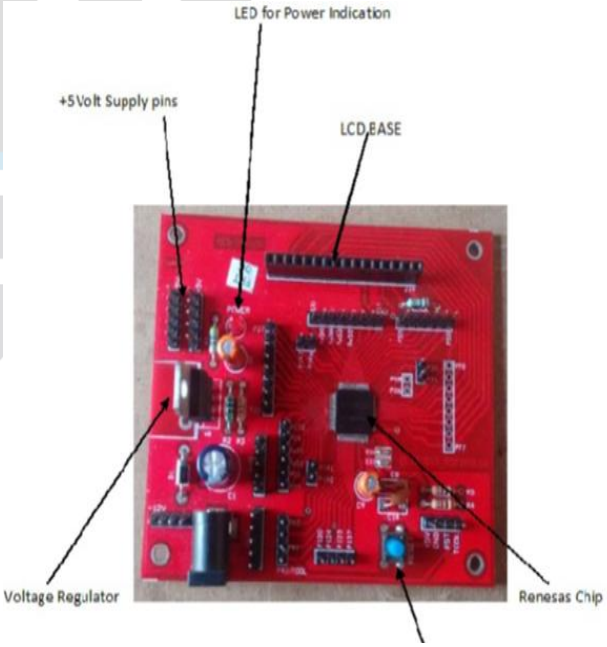

Fig 2: 64 pin RENESAS Microcontroller Board

B.ALCD

A liquid crystal display (LCD) is a flat panel display, electronic visual display, based on on Liquid Crystal Technology.

A liquid crystal display consists of an array of tiny segments (called pixels) that can be manipulated to present information. Liquid crystals do not emit light directly instead they use light modulating techniques.

C.FN-M16P EMBEDDED MP3 AUDIO MODULE

- Supports MP3 and WAV decoding.
- Supports FAT16 and FAT32 file system.
- 24-bit DAC output and supports dynamic range 90dB and SNR 85dB.
- Supports AD key control mode and UART RS232 serial control mode.
- Supports maximum 32GB micro SD card and 32GB USB flash drive.
- Audio files are sorted by folders; supports up to 99 folders, and each folder can be assigned to 255 sound files.

D.SPEAKER

A loudspeaker (or ”speaker”) is an electroacoustic transducer that produces sound in response to an electrical audio signal input. Non-electrical loudspeakers were developed as accessories to telephone systems, but electronic amplification by vacuum tube made loudspeakers more generally useful.

4.BLOCK DIAGRAM DESCRIPTION

In this project we are using the webcam connected to the PC, PC will have the MATLAB Programming running which has program to detect the hand gestures. After detecting the gestures program will send corresponding gestures ID to serial port and the micro controller will read the command and will active the speech unit called APR-9600 which has gestures command. Now the blind person can hear and will get to know what the person is telling. The blind person can speak and the MATLAB will read the command and will send ID to the same to the microcontroller which will display the commands spoken and the dumb person can see the same and get to know what the blind person has spoken. Communication like hello, hi, how are you etc.

5. RESULT

The analysis of the result is crucial and the complete output of the along with that is also important.Intialization begins with the connecting the kit to the power supply and pc through the serial com port, as soon as the lcd is activated it displays the message “real time communication between blind ,deaf and dumb”,then there comes”waiting for a command”,these messeges are shown in first as we set up our project.then we give the gesture input through webcam,the gesture which we let our finger to face is color,the color is analysed by the matlab program code in our pc.

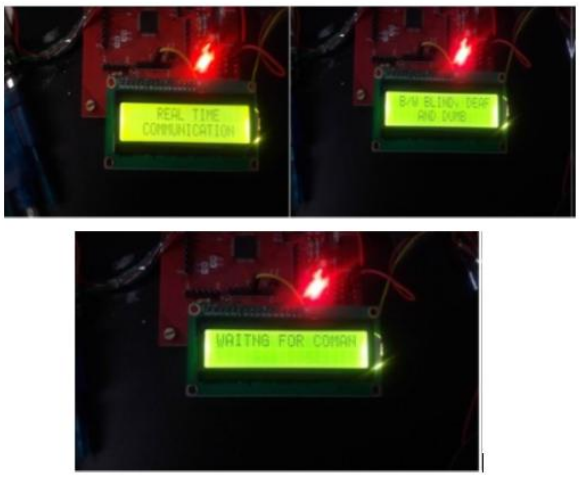

Fig 3:Gesture input

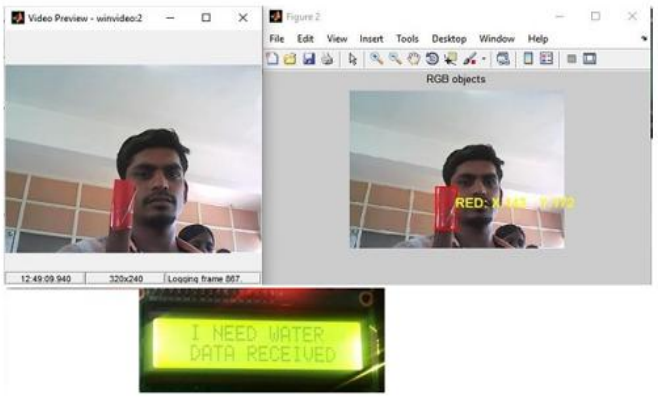

Fig 4: Gesture analysis

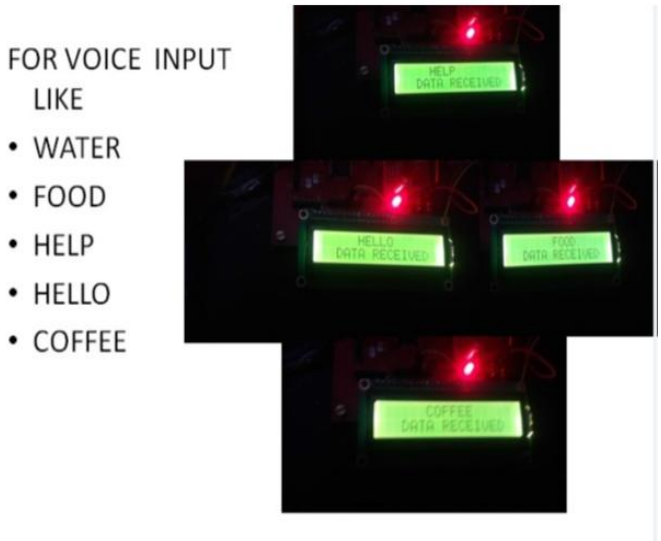

Fig 5: voice outputs on LCD

6. CONCLUSION

In this paper, we give brief summary about various methods and technique which are provided by various authors for recognition of hand gesture. Hand gesture recognition system can be used for interfacing between computer and human using hand gesture. Taking into consideration the research related to vision based hand gesture recognition an

observable progress has been made and it can be implemented as a real time application. To continue with the efficiency further research in the areas of feature extraction, classification methods and gesture representation are required to realize the ultimate goal of human's computer interface in the field of sign language recognition for physically impaired peoples.

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