

VoCoBo- Voice Control Bot

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Abstract: - This system is mainly designed to our customers such as kids, physically challenged and blind people. Our project uses voice recognition concepts to take commands from the user and based on the commands given, using its A.I. it follows the orders given by the user. Also, whilst complaining the task given by the user it automatically detects and avoid obstacles in its path. In addition to this an additional feature we have implemented is the smart weather forecast system. So, customers will get an all-round, well featured, efficient in use and kid friendly bot. This system is based on IoT technology.

Key words— A.I – Artificial Intelligence, Vocobo-Voice Control Bot, IoT-Internet of Things, ESP-Electronic stability program, EPE- Electrical and Power engineering, SPCC-Signal Processing, Computing and Control, DHT Sensor –Data Humidity and Temperature sensor.

I. INTRODUCTION

Speech recognition appears to be emerging as a new key man machine interface medium. Researchers have found that the psychological problems inherent to talking to machines are a barrier to acceptance of speech interfaces. To achieve practical continuous speech recognition, the system has to expand vocabulary by a n order of magnitude and increase speed by at least two orders of magnitudes. Natural language interfaces appears to be the way to vastly increase the number of people who can interact with the computers. For a field like robotics, this medium of communication may become very important for remote stationed and hostile environment robot operations. VoCoBo is a Voice Controlled Bot it is controlled by the Speech Controlled mode. Many sensors are incorporated in that to give users a great experience .

1.2 SPEECH RECOGNITION

For this task it was important that communication between the robot and the human be as natural as possible; that is using continuous short spoken English language sentences. Current technology is not available yet to the point when fluent speech or long sentences can be recognized with the same accuracy as isolated words or small phrases. However, if one applies certain restrictions on the types and structures of sentences, then connected speech recognition can be implemented with a good success rate.

The final action for the robot is based on the individual words. Input language commands are defined using regular grammar language modeling techniques. The model used by the recognition system evaluates only correct strings of words. Using this approach we can

increase the recognition accuracy while reduce the processing time.

The speech recognition hardware used is based on the Android hardware. This is, to a certain extent, a speaker dependent, language dependent state of the art recognizer capable of recognizing up to 256 words or short phrases. The voice activated hardware operates in recognition mode. The recognition mode is used when the user wants Android to "listen" to what the user has to say.

1.3 SPEECH RECOGNITION SOFTWARE

The speech recognition software used in this robot is VoCoBo.I developed VoCoBo app which supports for Android mobiles. The system consists of a control module for the robot it is the most important module of the software and it has a language understanding module. The speech recognition software used in this robot is VoCoBo which was developed by a team of our software experts. The system consists of a control module for the robot it is the most important module of the software and it has a language understanding module.

1.4 PROPOSED SYSTEM

The proposed system consist of an Wi-Fi module ESP 8266.Vocobo uses google's voice assistant for Speech recognition.

1.ESP-8266

The ESP-8266 is a low cost Wi-Fi microchip with full TCP/IP stack and microcontroller. The ESP-8266 is a 32 bit micro controller and its memory capacity is 32KiB instruction,80Kib user data. The power of ESP-8266 is 3.3 V DC

2. Ultrasonic Sensor:

An ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures the distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back .

3. DHT Sensor:

A humidity sensor senses ,measures and regularly reports the relative humidity in the air. It measures both moisture and air temperature.

CONTROL MODULE

The control module consists of five sub modules they are MOVE_LEFT, MOVE_RIGHT MOVE_STRAIGHT , MOVE_BACK, STOP

These are the five sub modules of the control module.

Our Vocobo can be controlled in 3 modes they are

- 1.Speech recognition mode,through google's voice assistant.
- 2Automatic Intelligence mode,through ultrasonic sensor
- 3.Manual mode,through the mobile app [VoCoBo]

LANGUAGE UNDERSTANDING MODULE

Language understanding module is taken from the voice recognition modules of Google's Voice assistant.

ROBOT CONTROL

The robot has six controls the command "START" will make the robot move and the command "STOP" stops the robot, the commands "MOVE_LEFT", "MOVE_RIGHT", "MOVE_FORWARD", "MOVE_BACK" are used to make the robot move left, right, forward , backward respectively.

1.5 RESULTS

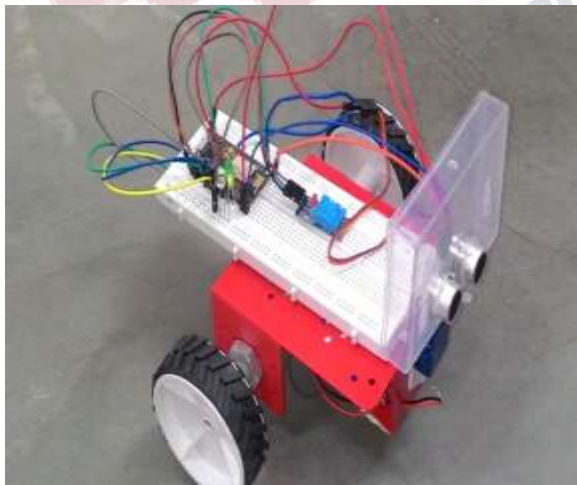


Fig 1: Working of Vocobo by using ESP-8266



Fig 2: Outlook of Vocobo



Fig 3: Logo of Vocobo software and Mobile app



Fig 4: Display page of Vocobo app to android mobiles

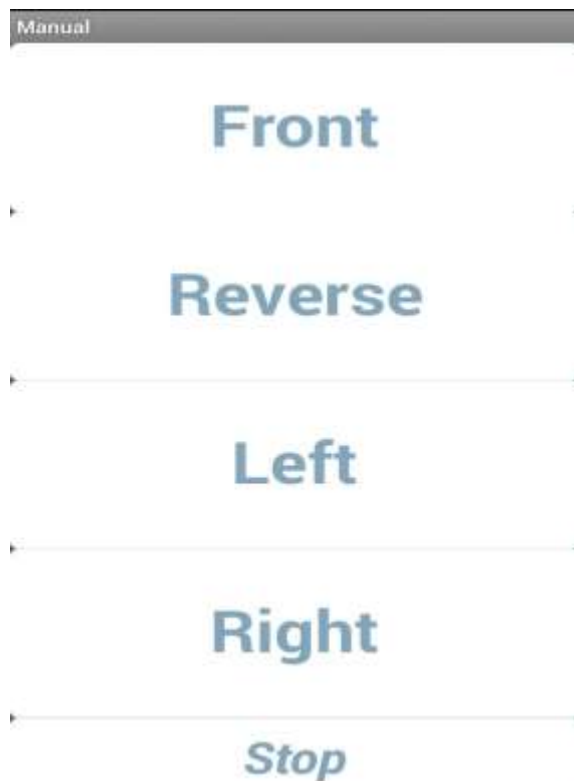


Fig 5: Manual Mode of VoCobo



Fig 6: Voice mode of Vocobo app

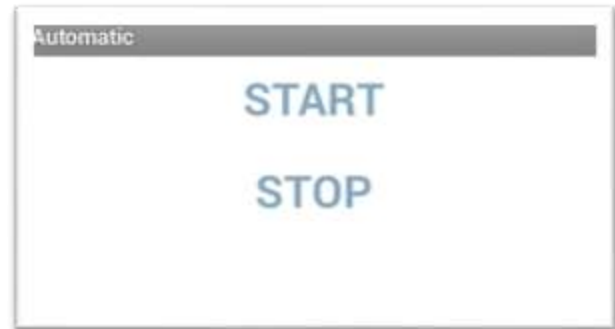


Fig7: Automatic Mode of Vocobo app

1.5 CONCLUSION

In this paper, an effort has been made to integrate a number of useful technologies into a unified robotic system. The system is user friendly and intelligent. It can be divided into two major sub-systems:

Firstly, it consists of the voice recognition part which takes the form of a voice controller interfaced serially to the computer. Software modules are written for training the voice recognizer and for natural language processing.

1.6 FUTURE WORK

In future we try to implement our vocobo in home automation by using infrared sensor for detecting the heat and motion and light sensor for controlling the electric bulbs for automatic on and off.

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