## Voice easy to interact with the system to

Education, Teaching



Voice Recognition Based Home Automation System forParalyzed People AbhishekBhujbal, Abhishek Hire, Akash Jadhav, Siddhesh Lendhe. Under theguidance of Prof. Z V Thorat. Abstract— The voice recognition based home automationsystem was built and implemented. The system is specially designed for thepeople suffering from paralysis and also for the elderly people. The use ofvoice commands eliminates the need to remote controllers and other electronicdevice and makes it easy to interact with the system to perform automation andcontrol electrical devices. Buzzer allows disabled person to notify theguardians whenever the person need help.

The illumination sensor automaticallyturns off the lights when sun light is enough to see things around also a timedelay is added that if user forgot to turn off lights or any device the will beautomatically turned off to conserve energy. Keywords— Home Automation System, PhysicallyChallenged People, Voice Recognition Module V3, Arduino Uno, Adjustable Bed MotorizedJack. Introduction any third person's assistance.

The voice recognition basedhome automation The home automation systems are gainingpopularity day by day due to their ease of use and wide operationscapabilities. Integrating voice recognition technology to home automationsystems make the system more user friendly and easy to operate. Some requirehome automation system to satisfy their needs and comfort while for physicallychallenged people it can provide great assistance.

Intelligent home navigation system fordisabled and elderly person proposed a system which uses voice recognitionmodule for the speech recognition process, an Arduino controller, a wheel chairand a navigation module. The Arduino receives the command from thevoice recognition module and move the wheel chair accordingly thus eliminatingthe need of system uses Lab view to perform speech recognition and Bluetoothmodule with a controller is used to control the devices wirelessly. While the needs of many individuals with disabilitiescan be satisfied with power wheelchairs and voice control home automation, somemembers of the disabledpeople's find it is difficult or impossibleto operate a standard power wheelchair.

This project could be part of anassistive technology. It is for more independent, productive and enjoyable living for disabledpeople.

I. system overviewThe voice recognition based home automation systemis an integrated system to facilitate the elderly and physically challengedpeople with an easily operated home automation system that operates fully onvoice commands. The functional block diagram of the proposed system is shown inFigure.

Thespeech input from microphone is given to the voice recognition module where thespeech signal is compared with the previously stored trained voice samples. Upon successful recognition of voice command the Arduino microcontrolleractuates the corresponding electrical device like turning on lights, andadjusting bed elevation using the relay module. The data from the illuminationsensor is processed in Arduino controller and based on a set point value theautomatic control action is taken to switch off the lights to save energy. Thebuzzer sounds when disabled person need is calling for help or when he needssomebody's assistance. II.

hardware implimentation A. Microphone and Voice Recognition Module The microphone used to get voice commands to the voice recognitionmodule is a simple collar type microphone with 3. 5 mm jack.

Elechouse voicerecognition module v3 is used for the voice recognition process as shown inFig. 2. The voice recognition module needs to be trained before it can be put toactually recognize the voice commands. The speech input from the microphone isgiven to the voice recognition module and there the input speech is comparedwith the previously trained voice commands and if there is a match then controlaction through control circuit is taken. The voice recognition module v3 canstore up to 80 commands of 1500ms each in its library and out of 80 only 7commands can be loaded into recognizer for the recognition process. Thus only 7commands are effective at a time and to add another 7 commands recognizer needsto be cleared first. The module has two ways of controlling Serial Port, General Input Pins.

General Output Pins on the board could generate severalkinds of waves while corresponding voice command was recognized. Module has arecognition accuracy of 99% under ideal conditions. B.

Arduino Uno The controller used for the proposed system as shown in Fig. 3is Arduino Uno microcontroller. The arduino platform provides an inexpensive and easyway for students and professionals to create devices that interact with theirenvironment using sensors and actuators. Arduino comes with simple integrateddevelopment environment (IDE) which runs on a PC and allows user to writeprograms for Arduino in C or C++ language. The Arduino microcontroller is basedon the ATmega 328. It has 14 digital input/output pins (Out of these 14 pins 6can be used as PWM outputs) and 6 analog inputs.

Ardunio works on 5V D. C andhas clock speed of 16 MHz. C. Light Sensor Lightdependent resistor is use to sense the illumination inside the room so that thesystem can shutdown the lights when there is sufficient day light to seeanything around to conserve energy.

D. Buzzer Buzzeris main indicators of the designed system through which the guardians of the disabled people can be alerted to check disabled person when buzzer makes around and take necessary care. If the patient needs any help then by voicecommand he or she may turn on the buzzer for help.
E. Relay Circuit To control the Home appliances relays are used with the Arduino.

. The relays used in the system are 5V-5 pin relay as shown in Fig. 4. The relay remains in normally closed state. When relay coils are energized therelay switches from normally closed to normally open state due toelectromagnetic induction . The normally open state (N. O) of relays is used inthe home automation system.

Fig. 4 shows the buzzer, illumination sensor andrelay on embedded on the general purpose PCB. III. SOFTWARE IMPLEMENTATIONThe software implementation part of voice recognition based homeautomation system implemented using the Arduino controller. It consists oftraining of voice recognition module. The voice recognition module needs to betrained first with the voice commands before it can be put to recognizingfunction. The voice recognition module training program is loaded into the Arduinoand then trained with the voice commands.

Fig. 10 shows the training process ofvoice recognition module using the Arduino IDE. The main code for the homeautomation system is written in C+ + language in Arduino IDE. Upon successfulrecognition of voice command the control action corresponding to that commandis taken III.

Working This system makes use of Arduino mega. The Bluetoothreceiver is interfaced with arduino in order to accept the commands and thenreact accordingly. It operates the loads through a set of relays using a relaydriver IC. Relays are used between loads and the control unit. This system thuscan be used in many domestic applications and in industrial setups.

Thepower supply setup of the system contains a step down transformer of 230/12V, used to step down the voltage to 12VAC.

To convert it to DC, a bridge rectifieris used. Capacitive filter is used which makes use of 7805 voltage regulator toregulate it to +5V that will be needed for microcontroller and other componentsoperation, in order to remove ripples. The microphone used to get voice commands to the voice recognition module is asimple collar type microphone with 3. 5 mm jack. Elechouse voice recognitionmodule v3 is used for the voice recognition process. The voice recognitionmodule needs to be trained before it can be

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The voice recognition module v3 can store up to 80 commands of 1500mseach in its library and out of 80 only 7 commands can be loaded into recognizerfor the recognition process. Thus only 7 commands are effective at a time andto add another 7 commands recognizer needs to be cleared first. The module hastwo ways of controlling Serial Port, General Input Pins. General Output Pins onthe board could generate several kinds of waves while corresponding voicecommand was recognized. Module has a recognition accuracy of 99% under idealconditions.

IV. Advantages ? Ahandicapped person can use this and become independent. ? Userfriendly. ? Reducedmanpower and dependency on other human drive. ? Physicallychallenged people can use home automation technique to operate home application. ? Easy todrive with negligible efforts to move wheelchair and use home appliances. ? compact and economical.

V. Disadvantages · Circuit is complex · Limited range operated · Very complicated to designlayoutVI. Future Scope · For future technology wheelchair would be fully autonomousthat will move automatic based on the user expression and behavior and thatshould be fully automatic and wireless. In this project firstly we are working on the voice basedautomatic
 wheelchair and after that we will combine upcoming latest technologylike
 software based that will be controlled by computer and GSM mobile phones.

After that we are thinking on putting a biometric feature in it that should be little bit secured for the user. Instead of using voice we can use eye retina using opticalsensor to move wheelchair accordingly. Also it can be extended by including GSM that sends an SMSduring emergency.
 VII. Acknowledgement We are thankful to ourcollege ' Bharati Vidyapeeth College Of Engineering" for considering project and considering us through the various stages of the project report-I.

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Shaikh. We convey ourdeep sense of gratitude to all teaching and nonteaching staff of Electronicsand Telecommunication Department for their constant encouragement, support andtimely help throughout the mini project report work. References· Oberle, S., and Kaelin, A. " Recognition of acousticalalarm signals for the profoundly deaf using hidden Markov models," in IEEE Internationalsymposium on Circuits and Systems (Hong Kong),· Shawki and Z. J.

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