

SMART WHEELCHAIR AND HOME AUTOMATION

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Abstract - This paper depicts the arrangement of an inventive and insignificant exertion transportability assistive advancement that is used to support the control of a wheel seat and home mechanical assemblies by using impelled voice heading of the disabled people. The four major components of the system wheel seat can be investigated through voice request or moving four position which is found using accelerometer sensors worked in android phone. Using IR sensors we can sidestep the threat of crash and harm and keep up some progressively secure great ways from the articles. Impediment individual can't stand up and switch on-off the light or fan unfailingly so to give them all the more loosening up this system offers home motorization by provide voice guidance or android phone or by truly swipe the catch on the screen. We have completed this system for the debilitated people when they faces any unfortunate issues, for instance, in case they amazingly tumbled down from the wheel seat or anybody harassing them or if the criminals upset them rapidly the alert message will lost to the stress individual through the GSM module. This structure will fabricate the specific level of the impeded individuals and urges them to vanquish their issues that they glanced in their regular daily existence. We can completed this structure can be injured people faces any unwanted issues, for instance, in case they grievously tumbled down from the wheel seat or anybody.

Key Words: Pic microcontroller, relay, android app(smart phone), dc motor, GSM module, bluetooth module, IR sensor.

1. INTRODUCTION

Now and again low-development contraptions are the most appropriately and even preferred for their straightforwardness, ease of use, upkeep, and insignificant exertion. Typically, a wheelchair voice control system should work reliably for a colossal number of customers, decline the physical necessities; and if avoiding the need to continue ahead in any event one road farthest focuses, should help a customer in keeping up well the seat position. Nevertheless, the confined exchange speed of the voice makes it difficult to adjust as frequently as conceivable with the wheelchair's

speed, and besides a voice input system may disregard to perceive a speaker. Right now, interface has yet ended up being monetarily possible for wheelchair control. In any case, one execution inconvenience is that a voice input structure may disregard to see a customer's voice. Undoubtedly, talk started interface among human and independent/semi-free structures requires exact recognizable proof and affirmation. So the pitch and end-point revelation expect a huge activity in talk affirmation structure The present force wheelchair control interfaces used may not be adequate to give really free convenience to impressive number of individual with inadequacies. The Respondents to the diagram gave insights about ordinary that around 10% of the patients arranged to work a force wheelchair can't use the perpetual stock of their groundwork for activities of step by step living or can do so just with exceptional difficulty. The structure and improvement of a talk affirmation system can be used to work together with a home PC and to control neighborhood machines at the request for a word (talk). The voice got is set up in the voice affirmation system where the component of the voice bearing is removed and composed with the present model in the database. The module sees the voice and sends control messages to the microcontroller. Filled wheelchair customers normally fight to drive safely and satisfactorily and in logically essential cases can get around when joined by a partner. Without assistance, individuals experienced various accidents while driving around the predefined course. These issues are proposed in a network control instrument that helps the customer as and when they The fundamental idea of the driving assistance module is to reroute obstructions in a way that is bound to be acceptable for the customer. The automated wheel seat using head joystick makes the driving assistance module by adjusting the translational and rotational rates. A paper revolve expressly around the evaluation of shared control frameworks reviews various portions of wheelchair plan: everything from mechanical perspectives, interfaces and control figurings to ISO rules that are being made to help customers in driving safely. The proposed system enables genuinely tried individuals like injured patients or truly weakened patients or patients having extraordinary

ailments like Parkinson's affliction, to empower the control of a wheelchair. In particular, this is important for the individuals where they can move their wheelchair in their own particular manners, with no untouchable's help or support. The objective of this paper is isolated into two targets. One is to control diverse home mechanical assemblies by voice, and the other is to engage truly injured person's improvement independently using voice authorized energized wheelchair, that give steadfast quality, prosperity and comfort. Additionally, home computerization is a level out preferred position and can improve the individual fulfillment for the customer. Wheelchairs give intriguing adaptability to the incapacitated and old with motor inabilities. The arranged structure relies upon social event a microcontroller with another voice affirmation processor. In this manner assistive innovation is significant for part of any improvement technique.

1.1 PIC MICROCONTROLLER

The PIC microcontroller PIC16f877a is one of the most prestigious microcontrollers in the business. This microcontroller is helpful to utilize, the coding or programming of this controller is additionally simpler. One of the primary favorable circumstances is that it tends to be compose delete whatever number occasions as could be allowed on the grounds that it utilize FLASH memory innovation. It has a complete number of 40 pins and there are 33 pins for info and yield. PIC16F877A. PIC16F877A likewise have numerous applications hardware circuits. PIC16f877a discovers its applications in an enormous number of gadgets. It is utilized in remote sensors, security and wellbeing gadgets, home mechanization and in numerous modern instruments. An EEPROM is likewise highlighted in it which makes it conceivable to store a portion of the data for all time like transmitter codes and collector frequencies and some other related information. The expense of this controller is low and its dealing with is likewise simple. Its adaptable and can be utilized in zones where microcontrollers have never been utilized as in chip applications and clock capacities and so on.



Fig1.Pic microcontrollers

1.2 RELAY

Moves are parts that permit a low-control circuit to control signals or to turn high stream ON and OFF which should be electrically isolated from controlling circuit. A transfer is an electrically worked switch. It comprises of a lot of information terminals for a solitary or various control signals, and a lot of working contact terminals. The switch may have any number of contacts in different contact structures, for example, make contacts, break contacts, or blends thereof. Transfers are utilized where it is important to control a circuit by an autonomous low-power signal, or where a few circuits must be constrained by one sign. Transfers were first utilized in long-separation broadcast circuits as sign repeaters: they revive the sign rolling in from one circuit by transmitting it on another circuit. Transfers were utilized broadly in phone trades and early PCs to perform consistent activities. The conventional type of a transfer utilizes an electromagnet to close or open the contacts, however other working standards have been imagined, for example, in strong state transfers which use semiconductor properties for control without depending on moving parts. Transfers with aligned working qualities and some of the time various working curls are utilized to shield electrical circuits from over-burden or blames; in present day electric force frameworks these capacities are performed by advanced instruments despite everything called defensive transfers.



Fig2.Relay

1.3 BLUETOOTH MODULE

Generally, when two electronic devises talk with each other, they use joins, infrared pillars, Wifi, etc. These are a part of the diverse tangled procedures used in partner one contraption to another. Bluetooth is a relative development, which is used to interface one electronic contraption to another, without the use of any wires and connections. It is a remote development to send and get data between two contraptions. The inference of word Bluetooth is intriguing. A captivating reality about the Bluetooth advancement is that it is named in the wake of King Harold Bluetooth, who was

the King of Denmark during tenth century. It was him who joined countries like Denmark and Norway. The name Bluetooth was picked for the advancement since it is countries like Denmark which overpowers the Bluetooth correspondence industry. Another reason behind the naming is that Bluetooth development organizes two electronic contraptions also as King Bluetooth did in the late ninth century. Bluetooth works by the direct guideline of sending and tolerating data as radio waves. Each Bluetooth engaged contraption has a card-like association known as the Bluetooth connector. It is this Bluetooth connector that sends and gets data. A Bluetooth connector has a particular extent of affiliation. One electronic connector can see another Bluetooth contraption just if the ensuing device is accessible inside the extent of the essential device. Exactly when they are inside the range, they can strike up a relationship between themselves. Striking up of relationship between two Bluetooth devices are known as paring of contraptions.



Fig3. Bluetooth module

1.4 DC MOTOR

A DC motor is any of a class of rotational electrical machines that changes over direct stream electrical essentialness into mechanical imperativeness. The most broadly perceived sorts rely upon the forces made by appealing fields. About a wide scope of DC motors have some inside instrument, either electromechanical or electronic, to at times change the course of current stream in part of the motor. DC motors were the fundamental kind of motor commonly used, as they could be filled from existing direct-current lighting power spread structures.



Fig.4. Dc Motor

1.5 GSM MODULE

The Global System for Mobile Communications (GSM) is a standard made by the European Telecommunications Standards Institute (ETSI) to delineate the shows for second-age (2G) propelled cell frameworks used by PDAs, for instance, phones and tablets. It was first sent in Finland in December 1991.[2]By the mid-2010s, it transformed into an overall standard for convenient exchanges achieving over 90% bit of the pie, and working in excess of 193 countries and territories. 2G frameworks made as a substitution for unique (1G) straightforward cell frameworks. The GSM standard at first portrayed an automated, circuit-traded framework improved for full duplex voice correspondence. This reached out after some an opportunity to join data correspondences, first by circuit-traded vehicle, by then by group data transport by methods for General Packet Radio Service (GPRS), and Enhanced Data Rates for GSM Evolution (EDGE). Thusly, the 3GPP developed third-age (3G) UMTS models, trailed by fourth-age (4G) LTE Advanced rules, which don't shape some bit of the ETSI GSM standard. "GSM" is a trade engrave guaranteed by the GSM Association. It may in like manner suggest the (from the start) most normal voice codec used, Full Rate.



Fig5. Gsm module

1.6 VOICE RECOGNITION ANDROID APP

Voice-affirmation writing computer programs is old news. Nevertheless, put it on a mobile phone, and it awakens. Most of the failure of endeavoring to control your PC by voice - fiddling for a recipient, reiterating yourself and again, battling the compulsion to yield and go to your trusty comfort - are slaughtered when you use a comparative advancement on your mobile phone. In addition, it's twisting up dynamically well known continually, thanks in colossal

measure to the improved talk affirmation limits of the present mobile phone stages, for instance, Google's Android and Apple's iOS. Regardless, that isn't using any and all means the main factor behind the uptick in versatile voice affirmation, says Tuong Nguyen, boss research master with Gartner. He alludes to the enthusiasm for improved UIs, especially from customers who might incline toward not to rely totally upon a touchscreen to connect with their phone. In addition, the growing inescapability of laws constraining the usage of telephones while driving has filled enthusiasm for these voice-based applications, Nguyen says. Bluetooth headsets empower drivers to talk without hands, yet various people need access to email and texts while driving, too, he notes. Fortunately, a great deal of uses give such access - and that is only the start. Here's a social occasion of a segment of the present best voice-affirmation applications for your phone.



Fig6. Voice Recognition android app

1.7 IR SENSOR

An infrared sensor is an electronic device, that transmits in order to distinguish a couple of parts of the earth. An IR sensor can check the glow of an article similarly as perceives the development. These sorts of sensors appraises simply infrared radiation, rather than exuding it that is called as an unapproachable IR sensor. IR Sensors work by using a specific light sensor to recognize a select light wavelength in the Infra-Red (IR) extend. By using a LED which conveys light at a comparative wavelength as what the sensor is scanning for, you can look at the intensity of the got light. The device involves an Infrared Transmitter, an Infrared Detector, and reinforce equipment. It just requires three affiliations. Exactly when it distinguishes a tangle inside range it will send a yield low. An infrared sensor is an electronic instrument that is used to recognize certain characteristics of its condition. It does this by either delivering or recognizing infrared radiation. Infrared sensors are in like manner fit for evaluating the glow being released by an article and distinguishing development. This contraption can perceive human closeness moving just as not moving considering the way that it changes over an IR of human body to electrical sign direct.



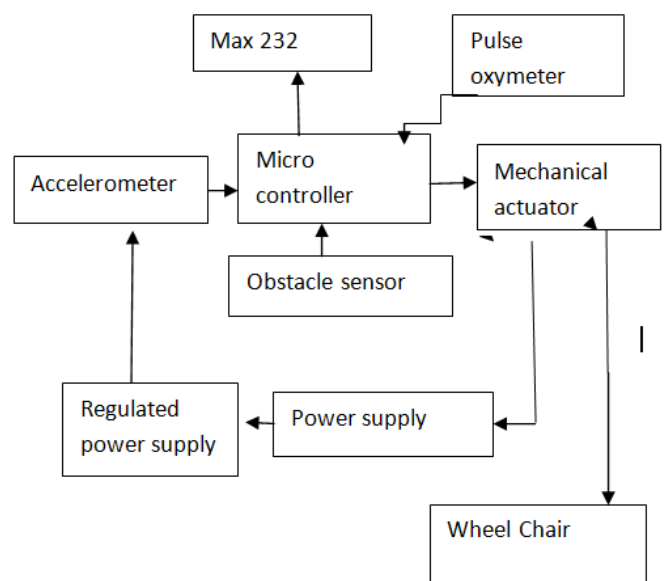
Fig7.IR Sensor

2. EXISTING SYSTEM

The present course of action of this and build up a head advancement controlled contraption trading system for genuinely crippled people. The use can wear this contraption on head and with clear head improvement he can request the key needs like water, sustenances or medication by using MEMS advancement which tackles the improvement of an inclining position. We will use arduino uno to see the sound starting from the MEMS sensor we will use voice recognizing circuit and it will make different kind of sounds .This is incredibly useful for loss of movement or truly weakened people the body of the loss of movement tolerant can't work and talk fittingly anyway simply head is move .so on a very basic level we use head advancement of the patient to require his/her basic essentials like medication, water or any of improvement and according to that advancement it will deliver the sign. versatility of head and as showed by that advancement different voice sign are describe the need of the loss of movement tolerant.

1. up side-need to water
2. down side-need to sustenance
3. right side-need to medicine

The essential rule of this paper relies upon the head advancement

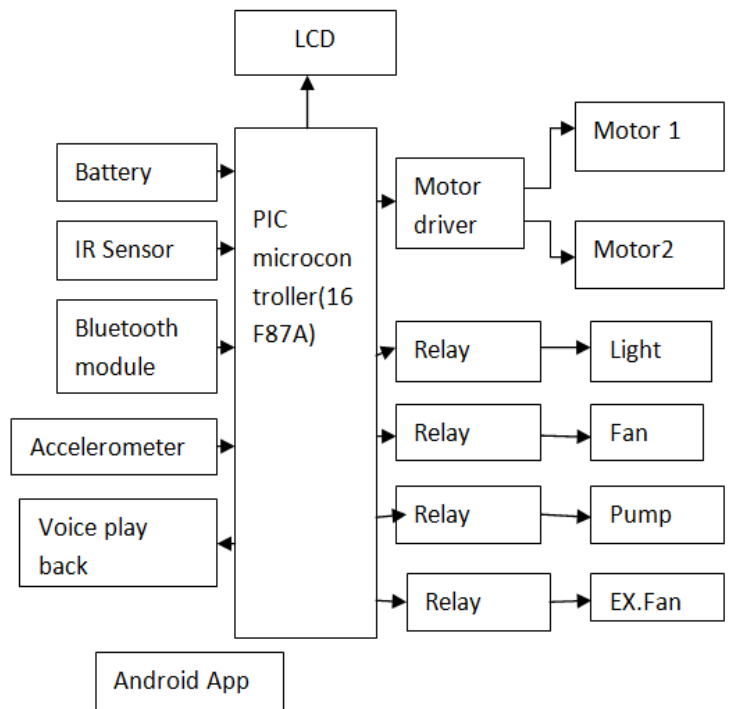


3. PROPOSED SYSTEM

The proposed framework empowers tested people like crippled patients or genuinely handicapped patients or patients having intense illness like parkinson's malady, to encourage the control a wheel seat. The four principle elements of proposed framework into one is to control different home machines by voice and others is to seriously impaired people development autonomously utilizing voice initiated controlled wheel seat that give unwavering quality security and solace. Wheel seats is give special portability to the debilitated and old with engine disabilities. In the event that he impaired individuals faces any undesirable issues suc as though they tragically tumbled down from the wheel seat or on the off chance that anyone forceful weight of, at that point or if the looters upset them quickly the alarm message will tossed of intothe concern individual from GSM module. In for the most part individual shows to the four headings like forward, ,both ways. the fundamental need of debilitated ..

1. forward-need to sustenance
2. backward-need to water
3. right side-need to prescription
4. left side-go to emergency

These limits are used into control by the voice reconition app.we control the whole methodology rule subject to the android application from cutting edge cell phone. The proposed system design was realized using common people. This would be executed for weakened people in the wake of having the effectively equipped of the wheel seat. This structure will extend the definite level of the weakened individuals and makes them rout their issues that they glanced in their regular day to day existence.



5. RESULT & CONCLUSIONS

This proposed system adds to the confidence of truly tried likewise, progressively settled people. It diminishes the manual effort for picking up and perceiving the course for controlling the development of a wheelchair and home mechanical assemblies. The speed and course of the wheelchair by and by can be picked using the predefined headings. Thus the simply thing expected to ride the wheelchair is to have a readied voice. Other than that, the improvement of this endeavor is done with less expense and sensible. In any case this structure requires a couple of upgrades to make it progressively strong. This structure could be improved by realizing remote correspondence in the wheel seat. By improving this system, we genuinely update the lifestyle of the incapacitated people in the system. Taking everything into account, we believe that this kind of structure could add to the advancement of the wheelchair development. By this structure the incapacitated people will have a feeling of security and safe. The patient and pro collaboration will be smart if there ought to emerge an event of emergencies will keep up a vital good ways from wretched conditions. The proposed system is monetarily sagacious with thought of features added to give better assistance and security for the people who have lost their conveyability as a result of setbacks or restorative issue or from the origin. The incapacitated people can't prepared to set some place close to themselves..

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