Smart Wheelchair Using Iot For Physically Challenged People

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Abstract- *In general wheel chair in hospitality that injured person has to move his/her wheelchair by using free hand by using sensor. In our system we move the the wheelchair using our head movement by placing a sensor behind the back of our head. In some cases they used to feel heavier by facing slope areas, in such places we provide a panic switch which is connected to IOT of their guardian ,if they feel unsafe or paniced they kindly press the panic switch, then a message will reach their guardian.*

Keywords: Arduino uno ATMEGA 328P,Motor driver, WIFI module, ultrasonic sensor, Accelerometer, Panic Switch, Motor driver, DC gear motors, Relays.

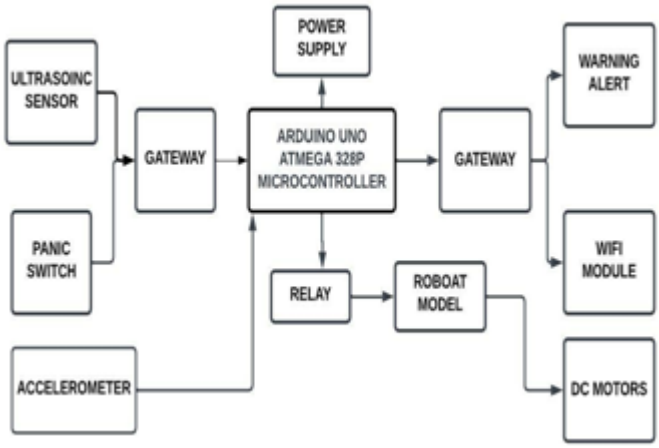
I. INTRODUCTION

The Arduino based wheelchair was to present a reliable means for human-computer interfacing based on hand gestures made in three dimensions, which could be interpreted and adequately used in controlling a remote robot's movement. we discuss the development of a novel architecture of an [1] intelligent wheelchair working on wireless hand gesture control and not by the usual method of keypad for the physically handicapped people. Unlike others before it, was also has a distress call system to alert the concerned people or family in times of necessity for the person, by the the person himself/herself from an alert switch or when there is any sudden detection of edge or staircase during backward motion, thus saving the chair from accidents. The locomotion of the wheelchair is controlled by a MCU (microcontroller). [1] The arduino is used for control the all moves and locomoion. The physically handicapped people will have the option of controlling the system through hand gesture wirelessly from ranges up to several meters and will have the independence of using the wheelchair without the help of any other people.

II. RELATED WORKS

Mudbi-UI Alarm Sajid, Md Firoz Mahmud,Rahaman, developed “Design of An Intelligent Wheelchair for Handicap People Conducting byBody Movement” 02 November 2020.The increasing development of the biomedical system and smart technology has a major impact on smart devices. A smart wheelchair is one of them to be improved with the blessings of this modern technology. In this paper, a smart wheelchair topology is proposed which is operated by a hand movement device and a smartphone. It comes with a lot of advanced features for people with disabilities who cannot walk or travel without the help of others. It is a hand-held wheelchair in which the gyro sensor and accelerometer are used and the Bluetooth phone control module is used to make it automatic. Users will wear a gesture system in their hands, and by moving the hand, the wheelchair will move forward, backward, left, and right. Arduino Mega and Arduino Nano are used as controllers. In this paper, the minimum threshold angle is compared with a microcontroller-based wheelchair where this proposed wheelchair started working with 5° fewer angles for forwarding and backward movement and 3° fewer angles for the left and right movement. Moreover, the linearity of this proposed wheelchair is -0.7, 0.045 & -0.03 when the sensitivity is 0.6102, 0.5214 & 0.55 for X, Y, Z axis respectively. The Sonar sensor is used here to prevent a safe movement. Using this design dimension and configuration, a prototype was eventually built and evaluated at various stages for performance evaluation.

III. SYSTEM DESIGN



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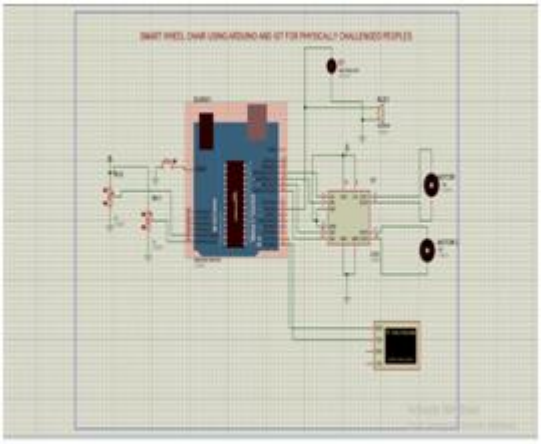
IV. CIRCUIT DIAGRAM



Circuit diagram of wheel chair

The circuit diagram is made for simulation purpose.In our project, we are using accelerometer for head movement monitoring.This sensor provide 3 axis level to the microcontroller as analog variable input ranges from 0 to 1023L293d motor driver governs the motor movements like forward, backward, right, left controls. [5] majorly used to control the motors in forward, backward also left, right moving purposes .In emergency case the alert will be send to uart serial communication which is iot.This will helps user to move independently and get support with guardian using iot.From the values the signal is produced from controller to L293d motor driver.

V. RESULT

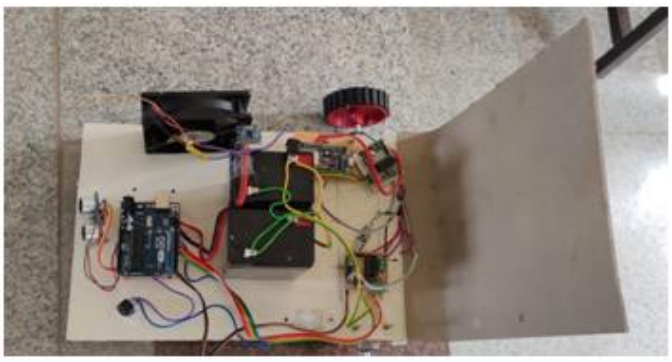
The result which we got while doing this project is very encouraging .the accelerometer works to maintain the constant speed to forward direction.We have able to successfully implement the ultrasonic sensor with motor to protect the wheelchair from any obstacles.We have able to successfully implement the ultrasonic sensor with motor to protect the wheelchair from any obstacles and the mobile is control the home appliances is successfully it controlled the fan, light also very encouraging the home appliance Controlled by iot

VI. RESULT COMPARISION

S.NO	PARAMETERS	EXISTING PROJECT	PROPSED PROJECT
1	Application control	Hand movement device	Head movement device
2	Sensors	NO Sensor	Ultrasonic sensor
3	Microcontroller	Arduino Nano	Arduino uno (ATMEGA 328P)
4	Panic Switch	Nil	Send alert message For guardian mobile
5	Alarm device	Nil	Make Sound to alert the person

VII. CONCLUSION

The head motion controlled wheel chair system is implemented as an example of companionship of human and machine. Independent movement is achieved with the help of the system. Errors appearing when the user makes free head motions can be reduced to a certain extent using an enable switch. It is designed to be characterized by low price and higher reliability



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