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AUTOMATIC MEDICAL WHEEL CHAIR

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ABSTRACT: People make use of different languages to express their thoughts in a different way. But, it is difficult for the people who are affected by paralysis and stroke. Hence, there is a need to develop a platform for those people who are physically challengeable. An embedded device shall address the above said problems. Based on 8051 processor the operation takes place. The device is designed with an intelligent wheelchair and people with disabilities can use it. In this process, the line following algorithm is implemented. To direct the wheelchair, motor driver is used with the help of ultrasonic obstacle sensor. This device provides an unic mobility for the people with disabilities.

Keywords: Automatic wheelchair, 8051 Microcontroller, IR Sensor, motor driver, Buzzer.

INTRODUCTION

Now a day's disabled persons in India, 21 million persons obtained through the most recent Population Census and National Sample Survey Organization's broad surveys on disability or we can say 2 percent of the total population in India. A new World Bank Report on disabled persons in India, has observed that, there is growing evidence that people with disabilities comprise between 5 and 8 per cent of the Indian population (around 55 – 90 million individuals). Although government and the public sector would have to play a key role in this Endeavour, it may be neither feasible, nor desirable for them to do it all. There are different types of disability, coupled with variations due to gender, class, place of residence (rural / urban) etc. Population Census and NSS surveys are the major two sources of official statistics in India. According to Census of India rate of disability increase rapidly every year.

LITERATURE REVIEW

History and Evolution of Wheel chair in 15th century first wheelchair was invented by king of Spain called Phillip and name of that wheelchair was invalids chair. Afterward Stphen Farfler made three wheel chassis in 16th century. Later on John Dawson was invented by Bath wheel chair in 1783. In the year 1881 the push rims for self forward motion wheel chair was invented. In the year 1932, Harry Jennings built the first foldable wheel chair.

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Vol-10 Issue-3 No. 1 March 2020

VARIOUS TYPES OF WHEEL CHAIRS

Depends on the mode of power we have mainly two types of wheel chairs: Manual wheel chair. Electric powered wheel chair. Manual wheelchairs or self-propelled wheelchairs are drive by the caretaker, usually by turning the large rear wheels like bicycle wheels are those that require human power to move them. Many manual wheelchairs are just as likely to be rigid framed with Light weight and due to light weight cost are high in the market. Transport wheelchairs are designed to be constrained by an assistant using the handles, and the back wheels are rimless and smaller. Transport chair is used to move a within a hospital or in areas where a user's standard chair is unavailable. These chairs are commonly seen in airports for disabled passengers to move from their seats on the plane. Manual wheelchairs are of different types

1) Standard Wheel Chair

2) Folding Light Weight Wheel Chair

3) Rigid frame wheel chair

4) Special positioning wheel chair

ELECTRIC POWERED WHEEL CHAIR

is a wheelchair that is controlled by small analog joystick with the help of electric motor and that analog joystick is mounted on the wheelchair, rather than manual power. With the help of electric powered wheel chair disabled person can move without any care taker. In the recent years power-assisted wheelchair is the replacement of standard rear wheels with wheels that have small battery-powered motors in the hubs. Electric powered wheelchairs are of different types:

1) Rear Drive Power Chair

2) Front Wheel Drive Power Chair

3) Mid- Wheel Drive Power Chair

Advantages of Manual Wheel Chair

1) Less weight and easily affordable

2) Low cost due to light weight

3) Low maintenance cost

Disadvantages of Manual Wheel Chair

1) Required more space due to non-foldable

2) Footrest is non-adjustable

3) Nonadjustable back and arm rest

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4) The patient cannot move for the bed or any other place only with the other help.

MARKET STUDY

Market study is necessity to understand the product market sector, to know the how many competitors in the market, to study their product capacitance and market strategy, to bench mark the product. Following are the competitors present in the Indian market:

1) M. TECHNOLOGIES Manufacturer,

2) ANAND MEDICAL EXPORTS Manufacturer, New Delhi

3) PARAMOUNT SURGIMED LTD Manufacturer New Delhi

4) VISSCO INDUSTRIES Manufacturer, Pune

5) MANISH STEEL 2INDUSTRIES Manufacturer, Madhya Pradesh

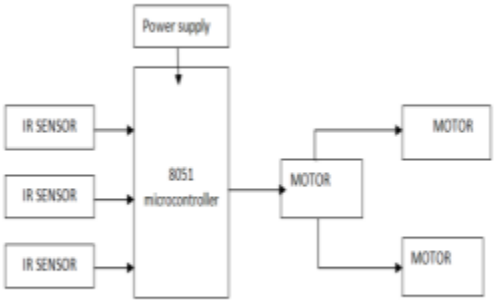

Fig.1: Block diagram

WORKING PRINCIPLE

The automatic medical wheelchair is one of the self-operating robots. That detects and follows the line drawn on the area. The line is indicated by black line on a white surface or white line on a black surface. This system must be sense by the line. This application depends upon the sensors. Here we are using two sensors for path detection purpose. That is proximity sensor and IR sensor. The proximity sensor is used for path detection and IR sensor is used for obstacle detection. These sensors mounted at front end of the wheel chair. The microcontroller is an intelligent device so that the whole circuit is controlled by microcontroller.

APPLICATIONS

1) Hospitals

2) Physically handicapped individuals

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Vol-10 Issue-3 No. 1 March 2020

CONCLUSION

We are introducing smart wheel chair which is multifunctional and can be controlled by various devices according to the comfort of patient. With the help of this multifunctional smart wheelchair patients who are disabled physically and mentally can make use of this smart wheel chair without the requirement of caretaker. So this is a multifunctional smart wheel chair the improvement and self reliability of many disabled people. Modifications made in the established equipment meant for the disabled ones will be of great use in upcoming time. All data provided are precise to the best of our ability. The system uses Mobile phone so that the accuracy is increased. The sensor describes the parameters like light, Temperature, smoke, gas etc. The IR sensor is used for obstacle avoidance. An eye movement wheelchair is any motorized platform for a physical disability person to reduce or eliminate the user's task of driving a motorized wheelchair. The knowledge gained from product design education is used to analyze the existing wheel chair product by means of detailed Market research, product study, problem identification and detailing finalized concept.

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