Consideration And Addition Of Electronic Circuit On Conventional Walker

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Abstract- It is realized that human versatility tends to diminish, bit by bit, with age as an outcome of neurological, solid and additionally osteoarticular weakening. Along these lines, in a maturing society, gadgets that give versatility help and wandering day by day practices are basic for the wellbeing and life nature of such people. Other than a concise presentation about walk help gadgets, this paper exhibits and proposes enhancements on the traditional walker. This adaptable recovery and utilitarian apparatus created by utilizing Atmega 16 microcontroller. In light of the gained know-how, the patients' input, a walker is being created, mechanically and electronically made strides. This paper is based on the proposed mechanical, outline and ergonomic contemplations.

Keywords- smart walker, Atmega 16, obstacle detection, additional circuit to conventional walker, sensors

I. INTRODUCTION

Mobility is a standout amongst the most critical human resources. It influences the person's movement limit as well as the capacity to perform individual errands. For instance, the loss of the capacity to walk may cause reliance of others in everyday life, which is a noteworthy determinant in life quality[1].

It is realized that the quantity of individuals with decreased versatility limits expands each year, particularly in the elderly populace. Step issue, one of the normal and huge reasons for decreased portability, could be occasioned by a Infection in various human body frameworks. It is critical, that the elderly are not by any means the only age gathering to endure from portability issue. Parkinson's Patients loose the ability of walking, and energy to lift the walker [2].

There are so many research areas in the development of smart walker including, motion control algorithm[8], navigation based gait assist[2], sit to stand support[3]. Step and sit-to-stand bolster is assessed by the cooperation amongst robot and human body in view of walk examination and sit-to-stand investigation [4].

In all above mentioned methods redesigning of walker is necessary. This paper is based on the electronic modification in traditional walker. It uses a DC motor to control the wheels of walker. It is a avr microcontroller based circuit to control a step size and motion of the walker. It also useful for blind people while walking because it has a obstacle detection feature. It reduces the efforts of redesigning of walker.

II. SMART WALKER

A redesigned smart walker has some drawbacks:-

A. In some walkers it needs to the inputs by the person, like direction or by using some methods controls the motion of walker [1].

B. it increase the cost of walker which is not affordable to everyone.

In this project above two drawbacks are tried to remove above two drawbacks

The overview of smart walker is described in a Fig. 1.It gives a unidirectional working. As the person starts walking it only move in forward direction.

The proposed system will guide the user in walking activity without hampering the same. This will enable the aged or disabled user to continue its normal walking exercise.

The proposed system will work exactly in tandem with the movement of user without disturbing it. The working of wheels will be exactly in line with the movement of step so as to achieve synchronism between movement of walker and step of person.

To enable each and every user of walker to use the smart walker, this system is made very compact and simple. Because of this, it can used for any conventional walker without redesigning it.

Another attempt to make this system universal, this system is made detachable so that this system can be used for any conventional walker.
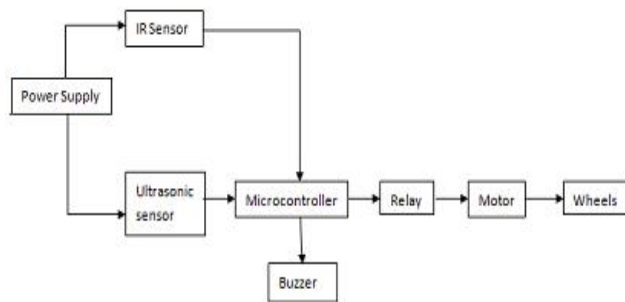

Fig.1

III. HARDWARE DESCRIPTION

Sensors:

IR sensor is used for obstacle detection. It continuously transmits the signal and detects the obstacle when it receives the reflected signal from the obstacle. The detected signal of obstacle will be transmitted to buzzer.

Ultrasonic sensor is used to coordinate between footstep of user and movement of walker. Based on the step of the user, it generates the pulse. This pulse will be fed to the microcontroller which in turns controls the motor so as to move the walker with exactly same distance of user step.

Controller description:

The input for this microcontroller will be received from ultrasonic sensor. Based on the input it will trigger the relay so as to control the motor.

Relay:

It receives the input from microcontroller. As per the input received from it, relay will controls the motor which includes the stopping of motor and again start the motor after receiving the signal.

DC Motor:

Relays are connected to the motor. After receiving the signal, motor will stop and movement of wheels will be under control. Also after receiving the reverse signal, movement of wheels will be initiated by the motors.

Buzzer:

It receives the signal from IR sensor based on the detection of obstacle. To intimate the user about the same, buzzer is used. Buzzer is used so as to indicate the user to stop the movement.

IV. WORKING

When a person is walking, power supply turns on. It is fed to the microcontroller, IR sensor, ultrasonic sensor and buzzer. When a person put step forward, an ultrasonic sensor sends a pulse to microcontroller. Microcontroller takes reading of pulse and that signal sends to motor through relay.

when a motor gets a signal it stops working so that the wheels of walker are stop at that instant.

IR sensor send continues signal. When obstacle is detected it sends a signal to microcontroller and a microcontroller sends it to buzzer. Buzzer rings and person get aware about obstacle.

V. CONCLUSION

Due to medical improvements, age of human being is increased and they need simple life. In elder age walking is key activity for good health. But in many cases due to elder age or any other medical reasons, user is unable to walk normally. Hence user requires Walker. But use of walker is also not easy as it requires synchronism between steps and hand movement and many other things. Hence in this project, we are trying to solve the elder person's difficulty of using walker. In the elder age user want the simple system so that they can use it without any difficulty.

In addition to normal walking activity, hindrance of the obstacles is also a major concern regarding safety of the user. Hence we have added the obstacle detection function is this system.

VI. ACKNOWLEDGMENT

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