

Intelligent Wheel Chair Based On Internet Of Things

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Abstract - Embedded gadgets are turning into piece of individual everyday life. Intelligent gadgets help to change life style of physically challenged, old Individuals. Main idea is to fullfill self dependent mobility of above mentioned people. RTOS is its center controlling frame work. Supports ultra sonic sensor and accelerometer sensors. Entire module includes obstacle avoidance, emergency identification. Android device and computer system is associated with live streaming module. GPRS is utilized for area assurance, GSM is utilized during emergency for communication purpose. IWC's communication with environment is same as normal person.

Key Words: IWC; RTOS system; fall detection; obstacle avoidance; live streaming; navigation; GSM; GPRS;

1.INTRODUCTION

Proposed IWC can be all around explored by touch screen android gadget that could either be associated by means of USB or by Bluetooth arrangement. engines are driven with assistance of H-extension or driver circuits. fall-discovery framework utilizing MEMS 3-hub accelerometer is executed. With assistance of GPS correct area of seat can be resolved and might discover where fall has occurred. Additionally, framework comprises of GPRS, live streaming module which can be helpful to track wheelchair. Wheel chairs joining every one of these elements are too expensive for everyday citizens.

2. LITERATURE SURVEY

People with physical disability can use manual wheel chairs if they are quite strong enough to peddle wheels, similarly pediatric wheel chairs for children to move within compound independently. Electric fueled wheel seat, stair climbing wheel seat and so forth generally these seats utilize ideas of button control system, picture preparing based, eye following, touch screen controlled procedures and so on for controlling development of wheel seats. [1] Configuration wheel seat that is autonomous, to reach said area in not predefined condition without abundantly need of others. [2]. In this wheel seat gives virtual picture of encompassing condition, utilizing LIDAR method client can choose alternatives to move left, ideal, forward and so on with the goal that client can achieve goal. For elderly individuals, it is hard to force manual wheel seats. For these individual's configuration, electrically fueled wheel seats, which works

utilizing battery. Utilized as part of indoor condition, for example, inside compound of house, inside school grounds or inside multinational organizations and so on is reasonable with ease for everyday citizens. [3]

3.PROPOSED METHOD

Proposed/complete system is subdivided into 5 sub systems

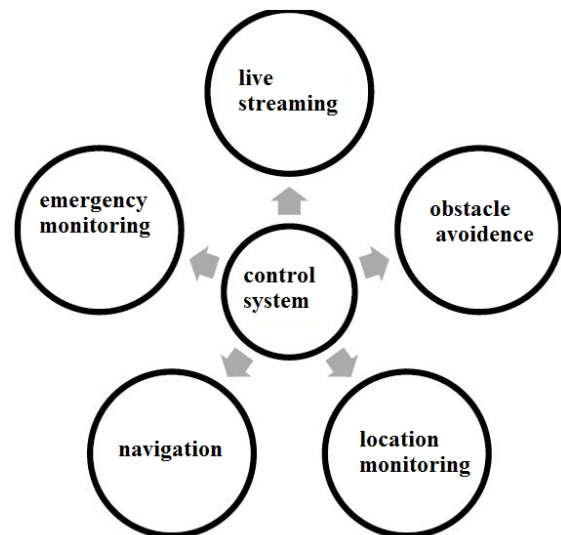


Fig 1 Subsystems

Sensors HC-SR04 fitted on fringe of IWC are utilized to identify hindrance inside endorsed run. Directionality assumes

Center Control: Control framework shapes central handling unit of IWC. control framework comprises of microcontroller installed with RTOS. RTOS is especially used to have more exact reaction or provoke reaction of IWC as for encompassing condition. control subsystem comprises of microcontroller and working framework ported on microcontroller. working framework is inserted into microcontroller and is in charge of time unsurprising conduct of framework i.e. IWC. control framework controls IWC as well as is in charge of time unsurprising and deterministic conduct of IWC.

Obstacle avoiding: This subsystem is in charge of distinguishing any moving/stationary questions inside predefined scope of IWC. Range is pre-chosen to keep away from sheltered mishap aversion with predefined range being of approx. 3.5 meters.

Emergency Monitoring: This module is executed with accelerometer placed on-microcontroller. Accelerometer is connected with GSM, GPS. variable is utilized to store initial estimation of accelerometer as "Variable", its value set as 0. After that if Variable greater than threshold occurs, it enacts caution, furthermore triggers GSM sends location of user to relevant person.

Location monitor: This subsystem includes GSM and GPS module. GPS is utilized to screen area of client GSM is utilized to communication.

Live streaming: Comprises of advanced mobile phone, portable workstation. Advanced mobile phone appended to wheel seat, demonstrates way of wheel seat to concerned individual of client. Get live video of wheel seat moving utilizing rear camera, front camera. Advanced mobile phone is connected to portable PC by means of wireless communication, which indicates way gone by client. This guarantees greater security.

for portable correspondences – with more than 90% piece of overall industry, working in more than 219 nations and domains.

3.3 DC Motor: Practically every mechanical development is expert by an electric engine. Electric machines are methods for changing over vitality. Engines take electrical vitality and create mechanical vitality. Electric engines are utilized to power several gadgets utilized as part of regular daily existence. Engines come in different sizes.

3.4 Android Device: Android is an array of software intended for mobile devices that features an operating system, core applications and middleware. Android device may be a smart phone, tablet PC, e-book reader or any type of mobile device that requires an OS. Here we are using this device to record path travelled by chair using front and rear side camera.

3.5 Computer System: is an electronic device which is capable of receiving information in particular form like audio, video, images, data in the form of text many more. Here we are using to play video of path travelled by chair which will be use full in case of accident, health related issues to provide assistance to user. This feature assures more security to IWC user.

3.6 Alpha numeric LCD Display (16 X 2): Alphanumeric displays are used in wide range of applications, including palmtop computers, word processors, photocopiers, point of sale terminals, medical instruments, cellular phones, etc. 16 x 2 intelligent alphanumeric dot matrix display is capable of displaying 224 different characters, symbols.

3.7 Global Positioning System: Is worldwide route satellite framework gives geo area data to GPS collector. Further more, it works free of any telephonic or web gathering, however these advancements can improve helpfulness of GPS situating data.

3.8 Accelerometer ADXL335: ADXL335 is 3 axis based sensor that measures acceleration of moving and stationary object in way of chair. controls direction of chair in forward, reverse, left, right directions.

3.9 Microcontroller: LPC2148 microcontrollers depend on 16-bit/32-bit ARM7TDMI-SCPU with ongoing imitating and installed follow bolster, that consolidate microcontroller with implanted rapid flash memory running from 32 kB to 512 kB. 128-byte wide memory interface, extraordinary quickening agent design empower 32-bit code execution at greatest clock rate.

4. DESIGN

when wheel seat begins moving to achieve goal. Sensors accelerometer, uv sensor will continuously screen wheel

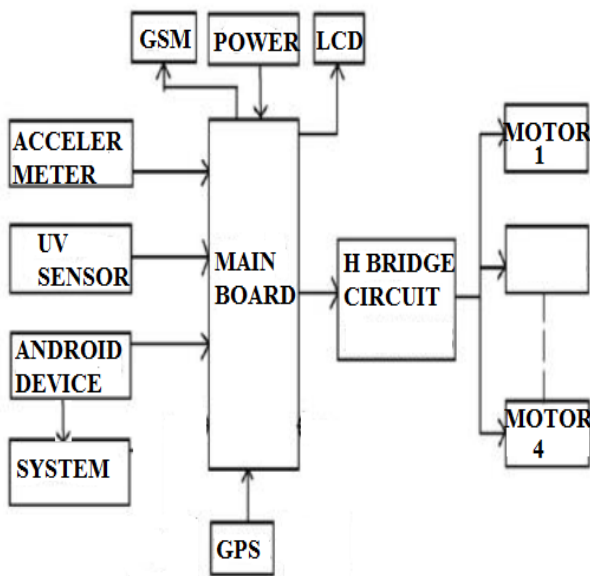


Fig 2 Functional Block Diagram

3.1 Ultra sonic sensors: this sensor measures distance from wheel chair to obstacle present in path of wheel chair. Range can be up to 4ms.

3.2 Global System for Mobile Communication: first conveyed in Finland in December 1991. Starting at 2014 it has moved toward becoming accepted worldwide standard

seat. Advanced cell connected to seat will constantly track way gone by wheel seat using front ,rear camera which will be displayed on laptop. Control system checks for $F > 0$ or accident, If F count is greater than zero means falling of user happened, immediately message forwarded to related person of user indicating emergency. Related person of user can view video live sitting at home or where ever they are. This feature helps for very fast response in case of emergency.

room to other room. Can be used in outdoor with minimum traffic areas. Obstacle avoidance system efficiently avoids any object on way of chair.

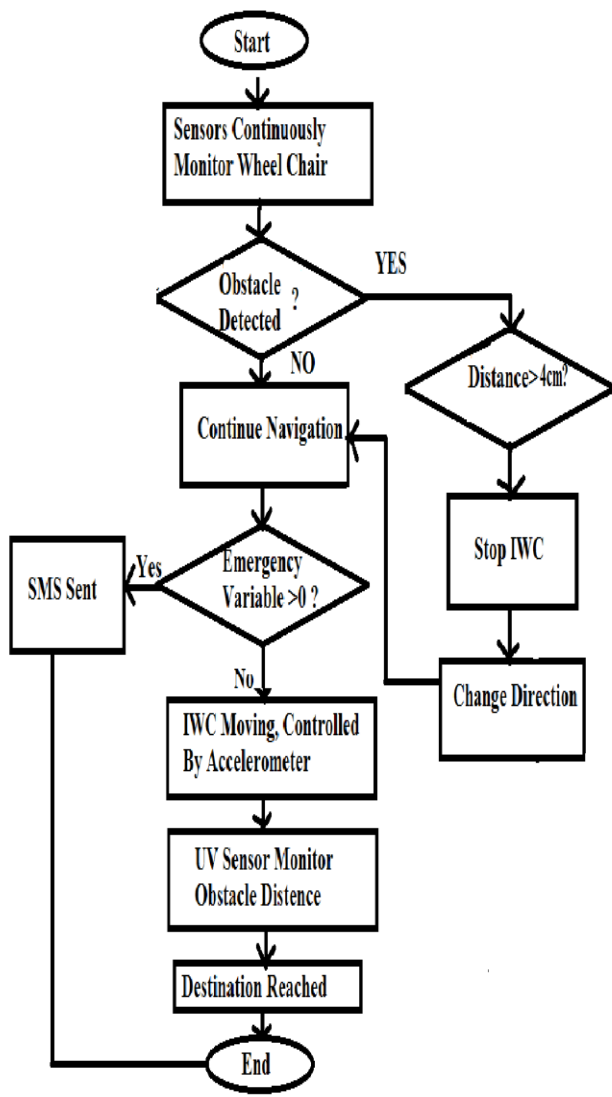


Fig 3 Flowchart

5. EXPERIMENTAL RESULTS

System designed is as shown in figure where in lcd display, motors, microcontroller board, power supply, sensors etc all are attached to chair. Response of system is like of normal human being and real time. Successfully full fills need for self dependency of age old, ill health, physically challenged people. Best for indoor use like within large buildings to move from one

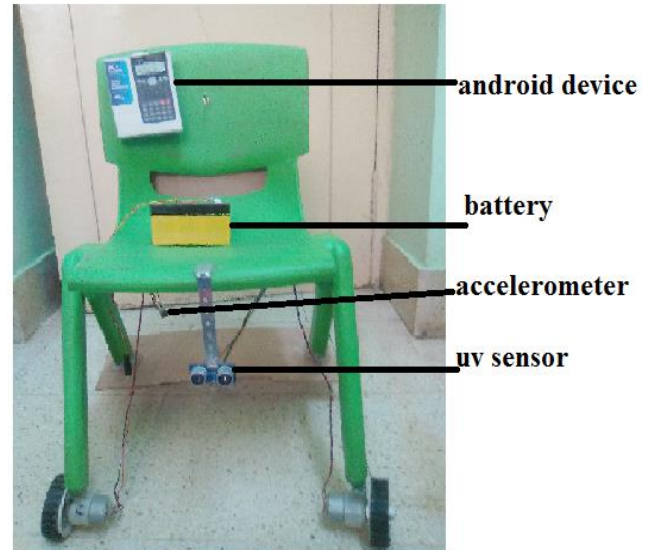


Fig 4 Prototype in Front View

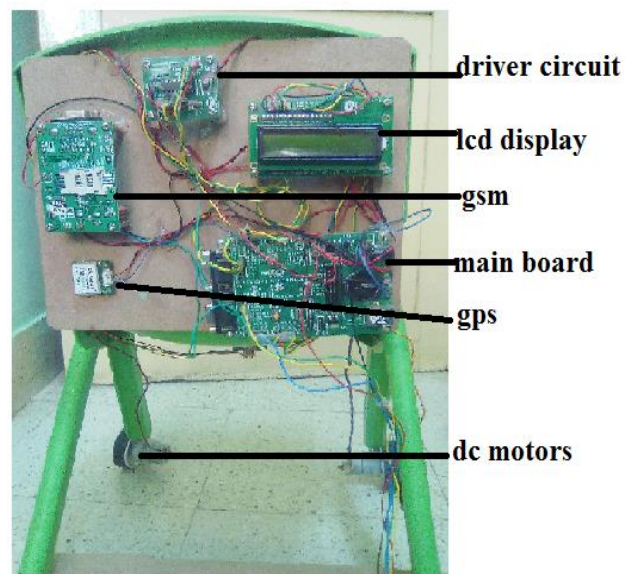


Fig 5 Prototype in Reverse View

5.CONCLUSION AND FUTURE SCOPE

System employs emergency monitoring, accident avoidance counteractive action module. Module consistently checks crucial indications of client. Emergency-recognition module can trigger GSM in instances of complexities to enact it and send messages to concerned individual as to area and issue that has occurred. Hence proposed system addresses topic of sheltered and autonomous portability of physically tested. In addition elderly individuals all things considered. Cost of

Wheel-Chair so created is practically less compared to Smart Wheel-Chairs that are accessible today. Obstacle avoidance module stops itself when obstacle is detected.

More support for crash sensor, IR Sensor, airbag to be given which would be initiated before crash to keep any wounds to client. Increment self-sufficient abilities of IWC, GPRS framework can be added to framework. Framework for programmed/self-sufficient vehicle car system can be designed. Client simply needs to enter destination address at beginning. Wheel chair will be coordinated to reach place with no client interaction required.

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