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INTELLIGENT TRANSPORTATION SYSTEM FOR DISABLED PEOPLES

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Abstract - Around one billion people in the world live with some form of disability. Persons with disabilities face physical, social, economic and attitudinal barriers that exclude them from participating fully and effectively in the society. In this study, a barrier free environment for disabled person is obtained for the anna nagar, chennai region. There is a popular belief that a ramp and an elevator/lift is all that is needed to make a built space barrier-free. But barrier-free has many other aspects ranging from door and passage widths to flooring surface, from counter heights to door handles and railings and from signage to auditory signal. Barrier-free design should be incorporated to access disabled persons. In this study we have incorporated ramp, railings, auditory signal, to access for the disabled person.

Key Words: Intelligent transport system, Streetscape, Smart technologies, street scape for disabled people, its for disabled people

1. INTRODUCTION

Intelligent Transport Systems (ITS) have changed transport, both private and open. This pattern is set to proceed with an European Directive 2010/40/EU cherishing organization of ITS in the field of street transport and for interfaces with different modes all through the landmass (European Commission, 2010b).In its broadest sense ITS is the utilization of modernized frameworks, including data interchanges innovation (ICT), to transport. They go from the agreeable level, for instance helping drivers, armada directors and movement administrators through frameworks like activity signals, armada administration frameworks, and correspondences amongst vehicles and roadside foundation, to frameworks and administrations, for example, the arrangement of online data, electronic ticketing, and cell phone applications that are intended to improve people educated, empowering speedier, less demanding go by open transport.

2. SCOPE

- To implement Intelligent transportation system to fulfill the needs of disabled persons.
- While improvements to physical infrastructure and service provision have undoubtedly enhanced public transport accessibility and thus mobility in recent years, it is the rapid growth of new technologies that must now be embraced in order to facilitate fully independent travel for older and disabled people.

3. OBJECTIVE

- To implement Intelligent transportation system to fulfill the needs of disabled persons.
- While improvements to physical infrastructure and service provision have undoubtedly enhanced public transport accessibility and thus mobility in recent years, it is the rapid growth of new technologies that must now be embraced in order to facilitate fully independent travel for older and disabled people.

4. RFID

The Internet of Things requires a few necessary components to enable communication between devices and objects. Objects need to be augmented with an Auto-ID technology, typically an RFID tag, so that the object is uniquely identifiable. Also, an RFID tag allows the object to wirelessly communicate certain types of information, which leads us to another requirement – the ability to monitor data. The smart object reports data, and the information travels over IP networks to a central database which stores and sorts the data into a human-readable format.

RFID (Radio Frequency Identification) devices are wireless microchips used for tagging objects for automated identification. RFID can communicate wirelessly to objects which embed and need not be line of sight. RFID tag and a sensor to read and measure data. The sensor may capture fluctuations in the surrounding temperature, changes in quantity, or other types of information. objects which also consist a RFID reader which is powerful and contain a small memory. RFID readers will read this information and inform the user through wireless sensor network and internet[6]. The RFID tags are divided into three: passive tags, semi passive, and active. RFID technology is help disabled people in various areas. In case of visually disabled people, if they want to reach a particular destination or want to purchase from a mall this RFID tags and readers will help them to reach exact location.

5. Transport Needs and Problems of Disabled People

Physically disabled peoples mainly face problems in mobility with their limitations .so they are mainly depend wheel

chairs for movement. Now days they are travel across society with some ones help. So researchers are developing sensors embedded wheel chairs for physically disabled people. Wheel chairs that connect with sensors, that made capable of challenged peoples to do their activities and travelling individually. Wheelchairs that developed should include sensors, that provide shortest path if they want to go anywhere, if any unwanted situations occurs like any accident or such an emergency situations the wheelchair automatically should inform the doctor. FM are kind of sensor that help physically disabled people, are Wireless, injectable micro devices that are versatile, robust and relatively inexpensive to implant in a variety of sites and applications. They also stimulate the functioning muscles of the body by providing electric signal; which will of course improve the performance of the body of physically challenged people .Many researches are going on in this area.

6. Working principle

- In this project the following components involved such as small robotic model, RFID, ultrasonic sensor, traffic signal setup, motor, microcontroller, battery,
- In the wheel chair robotic model and the traffic signal setup the RFID is fix.
- Whenever the disabled person will come and they need to be cross the road the RFID signal will transmit the signal to traffic signal setup.
- Then the signal will immediately change into RED color to indicate stop the all vehicle depends on the roadside.
- So, here we have made the robotic car model to shows that it will automatically stop when the signal change into RED color.

7. PROPOSED SYSTEM

- In our project, we are designing a Robotic model which will able to manage traffic efficiently in day to day life specially for physically challenged people.
- The vehicle unit will have the wireless transceiver and the traffic signal will also have the wireless.
- Physically challenged people will face many problem in normal signal timing.
- In case physically challenged people comes near the traffic signal the both RFM will communicate and the signal will change to RED.
- Wheelchair Users: The width and length of the wheel chair, its control and the diameter of the casters decide the following:
- Width of entrances and exists (clear 900mm)
- Width of the passage / corridor (min. 900mm)
- Slope of the climbing (min. ramp slope 1:12)
- Passing over different levels and grooves (Level difference to limit to 2cm or less)
- The width of the footpath can vary as per the adjacent land use. Footpaths in residential areas require a minimum clear width of **1.8 m**, which is enough space for two wheelchairs to pass each other. For commercial areas, the clear width should be at least 2.5 m (IRC:103-2012, 6.1.5.2).

8. Site location

Fig 1. Four way intersection at anna nagar.

Fig 2. View from Side Street at anna nagar

Fig 3.Model of ITS using sensors

9. DATA ANALYSIS

- Normal pedestrian crossing time in densely populated area is about 10 to 15 according to the traffic volume
- The motorized wheel chair can cross 50 ft road by 15 to 20 sec
- The normal wheel chair can cross about 20 to 25.
- The design period of the signal timing depends on traffic volume of vehicle.

10. CONCLUSIONS

- The proposed project is based on improving the safety of elder and disabled pedestrian crossing the road. From the past three year from 2014 to 2017, pedestrian death rate analysis, it can be seen that there is a 66% of high increase in the accidents occurring in India. Overall, India has faced a high pedestrian death rate of dying pedestrian of 56 pedestrian last year. Thus, the proposed project can lower the pedestrian death rate from road accident.
- Tamilnadu reported a maximum number of 3,507 pedestrians killed in road accidents in last year followed by Maharashtra(1831) and AndraPradesh(1379). According to the "The Times of India" dated on oct 1,2018.

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