Automatic Wheel Chair

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Abstract*: The main purpose of this paper presenting our revolutionary creation: A wheelchair can be driven using acceleration sensor and head movements with the possibility of avoiding obstacles. Our project Automatic wheelchair basically works on the principle of acceleration, one acceleration sensor, provides two axis, acceleration sensors whose output varies according to acceleration applied to it, by applying simple formula we calculate the amount of tilt & output of tilt will decide to move in which direction. On chair rain sensors will be installed. The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity. We are trying to build a controlled wheelchair; the system will understand and obeys natural language motion commands such as "Take a right." Various technologies are used for developing such a system.*

Keywords: revolutionary, wheelchair, rain sensor, direction and move, temperature sensor

I. INTRODUCTION

The aim of this project is to use wheelchair automatically for moving forward, backward, Left & Right. The overall framework of this project is to restore autonomy to severely Disabled people by helping them use independently a power wheelchair. A wheelchair is an electric wheelchair fitted with acceleration sensors, obstacle sensor and computer to help less able drivers achieve some independent mobility. By just tilting acceleration sensor wheelchair can be moved in four directions. The obstacle sensor can help the rider control the wheelchair by taking over some of the responsibility for steering and avoiding objects until he or she is able to handle the job. The amount of work that the rider chooses to do and how much control is taken by the chair is decided by the rider and his or her care. Mini technology distress state which make the implementation of unusual decisions. Thus, to find out a way to control the wheelchair without involving the hands and imparting a decision making power, could be of a great help to such persons. Here the most perfect solution comes out to be the voice control, physiological state analyzing and environmental state analyzing, self decision making wheelchair. This motivates us to work in the direction of design and implementation of prototype of low cost smart wheelchair by distinguishing emotion, illness and environment for elderly and physically challenged. Following are the situation where traditional wheelchairs fail Handling Joystick/Touchpad: For the persons who suffer from spasm sand paralysis of extremities, the joystick or touchpad is a useless. So, the voice command system may be the good information transmission means to control the navigation of the wheelchair by such users. Emotional Distress/Disease State: Except the normal wheelchair control, the morbidity and the exceptional emotion also need to be considered fully.

The wheelchair's operation depends upon the instruction provided by the user. Under the influence of Emotional Distress/Disease state the instruction may result fatal. Thus users need to be continuously monitored for such bad emotions or states .Sudden change in Ambient Environment: The outside environment and the risk cannot be decided completely by the old and the disabled. A what it means to walk with purpose, providing not only practical functionality but also a glimpse into the future of wearable technology.

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II. LITERATURE REVIEW

Considering the problems mentioned, a few models have been suggested to help lessen those same issues.

The In today's world there are many disabled persons who find it difficult to perform movements or perform daily activities. This types of persons are mainly dependent on others for their assistance. But they can become self-independent and perform some daily activities on their own with the help of assistive devices. The most widely used assistive devices are Wheelchairs. Wheelchairs is basically a chair fitted with wheels, which can help people move around who cannot walk because of illness, disability or injury. But there are many disabled people with weak limbs and joints who cannot move the wheelchair. Thus, Smart Wheelchair can benefit a lot to them and everyone in society. Smart Wheelchairs are electric powered wheelchairs with many extra components such as a computer and sensors which help the user or guardian accompanying wheelchair to handle it easily and efficiently. The recent development in the field of Artificial Intelligence, Sensor technologies and Robotics help the growth of wheelchairs with new features

Several studies have shown that both children and adults benefit substantially from access to a means of independent mobility. While the needs of many individuals with disabilities can be satisfied with traditional manual or powered wheelchairs, a segment of the disabled community finds it difficult or impossible to use wheelchairs independently. To accommodate this population, researchers have used technologies originally developed for mobile robots to create "smart wheelchairs." Smart wheelchairs have been the subject of research since the early 1980s and have been developed on four continents. This article presents a summary of the current state of the art and directions for future research. It is the ultimate objective of this design and testing project to contribute a useful product to the enabling devices market Therefore, the final consumer of the product must be considered through each of the stages of its lifecycle.

The second proposed scenario for the PAU consumer is an integrated electric wheelchair operator. Due to the large, heavy, and bulky configuration of the integrated wheelchair, a special vehicle, such as a van or bus equipped with a wheelchair lift, is needed to transport the chair from one location to another. Transporting an electric wheelchair can purchase the new power assist device for use with a folding wheelchair that can be transported in a personal vehicle.

However they are categorized, understanding the different segments of the wheelchair consumer population will improve the knowledge base for design decisions, advertising strategy, and targeting specific consumers.
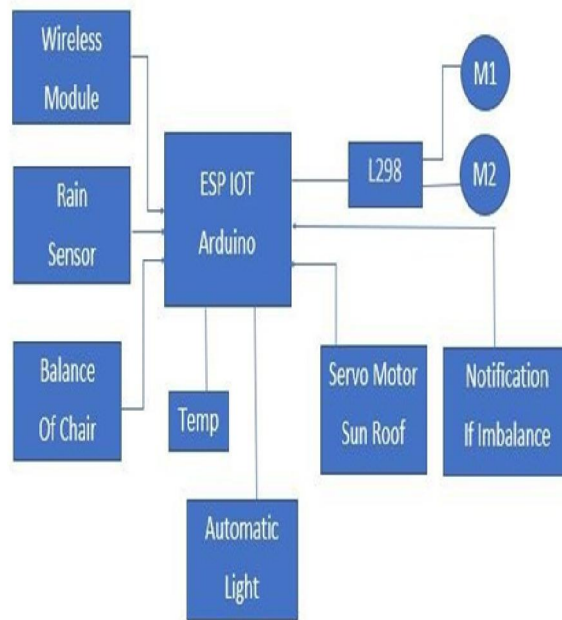
III. PROPOSED METHODOLOGY

Fig 1: System block Diagram

The majority of wheelchairs used in developing countries are given away for free and break down quickly on rough terrain. Because users depend on handouts, they cannot assert economic pressure to improve imported products to suit their lifestyle. To address this problem the project team will create a Web-based network to connect donors from developed nations directly to workshops providing appropriate technology that meets user needs and suits the local environment. Through this system, workshops will advertise their clients, donors will select recipients, and workshops will provide confirmation of wheelchair delivery.

Inputs and outputs will be controlled by workshops and donors, minimizing the need for an a separate institution to oversee this process and maximizing revenue flow to the manufacturers. An additional component to the network will be a "Friendster" type peer-to-peer community where wheelchair manufacturers from around the world can share designs and ideas with each other.

IV. RESULTS AND DISCUSSIONS

Thus, in this project we have concentrated on the operation implementation helps disabled people who are dependent on their basic needs. Sometimes their mood is not good. Then the umbrella is so simple to operate and doesn't need any external help. The head mat operates according to feelings of personal mood. The foot mat helps during the rainy days. All the common man can reach out due to this wheelchair to become independent if the guardian holds a smartphone.

This project work was carried on to fulfill the requirement of minor project of Bachelor in Electronics and Communication Engineering. Smart Wheel Chair was chosen to be done as it incorporated designing an embedded system that was real time and also due to the sensor that was to be used in it. Most modern day technologies use sensors such as accelerometer, gyroscope, to take interactive input and in this project we also have tried to make the robot interactive and close to human. Also we wanted to know about the accelerometer, Gyroscope, Joystick, Ultrasonic Sensor and its working in detail and also wanted to develop a fast and real time project that can help others people

V. CONCLUSIONS AND FUTURE SCOPE

A prototype system implementation shows that the proposed day/season based system is efficient in interacting with the living environment. So there is some manual work, and in our, it is fully automatic and unique. Thus, the authors able to make a chair that acts as a moving chair and a wheelchair (with foot mat during rainy days) depending on the need of a person using Location Track through GPS and Open Head mat using Pettier Transducer.

Smart Wheel Chair is mechanically controlled devices designed to have self mobility with the help of the user command. This reduces the user's human effort and force to drive the wheels for wheelchair .Furthermore it also provides an opportunity for visually or physically impaired persons to move from one place to another. The wheelchair is also provided with obstacle detection system which reduces the chance of collision while on the journey. Smart wheelchair has gained a lot of interests in the recent times.

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