

SOLAR VEHICLE FOR PHYSICALLY CHALLENGING PEOPLE USING VOICE RECOGNITION

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ABSTRACT

Now-a-days the current scenario, transportation has become one of the most important requirements for the humans. There is no correct platform for physically challenged folks to commute severally the physically challenged people's travelling is very difficult and challengeable. They have to depend on others to complete their travelling needs. Now days utilization of vehicles was increased a lot so the ingestion of fossil fuels like petrol and diesel are keep on increasing. Due to this, the accessibility of fossil fuel is also increased. The high consumption and demand of this fuel causes the enormous price. These types of fuels also affect the environment in more. Hence, we decided to solve the both glitches in a single conception. We have design and developed a vehicle which helps persons who physically challenged to commute easily without other's help. The vehicle is powered only by solar and we introduced a new technique to start and stop the vehicle by voice recognition.

I.INTRODUCTION

The Internet of Things (IoT) refers to a network of physical devices, vehicles, appliances, and other physical objects that are embedded with sensors, software, and network connectivity, allowing them to collect and share data. IoT devices—also known as “smart objects”—can range from simple “smart home” devices like smart thermostats, to wearables like smart watches and RFID-enabled clothing, to complex industrial machinery and transportation systems. Technologists are even envisioning entire “smart cities” predicated on IoT technologies. IoT enables these smart devices to communicate with each other and with other internet-enabled devices. Like smart phones and gateways, creating a vast network of interconnected devices that can exchange data and perform various tasks autonomously. This can include: • monitoring environmental conditions in farms • managing traffic patterns with smart cars and other smart automotive devices • controlling machines and processes in factories • tracking inventory and shipments in warehouses The potential applications of IoT are vast and varied, and its impact is already being felt across a wide range of

industries, including manufacturing, transportation, healthcare, and agriculture. As the number of internet-connected devices continues to grow, IoT is likely to play an increasingly important role in shaping our world. The household appliances, airplanes, vending machines, and toys (as well as the more obvious cellular phone and PDA) are among the myriad possible hosts of an embedded system. Embedded systems that are programmable are provided with a programming interface, and embedded systems programming is a specialized occupation. Certain operating systems or language platforms are tailored for the embedded market, such as Embedded Java and Windows XP Embedded. However, some low-end consumer products use very inexpensive microprocessors and limited storage, with the application and operating system both part of a single program.

II.LITERATURE SURVEY

Deepak. B et.al [1] describes Solar-based wheelchair with a 3-axis accelerometer (ADXL335) controlled gesture and a Bluetooth module Setup for voice recognition with an ATmega microcontroller that we will configure the entire setup using the Arduino board together with some mathematical algorithms. The movements can be recognized from any kind of physical movement detected by a person's Accelerometer and the voice recognition will function with the help of the Bluetooth module using Android Application, we will only have some command on our Android device, and will be recognized with the help of the Bluetooth module present in the entire unit voice and thus the required action will be taken accordingly. Gesture recognition and voice recognition can be explained as the method or process that explains how the computer understands the human body language and also creates a bridge between the computer and the human world.

Desai, Palak et.al [2] says In present scenario, due to serious crisis in energy sector, alternative energy and energy for sustainable development is imminent. Hence, clean and efficient usage of energy sources becomes the prime importance across the global. Recently, innovation in Electric Vehicles (EVs) has attracted prominent attention since they use clean electricity. The increased demand in usage of electric vehicle started because of lower noise pollution, reduced emission, less maintenance requirement, and decreased power consumption along with eco-friendly technology. Integration of renewable energy sources such as solar and wind power would be an efficient method.

Devan, P K [3] et al described A solar powered tricycle for the physically disabled persons has been designed using the simple surface structural (SSS) analytical method without the need for rigorous complex method of the finite element analysis (FEA) usually employed in automobile industry. The structural performance analysis and power train performance analysis were carried out in order to predict the vehicle performance at certain operational condition, and also to assist in power train

selection and sizing. The Simple surface structural (SSS) analysis was performed on the tricycle frame to determine the deformation of the tricycle when it is subjected to the driver and goods payloads totaling 900N. The power train performance simulation was carried out on the tricycle using gross vehicle weight (GVW) of 1300N for only the driver, and GVW of 2000N when goods are on board under using different accelerations in starting from. This simulation output resulted in the selected BLDC motor of 5000W and a 3000W.h battery capacity. The structural performance analysis gave a maximum deflection of about 1.3mm which is within the safe limit. The tricycle will be able to cover a minimum distance of 10km and a maximum distance of 30 km depending on the payload and the road conditions.

Chennabasappa Hampali et.al [4] said solar energy plays a vital role in our day to day life. Solar tricycle developed will be useful especially for handicapped people. Comfortless for the person travelling in the tricycle is given more importance. Nowadays fuel prices throughout the world are increasing day by day. Thus, in the present work solar tricycle runs with solar energy. Since, India is blessed with nine months of sunny climate, so concept of solar tricycle is best suited in India. Solar hybrid tricycle can become a very vital alternative to the fueled automobile. Since the fuel prices are always on increasing direction, so there is a tremendous need to search for an alternative source of energy to conserve these natural resources. Thus, a solar tricycle is an electric vehicle that uses alternate form of energy by harnessing solar energy to charge the battery and thus provide required voltage to run the motor. Hybrid tricycle combines the use of solar energy as well as the dynamo that runs through pedal to charge the battery to run the tricycle. Thus, solar hybrid tricycle can become a very vital alternative to the fueled automobile.

Ravikumar Kandasamy [5] developed the solar tricycle especially for handicapped person of ANANDVAN organization started by Mr. Baba Amate in Warora taluka of Maharashtra state (India). The organization is working for the leprosy affected people. In this paper it is discussed that how solar tricycle will help to reduce the effort of handicapped person. All the designs specification considered after analyzing the problems from the handicapped person. Comfort of the person in the tricycle is an important and we have given importance to it. The main content of the tricycle is Solar PV panel, Brushless PMDC motor, Charge controller and battery. This paper will discuss about the main idea of this project and to get a larger picture on what is the problem in the current technologies, what that I want to achieve in this project and the area that will cover on this project. This paper is divided into some categories that are project background to describe the reasons to do this project, problem statement to inform about the problem or weakness of the existing technology, objective to make sure what actually this project must achieve and scope of this project to specify what will be used in this project.

Mothibeli Joseph Pita et.al [6] presents a study of a low-cost solar-powered wheelchair for disabled people of rural areas in South Africa. There are manual wheelchairs on the market which always require an able-bodied person to assist in steering the disabled person around. Other wheelchairs use a battery that is charged by electricity when it is flat. Electricity is expensive and scarce in rural areas. The main components of the solar-powered wheelchair are the wheelchair structure, solar panel, DC motor, charging controller, switch and wheels. The proposed design is very useful for physically disabled people of rural areas and affordable for the low-income earners of countries like South Africa. The wheelchair is cost effective, user friendly, self-driven and independent. The solar-powered wheelchair will help physically disabled people with their daily movements and will be very effective in both rural and urban areas. The maximum speed and load that the wheelchair can handle are 11.25 m/min and 155 kg, respectively.

Zhang Hua et.al [7] aims to provide a framework of guidelines for the design of an in-vehicle speech recognition interface. In the first section, a background of speech recognition technology is introduced to explain why it is necessary to provide specific guidelines for in-vehicle speech recognition interfaces. The second session reviews two parts of previous research work; existing guidelines on general speech recognition interface design and physical and cognitive performances during driving and using speech recognition. However, the current research results do not conclude on how to design a speech recognition interface for in-vehicle systems, thus for the third section, an actual case-study from our organization was evaluated to identify usability issues. It describes how to apply general speech recognition guidelines into an in-vehicle speech recognition interface and introduces new solutions to solve the found usability issues.

III. EXISTING AND PROPOSED SYSTEM

EXISTING SYSTEM

Nowadays the current scenario, transportation has become one of the most important requirements for the humans. There is no correct platform for physically challenged folks to commute severally the physically challenged people's travelling is very difficult and challengeable. They have to depend on others to complete their travelling needs. Now days utilization of vehicles was increased a lot so the ingestion of fossil fuels like petrol and diesel are keep on increasing. Due to this, the accessibility of fossil fuel is also increased. The high consumption and demand of this fuel causes the enormous price. These types of fuels also affect the environment in more. Hence, we decided to solve the both glitches in a single conception. We have design and developed a vehicle which helps persons who physically challenged to commute easily without other's help. The vehicle is powered only by solar

and we introduced a new technique to start and stop the vehicle by voice recognition.

LIMITATIONS

- Sunlight Dependence: Performance varies with weather and time of day.
- Cost: High initial investment for solar tech and batteries.
- Voice Recognition: Needs to handle various speech patterns accurately.
- Accessibility: Must be designed for different physical challenges.
- Infrastructure: Requires solar charging stations for longer trips.

PROPOSED SYSTEM

Basically we have create a tri-wheel solar vehicle. We have made the basic structure of our solar vehicle by welding the iron thin plates and a cardboard to hold the weight of a person or any material 100-120 kg. We have tried to make the demo model as light as possible. In the housing structure we have used 25mm shaft with a pinion. We have connected another chain pulling pinion to the main shaft by using a chain through welding which is connected to the geared motor. Now the circuit part, for that the solar panel is connected to the battery which is charged directly by the sunlight and the second way to charge the battery is through direct electricity. Now when the input is provided through the throttle as in when we twist the throttle, which then sends the input to the controller. the controller then processes the input and sends out the desirable instruction i.e. output to the motor, which then controls the wheels and varies the speed according to the input taken by the motor.

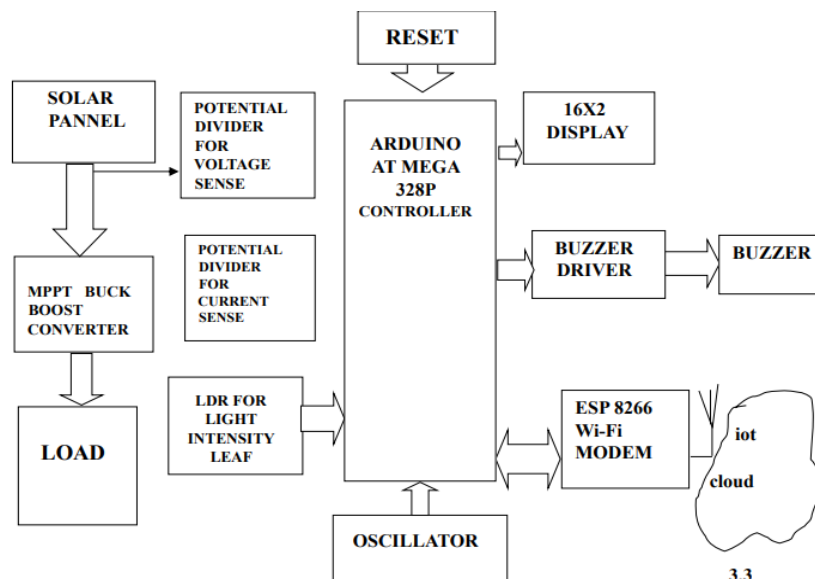
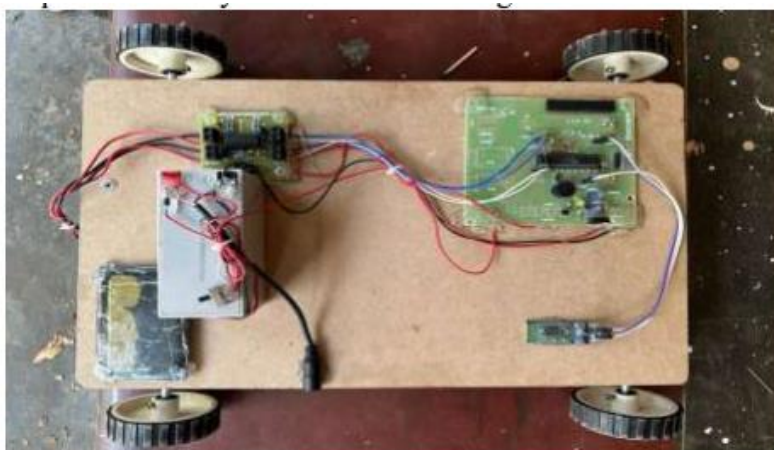


Fig. Block diagram of proposed system

III.RESULTS & DISCUSSION

The result for solar-powered vehicles for physically challenged people looks super promising. These vehicles could mean a new level of freedom and autonomy, reducing carbon footprints and energy costs. It's a step toward a future where technology not only advances but also includes and empowers everyone



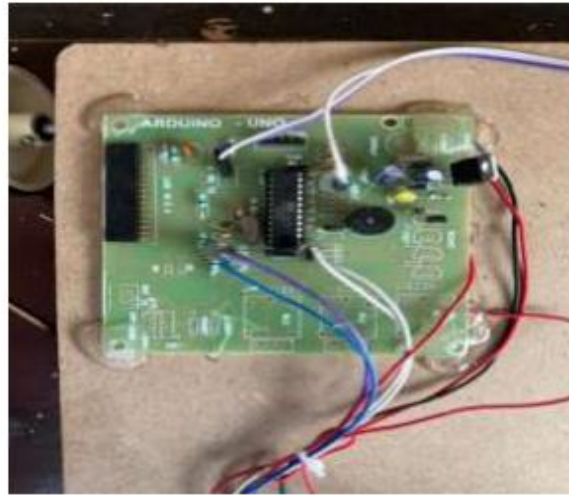


FIG 6.1 HARDWARE KIT RESULT

IV.CONCLUSION & FUTURE SCOPE

CONCLUSION:

In conclusion, solar-powered vehicles for physically challenged people represent a huge leap forward. They're not just eco-friendly, but they're all about empowering individuals with greater mobility and independence. As technology progresses, these vehicles are set to become even more efficient and user-friendly, addressing specific accessibility needs and embracing clean energy. It's a win-win for both users and the environment. Absolutely, the potential for growth in solar-powered vehicles for the physically challenged is pretty vast. As we move forward, we can expect to see enhancements in solar technology and battery storage, making these vehicles more practical for everyday use. There could be more customization options to suit different disabilities, and integration with smart technology for easier navigation and control. It's all about creating a more inclusive and sustainable future for transportation.

FUTURE SCOPE:

The future scope for solar-powered vehicles for physically challenged individuals is seriously promising! We're talking about advancements in solar panel efficiency, making these vehicles more reliable and able to go longer distances. Plus, there's potential for better battery tech, which means storing more solar energy for later use. We might also see more personalized features tailored to different needs, and even self-driving tech to give an extra level of independence. And

as clean energy becomes more of a focus, these vehicles could become more affordable and mainstream.

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