Hover Board Cart

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Abstract - Our goal is to reduce pollution from cars and gasoline and make transportation more fun. We plan to do this by making all new means of travel. This invention will reduce the amount of cars sold and the amount of gasoline used and put into the air. So we planned to make hover board cart. Hoverboard Cart is a hybrid vehicle which runs using the power of motors which are connected to each wheel of the hover board. Motors are getting power from the battery used in the hover board. An Electric DC motor is a machine which converts electric energy into mechanical energy. The working of DC motor is based on the principle that when a current-carrying conductor is placed in a magnetic field, it experiences a mechanical force. The Electric motors give the necessary torque to the wheels and then it is controlled with the help of switches. As the whole idea of hover board cart is based on the people related to disabilities, the switches used at the hand positions so that anyone can able to navigate the vehicle easily.

Keywords – Hover board Cart.

1. INTRODUCTION

With the rise in global warming and increasing pollution levels, it is becoming essential to find a viable alternative to the internal combustion engine petrol powered vehicles.

The prototype introduced by our group is to show the next level of navigation experience for various fields such as it can be used in hospitals replacing wheelchairs, Industries etc.

The aim of this project is to provide a versatile and comfortable form of navigation using hover board.

This report presents the design of hoverboard cart which include following components: Motors, Battery, Hover board, Safety features and Materials.

2. SYSTEM MODEL

A self-balancing scooter or self-balancing two-wheeled board commonly referred to as a "hover board", is a type of portable, rechargeable battery-powered scooter. They typically consist of two wheels arranged side-by-side, with two small platforms between the wheels, on which the rider stands. The device is controlled by the rider's feet, standing on the board. Reason for modification.

Hover boards are unsafe, so we created a new, fun & safe mode of transportation that virtually anyone can drive "Hover board Cart". The Hover board cart is comfortable, versatile and has many practical uses.

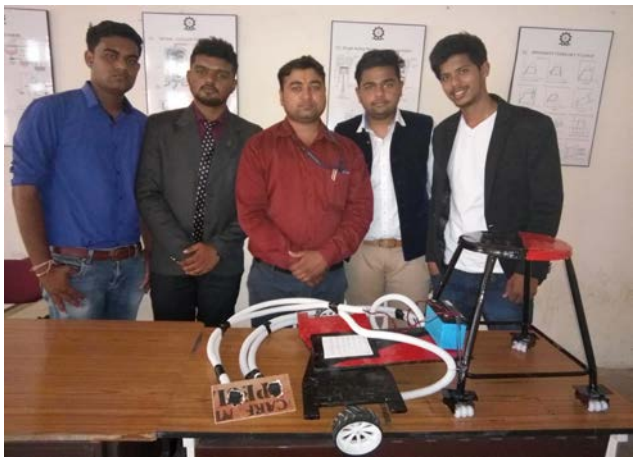

Fig. Hardware Setup

It is cheaper as compared as compared to other hybrid vehicles as simple components are used. Gyroscope and speed sensors are not used as hover board cart is stable and switches is used for controlling speed , which makes it cheap, safe and affordable.

Working principle of hoverboard cart

Hoverboard Cart is a hybrid vehicle which runs using the power of motors which are connected to each wheel of the hover board. Motors are getting power from the battery used in the hover board.

An Electric DC motor is a machine which converts electric energy into mechanical energy. The working of DC motor is based on the principle that when a current-carrying conductor is placed in a magnetic field, it experiences a mechanical force.

The Electric motors give the necessary torque to the wheels and then it is controlled with the help of switches. As the whole idea of hoverboard cart is based on the people related to disabilities, the switches used at the hand positions so that anyone can able to navigate the vehicle easily.

3. PREVIOUS WORK

Hoverboard, first described by author M.K. Joseph in 1067 and popularised by the Back to the Future film franchise. The hoverboard is first depicted as a fictional levitating

board used for personal transportation and resembles a Skateboard without wheels.

During the 1990s there were rumours, fuelled by director Robert Zemeckis that hover board was, in fact, real, but not marketed because they were deemed too dangerous by parents' groups. Though hover board gained so much popularity through the media but there are some concerns over the name represented nowadays and earlier as it considered as the fictional levitating board.

As the theory depicted that there is no Universally accepted name for the device, as its various products names are attributable to the companies which distribute them and not their manufacturers. Shane Chen an American businessman who founded the company Inventist has the earliest claim to inventing the self-balancing scooter device [swegway]Chen started a Kickstarter for Hovertrax, in 2013. In an interview with the *Los Angeles Times*, Chen voiced his frustrations regarding patent rights in China. He claimed that Solowheel, his self-balancing unicycle, was copied by other manufacturers after it appeared in *Happy Show*, a Chinese television show. In August 2015, Mark Cuban announced plans to purchase the Overtax patents from Chen. Also in 2015, an American company, Invents, claimed to hold patents and announced its intent to pursue litigation.

Whereas in other theory it states that Seaway Inc. holds patents which give it exclusive rights to sell self-balancing scooters in the United States. One of the manufacturers, Ninebot, acquired Segway, in April 2015, to resolve the dispute. The fast pace of the Chinese manufacturing industry makes it difficult to pinpoint which Chinese company was the first to manufacture the device.

According to Wire's David Pierce, the device was likely invented as the" Smart S1" by Chic Robotics, a Chinese technology company founded in 2013, and associated with Zhejiang University. The Smart S1 was released in August 2014 and found success at the 2014 Canton Fair trade show.The company patented technologies associated with the board, but due to China's lax patent enforcement, the product was copied by several Chinese manufacturers.

As of June 2015, the board is made by several knock off manufacturers in China – a pattern common in the country's technology and industrial sector. The copies vary greatly in price and quality and may exhibit various defects. Most of the boards are produced in mass manufacturing factories in Shenzhen, China. Some newer boards have incorporated Bluetooth speakers, allowing the driver to play music.

The devices' increasing popularity in Western countries has been attributed, initially, to the wide array of celebrities who have been seen with various models of the product. These individuals include Justin Bieber, Jamie Foxx, Kendall Jenner, Chris Brown, Soulja Boy and Wiz Khalifa, among others. The founders of the American company, PhunkeeTree, encountered the board at the Hong Kong Electronics Show, in 2014 and became involved in its distribution, shortly thereafter. The company gave a board to Kendall Jenner, who posted a video of herself riding it, on Instagram. The video became a viral hit on social media, which led to other celebrities asking PhunkeeTree for free samples.

In an undated article, Merriam-Webster's Ammon Shea wrote:

The word hoverboard has recently seen a dramatic surge in use, as a result of it being widely used to describe a kind of scooter, one which has two wheels attached to a small platform and is operated in a hands-free fashion. That it does not hover seems not to bother people as much as the fact that the devices are, at least in this early state of development, rather prone to catching on fire. Although the word hoverboard did not enjoy widespread use until after this cinematic exposure, it did exist before this time. In 1986 it appeared in an issue of Texas Monthly magazine, in Stephan Harrington's imagining of what Texas might look like in the year 2036 But the earliest currently known use of the word, by a long shot, comes from a 1967 book by M. K. Joseph, The Hole in the Zero. This novel, subtitled A Story of the Future, falls into the genre of what might be called speculative science-fiction. We should not be so surprised that the wheeled variety now so seemingly ubiquitous should have been granted its slightly imprecise name; when you come down to it, hoverboard is probably a catchier name than rollerboard and certainly preferable to fireboard.

Months after their introduction, there continues to be anongoing debate regarding the correct name for these devices. While they are now broadly referred to as hover boards, with some support, opposition and even ambivalence for that name, the issue remains largely unsettled. The term "self-balancing electric scooter" also remains popular, if equally unofficial.

4. PROPOSED METHODOLOGY

Making of Hoverboard:-

Prepare a wooden cover for hoverboard,

Wheels need to be connected to the motors and motors are incorporated on the cover plate.

Making of Hoverseat:-

Steel chair is used for making hoverseat (considering weight and strength of hoverseat)

Chair is welded to 360^{o} wheels. Steel welding is done.

5. ASSEMBLY OF HOVERBOARD CART

- Now the hoverseat is to be connected to the hoverboard cover plate assembly with the help of wooden piece.
- The battery is to be located on the wooden piece for better distributions of wires. Now connections to battery need to be done for the first testing process.
- Wires are connected to the battery and motor with proper signs.
- To incorporate the forward and backwards motion in the hoverboard cart, switches needs to be connected with the proper signs. So the switch assembly is developed in such a way that it can change the direction of the motors.
- Preliminary Testing of the hoverboard cart is done by first checking the forward and reverse motion.
- Then by applying weight to the hoverboard cart, secondary testing will be done. After the secondary testing process, it should move forward with Left/Right motion.
- After all the testing processes users are ready to take the ride on hoverboard cart.
- Painting of cart is done

6. EXPERIMENTAL RESULTS

The hoverboard cart can take weight upto 55 kg and can be used on road and off road.

Motors used can take load of 60kg (30kg each motor and 2 motors are used)

Total bearable load = 60kg

Weight of battery = 3kg

Weight of seat and wooden pieces =2kg

Net bearable weight = 60-(3+2)

= 35kg

The hoverboard cart can be used on road as well as off road and it can turn easily in any direction with the help of switches.

7. CONCLUSION

The hover board cart is modified version of hover board and is much safer than hover board. It can bear weight up to 55 kg and can be used on road and off road. It is cheaper s compared as compared to other hybrid vehicles as simple components are used. Gyroscope and speed sensors are not used as hoverboard cart is stable and switches is used for controlling speed , which makes it cheap ,safe and affordable.

8. FUTURE SCOPES

More powerful motor can be used which makes it more convenient.

Solar panels can be used in place of battery

This discovery of hover board cart can lead to the discovery of user friendly hovercraft

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