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TECHNOLOGY BLUEPRINT SMART WHEELCHAIR

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CHAPTER 1

1.0 EXECUTIVE SUMMARY

Nowadays, there are people in the world who are facing disability in movement due to a significant amount of paralysis, accident, or due to old age. For many years, the wheelchair was used among disable person in order to ease their movement. But, the standard wheelchair nowadays needs some improvements and remodeling in order to fulfill the requirements of users.

For this reason, our team decided to build a smart wheelchair which would be helpful to these people to be self-dependent and would be helpful in integrating them into our society. A smart wheelchair comes with several features and latest technology which is very helpful to its users such as driven by an electric motor controlled by joystick or voice command, obstacle sensor to avoid a collision and also have the ability to climb the stairs. This product will offer many advantages and benefits to its user

The smart wheelchair will be sold to the hospital, old folk homes, charity homes, and homeowner. This is the main target buyer for our product because based on our study and observation these parties is the most that use the wheelchair. This smart wheelchair will be sold in the physical store and website with price RM2400. The price is quite expensive because it's come with many features and technology. Although the price is quite expensive it gives a different experience to its users

CHAPTER 2

2.0 PRODUCT DESCRIPTIONS

2.1 Purpose of Development

Smart Wheelchair was developed to help the users who have lost their ability in moving from one location to another location safely, quickly and easily. The wheelchairs that are produced today need improvement and need it quickly. From our study, most of the wheelchairs that are used nowadays are not a friendly user type. They need continuous push from someone in getting the wheelchair moving. Their lives are more difficult by the fact that there is a lack of an intuitive control system for their wheelchairs that allows moving independently. Based on a study and observation, most users complain about the standard wheelchair which caused the users to feel uncomfortable or pain on their back while sitting on the wheelchair and most of the users said that the major problem on the standard wheelchair is the armrest.

2.2 Product Concept

This smart wheelchair is made up of high-quality material and parts to make it more durable and long lasting. This smart wheelchair also has a futuristic design concept to attract the customer to own this smart wheelchair. It seems technology is playing a large part in the design of any new product. So, our team decided to put several features to our smart wheelchair such as obstacle sensor, self-balancing wheel, 3 modes controller mechanism, and also rubber track to make it more futuristic and multipurpose.

2.3 Application of the product

The basic application of smart wheelchair is to move from one location quickly because it powered by a powerful electric motor. This smart wheelchair can be control using three systems in which remote control by using a smartphone, a joystick which is in the wheelchair and also voice command. So, people who lose the ability to use hand can control a wheelchair by using speech commands.

In addition, most of our public infrastructure, public transport, and government buildings are not disabled-friendly. So, this smart wheelchair comes with the most useful feature which it has the ability to climb the stairs easily without any help from other people. Besides that, the users can use public transport such as bus without any problems.

2.4 Unique features

Our team has done some improvement in term of electrical and mechanical part in order to upgrade its features in order to make it more unique compared to the other wheelchair. The smart wheelchair consists of a set of a controller unit which allows the user to provide the input in the form of a joystick or wireless control by using a smartphone or a voice command. The controller unit then synthesizes the command and takes required action so as to move the wheelchair to the particular position. Besides that, it has ultrasonic sensors to detect any obstacles within range of 5 meters to avoid any collision that can cause injury. The sensor will immediately notify the system and stop the smart wheelchair till further command.

Next, this smart wheelchair is a self-balancing and only have a pair of wheels that makes it unique compared to the other wheelchair. This feature offers the users a dynamic experience during navigating. It also consists of rubber track that allows the smart wheelchair to climb up and down the stairs smoothly and safely. This rubber track also allows the smart wheelchair to travel on rough surface without any problem.