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Pusat Asasi

Designated Parking for OKU with RFID Access

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ABSTRACT

Most structures, public spaces, and even public transportation in Malaysia have offered disabled-friendly infrastructure to those in need as awareness of the need of services for individuals with disabilities grows. Even an exclusive area for parking cars has been created. To make everything easier for those with impairments, this space is typically placed close to the entrance. However, not everyone is aware of this group of people with disabilities, even being selfish. Even though it is obvious that this parking space is designated for the disabled, they unilaterally leave their cars parked there. The reason for this is that the entrance is not far from this area. They blatantly park their cars there even they don't have any disabled person decals. For individuals who are in extreme need, this attitude of selfishness is especially challenging. To address this issue, something needs to be done so that people not misused and being selfish. Designated Parking for OKU with RFID Access is an innovative solution that addresses the problem of unauthorized usage of disabled parking spaces. The use of RFID by OKU to obtain parking space authorization was highlighted by this invention. Unauthorised vehicles may have to pay for the compound before they are allowed to leave if the space is filled with them. These were the key goals in mind when this innovation was created. This innovation utilizes ultrasonic sensors to detect incoming vehicles and RFID readers to determine if the vehicles are authorized to park in the designated area. Unauthorised vehicles are prevented from leaving the parking lot by the system's boom gate, which is operated by a servo motor, allowing management to respond to the offender. Conversely, authorized users can enter and exit the parking lot without any issue. The uniqueness of Designated Parking for OKU with RFID Access gives it a significant advantage in the market. This innovation could potentially address the issue of unauthorized vehicles occupying designated spaces, leading to a decrease in conflicts between users of parking lots. Overall, this innovation is a revolutionary innovation that offers a reliable and efficient way of controlling access to disabled parking spaces.

Keywords: OKU; authorized person; RFID; parking space; disable

INTRODUCTION

As the necessity for services for people with disabilities becomes more widely acknowledged, most buildings, public areas, and even public transportation in Malaysia have provided disabled-friendly infrastructure to those in need. Even a private parking lot has been established. This area is often located near the entrance to make things simpler for those with disabilities.

As stated in [1], one of the most hotly contested topics in today's local society is the violation of disabled people's rights. The community is less conscious of the abuse that takes place around them today. In the context of disability parking places, it has become normal to

obstruct those designated spaces without being held accountable. The fact that non-disabled people are now parking in disability parking places makes this situation a complete mess.

According to a study by The Star Online, the penalty for wrongful usage of parking bays for the disabled (OKU) is steep, and yet the misdemeanour is rampant in Petaling Jaya [2]. The article reported that in the past 14 months, the total number of compounds issued by the Petaling Jaya Municipal Council (MBPJ) was 211, but only 69 have been settled. It is also reported that, due to the widespread sale of fake stickers in hardware shops and bookshops, there seems to be some confusion about OKU stickers which are intended for identifying a car belonging to individuals with disabilities.

This problem is not unique to Malaysia and is a global issue, with disabled parking spaces often being misused by able-bodied drivers, causing frustration and inconvenience for those with disabilities. The objective of this innovation, Designated Parking for OKU with RFID Access is to provide a practical solution to this problem by using advanced technology to control access to these parking spots, ensuring that only authorized vehicles are allowed to park in them.

The motivation behind this innovation is to create a more accessible and equitable society for individuals with disabilities, who often face significant challenges in their daily lives. By providing a solution to the problem of unauthorized parking in disabled parking spots, it is expected to make a positive impact on the lives of these individuals and promote greater awareness and understanding of their needs.

INNOVATION DEVELOPMENT

Designated Parking for OKU with RFID Access is a solution for the problems encountered in parking-lot management systems via RFID technology. RFID readers, RFID labels, computers, barriers and software are used as for the main components of the RFID technology. The software has been handled for the management, controlling, transaction reporting and operation tasks for parking lots located on various parts of the city. Check-ins and check-outs of the parking-lots will be under control with RFID readers, labels and barriers. In this innovation, RFID reader is located at the side of the parking space, so that it can read the RFID card that belong to the disabled people (authorized person).

An ultrasonic sensor is used in this invention to find any adjacent objects. It is utilised in this instance to find any car parked at the defined spot. It is crucial as a system indicator before activating on the boom gate. There is a RFID Tag attached to every vehicle. RFID reader is embedded into the system and when vehicles approach, the Readers “read” the signals that being broadcasted by the RFID Tags displayed on each vehicle. The RFID reader will turn to read the data from the RFID card as soon as the sensor detects the vehicle in that region. It will notify the green LED to light up if the correct data (OKU personal data) was read. It signifies that the car is registered to the rightful owner thus the boom gate is in passive mode. Conversely, when the RFID reads the incorrect data, the servo motor will automatically activate the boom gate. The owner of the vehicle will hear a buzzer, and they will have five minutes to move the vehicle before it gets stuck behind the boom gate. The management can act in this way towards the owner by suggesting the compound to the offender.

Figure 1: RFID reader and access card

Figure 2: Buzzer

Figure 3: Ultrasonic sensor

Figure 4: Servo motor

COMMERCIAL POTENTIAL

This invention is pertinent because it solves the long-standing problem of finding parking spaces for people with disabilities. By encouraging inclusivity and accessibility for those with disabilities, which is crucial for their mobility and independence, it makes a positive contribution to society.

There is a growing demand for designated parking systems for persons with disabilities (PWD), and the market potential for our innovation is high. According to the Department of Social Welfare Malaysia, the estimated number of PWDs in Malaysia in 2020 was 586,558 and this number is expected to grow with an aging population [3]. The demand for designated parking spaces for PWDs will continue to increase as a result. Furthermore, there are currently no designated parking systems embedded with RFID technology on the market. This innovation provides a unique and valuable solution to the current problem, making it highly marketable.

This innovation provides a simple yet effective solution to the problem of unauthorized parking in designated parking spaces for PWDs. The designated parking system is embedded with RFID technology, which allows only PWDs with authorized access to park in the designated parking spaces. The system includes a boom gate that imposes a fine on drivers who park illegally in the designated parking spaces, as their car will be stuck and unable to leave the parking space.

This innovation's marketability is further strengthened by the fact that it is the first of its kind in the market. As a result, it is expected to generate significant interest among individuals with disabilities and organizations that cater to their needs. The starting price of RM 130.00 is reasonable and competitive compared to other parking products.

Depending on how many units are sold, it can be estimate that this innovation's profit margin. On the other hand, a sizable profit margin can be anticipated given the great demand for this product and the lack of market competition. Since this invention has not yet been launched, there is no sales history. However, market research has been done and it shows potential to be successful in the market.

Investigation and study have been done in order to make sure that this invention is original and hasn't already been patented or trademarked by another business. All required precautions to safeguard our intellectual property has been taken, including filing for the necessary copyrights.

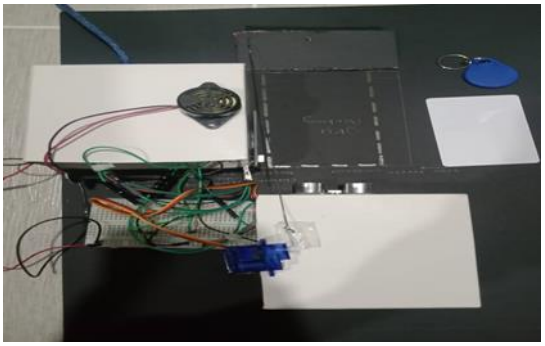

Figure 5: Top view of prototype

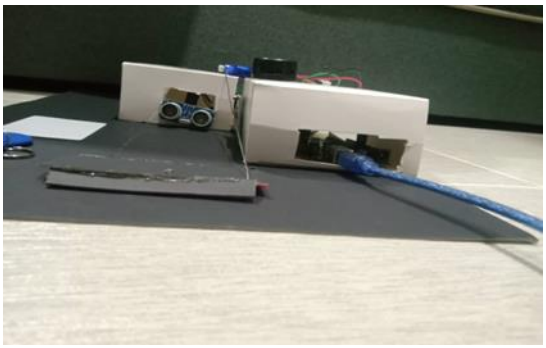

Figure 6: Front view of prototype

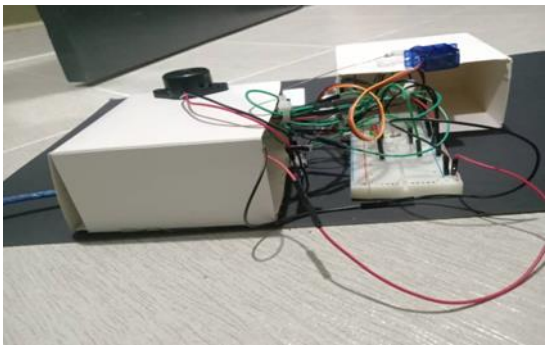

Figure 7: Back view of prototype

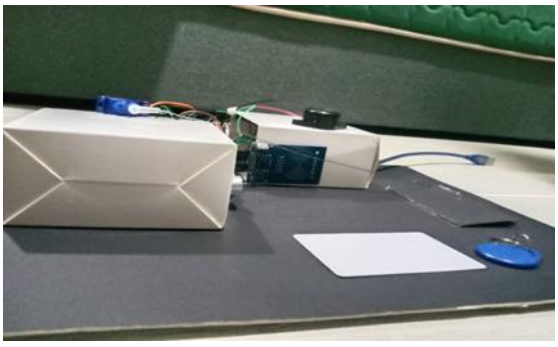

Figure 8: Side view of prototype

CONCLUSION

In conclusion, Designated Parking for OKU with RFID Access is a ground-breaking innovation that addresses a crucial issue faced by disabled individuals in society. This innovation provides an efficient and effective way to control access to disabled parking spaces, reducing conflicts and promoting a more equitable society. The use of RFID technology and ultrasonic sensors make our innovation unique and superior to other parking systems in the market.

As for future development, it is suggested to explore the integration of this innovation with mobile applications to provide real-time information on parking availability and allow for easier access control. Additionally, it is recommended to collaborating with local authorities to expand the implementation of this innovation to public spaces to increase its impact and benefit to the

community.

Overall, Designated Parking for OKU with RFID Access is a remarkable innovation that offers an efficient and reliable solution to the problem of unauthorized usage of disabled parking spaces. It is believed that this innovation has the potential to bring significant positive impacts to society, and looking forward to seeing it implemented widely in the future.

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