

ELECTRONIC TROLLEY USING ARDUINO FOR SMART SHOPPING

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Abstract - In our daily life shopping at big malls, grocery stores becoming a daily activity in urban cities. We can see heavy crowd at malls during holidays and weekends. The rush is even more when there are giving discount and during festival. People purchase different products and put them in trolley. After finishing the total purchase one needs to go to billing section for payments. Usually it consumes more time than purchasing. So, shopping trolley is an essential thing to purchase the products in shopping malls. On the other hand, it is difficult to carry the purchased products if the trolley is heavy. So, to overcome the above problem we updated the ordinary trolley into electronic trolley. In these trolley, Camera barcode reader decode the information available in the products through database and send the decoded signal to the billing section. Because of this Camera barcode sensing mechanism in the electronic trolley, it is used to avoid rush during shopping. Ultrasonic sensor detects and counts the object, while putting into the trolley. And, finally it acts as a human follower by using Kinect sensor. This human follower using the line following mechanism to follow humans. So the aged people can easily carry the products in the electronic trolley. So, by adding Camera barcode reader ultrasonic, and Kinect sensor to make the trolley too smarter.

Key Words: Electronic trolley, Camera barcode reader, human follower, shopping malls

1. INTRODUCTION

Shopping trolley is an important thing for shopping in malls and grocery shops. Yew et al. [1] describes a system for smart shopping that replaces the traditional barcode by RFID tags and scanners. In 2013, another approach to use Wireless Sensor Networks to design a cart where the entire processing was done at the cart locally and a camera acted as a barcode scanner was proposed. So to convert the ordinary trolley into electronic trolley we are adding kinect sensors, ultrasonic sensors and Camera barcode reader with trolley. It makes the ordinary trolley even more smarter. Systems for human recognition are increasingly required for a variety of important applications. In this electronic trolley, kinect sensor uses line following mechanism to follow the humans. To avoid rushing in the billing section, Camera barcode reader is fixed to the electronic trolley and to avoid shoplifting, ultrasonic sensor always counts the object while products are putting inside the electronic trolley.

2. METHODS

In the electronic trolley, kinect sensor has depth camera to record the video and it is taken as an input to follow the human as the principle of line following mechanism. Kinect tracks our full body movement in 3-D, while responding to commands, directions, even a difference of emotion in your voice.



Fig 1. Kinect Sensor

Zeng [4] So Kinect sensor is used to derive the skeleton data recognizing of individuals, a skeleton model is adopted to approximate the humans complex mechanical structure

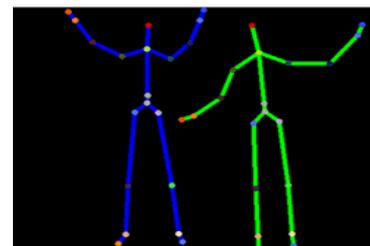


Fig 2. Skeleton Image

Ultrasonic sensor, counts the objects while the products are placed inside the trolley. It detects the object only in the range upto 1500mm.

Camera barcode reader plays major role in the electronic trolley to avoid rush during shopping. It decodes the information as available in the products, and it send the signals to the computer for billing purpose. The decoded signal consists of the product name, price of the product, and quantity of the item



Fig 3. Camera Barcode Reader

3. RESULTS AND DISCUSSION

This application will help avoid long queues and provide a hassle free checkout. It will not only reduce the amount of waiting time, but it will also reduce the human work

3.1 Existing system

In Existing system robot with ultrasonic Sensor is employed if the distance is exceeding the Particular or pre-set value means It will move forwards and follows the person. But it has some limitation is there ultrasonic is not that much accurate. And it if group of people is there it will not follow the Correct Person

3.2 Proposed system

In order to overcome the disadvantages in existing system we go for depth camera-based system to recognize and track the human using technology.



Fig- 4. Completed Hardware

Ultrasonic sensor is count of the object in the electronic trolley .Camera barcode reader is also detected for the cost. Electronic trolley is fixed with kinect sensor, Camera barcode reader, ultrasonic sensor and it programmed to extract the human features and track the human and to reduce the time in billing section

3.3 Working

Kinect sensor has depth camera to record the video and it is taken as an input to follow the human as the principle of line following mechanism. From kinect sensor, it gives the output signal through relay driver to run the DC motor using computer as an interface. Camera barcode reader decodes the information as available in the products ,and it send the signals to the billing section to the computer for billing purpose .ultrasonic sensor always counts the object while products are putting inside the electronic trolley

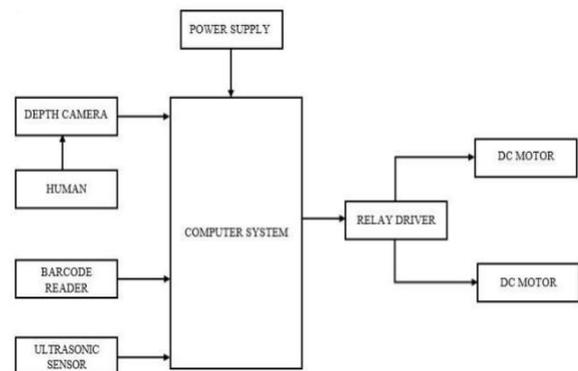


Fig- 5. Block Diagram.

4. CONCLUSION

Considering the changing trend in retail shopping, we conclude that the electronic Shopping trolley is most certainly a definite necessity for the Retail marketing industry to step up their cope up with the advancement in technology and save time and manpower. The main advantage of the electronic trolley is to provide hassle free shopping experience to customers and it reduce the time consumption by standing in bill counters

5. Acknowledgement

The successful completion of the project requires a lot of guidance and assistance from many people and we are extremely happy to get this all along till the completion of the project .Everything we have done for the project only because of such guidance and supervision of the people and we would never forget to thank them.

We would like to express our gratitude to the Valliammai Engineering College, for the encouragement and support of our project .we would like to thank our guide and review panelists for their guidance and support which helped to make this project a success. Finally, we would like to thank our family ,friends and relatives for giving the support to do the work

6. References

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