TROLLIGENT, SIMPLY INTELLIGENT TROLLEY

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Abstract: *In the pandemic chiefly it is recommended to avoid visiting crowded places such as super markets, malls, etc. So we are preparing a system that is used to maintain social distance and contactless purchasing of the products in malls by making trolleys inside the malls, automated that is upgrading trolley smart trolley in the terms of TROLLIGENT, simply intelligent trolley so that once the list is passed to the trolley it will collect the products and deliver the amount to be paid by the customer. By doing this it will reduce purchasing time as standing in queue is avoided at times. The purpose of this system is to help the society efficiently by saving their time and their lives.*

Index Terms - **Barcode reader, Smart Trolley, Line tracing Robot, Wi-Fi, Raspberry Pi.**

I. INTRODUCTION

In recent days shopping malls have become a center attraction for people as all type of items are available under a single roof.[1]The changeover from traditional market to online shopping is one the best epitomes. Everyday business field is finding new techniques to make customers life easier.[2] Now-a-days large number of people visit shopping malls daily and huge crowd is observed on the weekends and during various offers. Times plays crucial role in every individual's life and in shopping malls time is wasted as people need to stand in queue for billing. So, we have prepared a system such that time consumption is reduced and social distancing is maintained. It is done with the help of a trolley. So basically only two jobs are done by the customer.[3] The main goal of this project is to develop the system is to solve the problem which is the on-going pandemic and, this will also be beneficial in future as it reduces crowd by large extent and, it will be more efficient.[1]

II. METHODOLOGY

The smart electronic trolley is has been fabricated to reduce the efforts of people and shopkeepers so that customers can finish their shopping without squander their valuable time and they can know the cost of every product they pick by themselves. The block diagram represents that how the system will work.
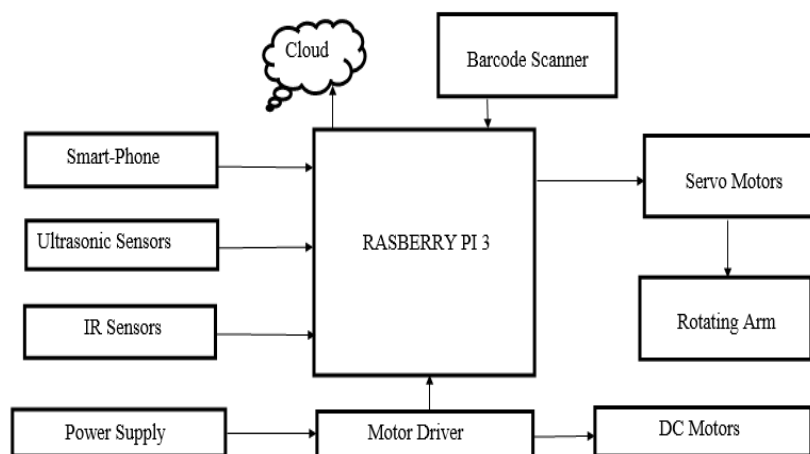

Fig.1 Block diagram of smart trolley

In the figure 1 there is a Raspberry Pi where, IR sensors, ultrasonic sensors, servo motor, barcode scanner, motor driver, are connected to the Raspberry Pi. Raspberry Pi is a microcontroller that has 40 GPIO pins and works on 5.0 GHz. It has 2 USB 3.0 ports and 2 HDMI ports. These sensors are connected to the GPIOs of the Raspberry Pi which provide the logic and power supply to them. Power supply is of 12V rechargeable battery which is given to the motor driver and, the 12V is reduced to the 5V which is then given to the microcontroller. A barcode scanner is connected to the microcontroller to scan the items.
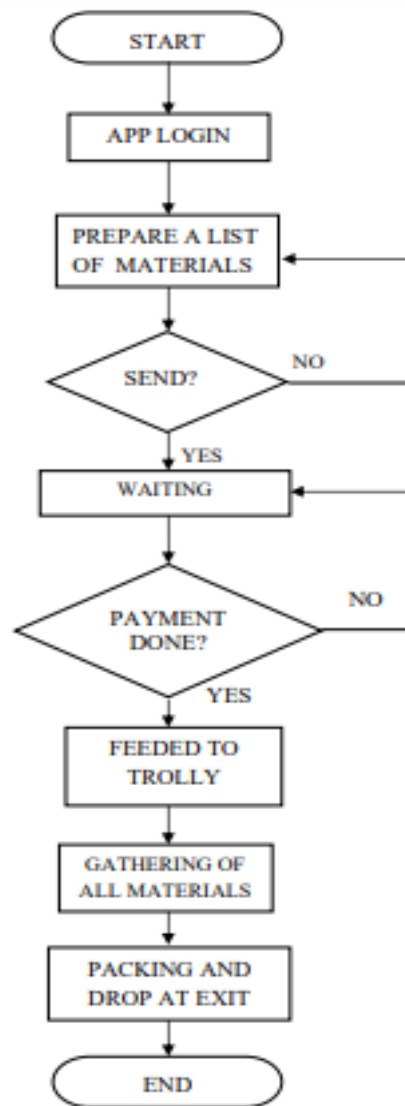

Fig.2 Working flowchart of Smart trolley

The figure 2 is the flowchart of the proposed design. As the customer enters the shopping mall, after taking the electronic trolley, the customer have to login to the app to select the items from the list. After selecting the items the pdf will be generated and the calculated price will be sent to the customer. After paying the bill, the list will be sent to the trolley and the trolley will start doing its job. The trolley will move in the specified path according to the items in the list. There are going to be barcode for each type of the items. So, the electronic trolley will scan the barcode and check if it's there in the list. When the product is placed near the barcode reader the reader reads the availability and checks with the item in the list. If the scanned code match with the items in the list then the electronic trolley will take the item with the robotic arm which will be controlled by servo motor. This process continues till all the items are collected from the list. Likewise all the items from the list will be collected and the electronic trolley will come to the exit where, the customer will pick up his bag.
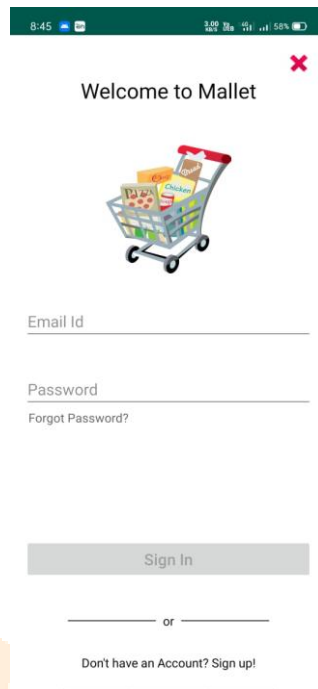
III. RESULTS

Fig.3 Starting page of the Application

The figure 3 is the starting page of the application where, the user has to enter the email ID and password to login into the page.
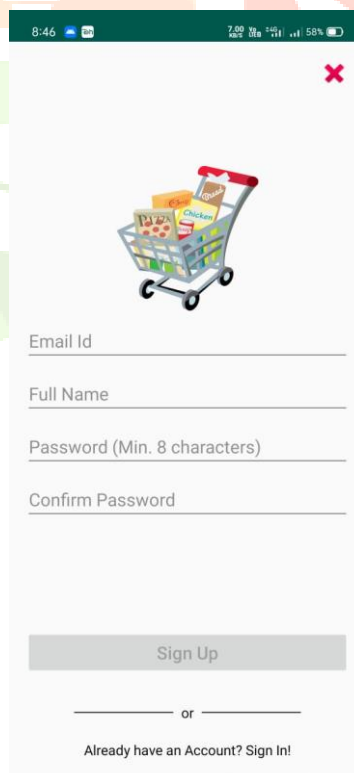

Fig.4 The signing up page

The figure 4 is to create the account in the application. If the person doesn't have the account then he/she has to fill all the details and create the account.
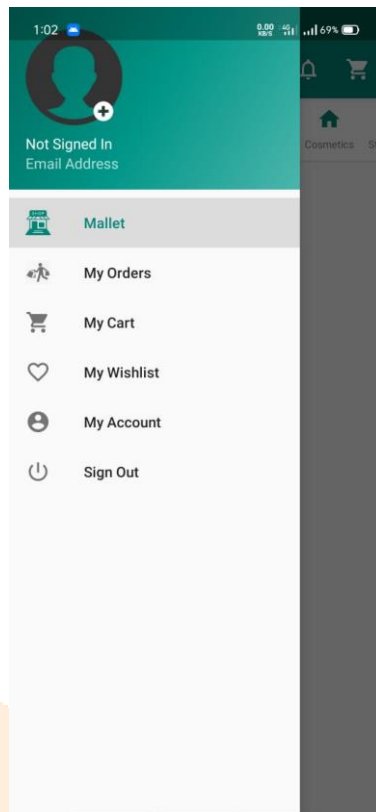
Fig.5 The catalogue page

The figure 5 is the catalogue page where there is the content of the application. The person can view his orders, cart, etc.
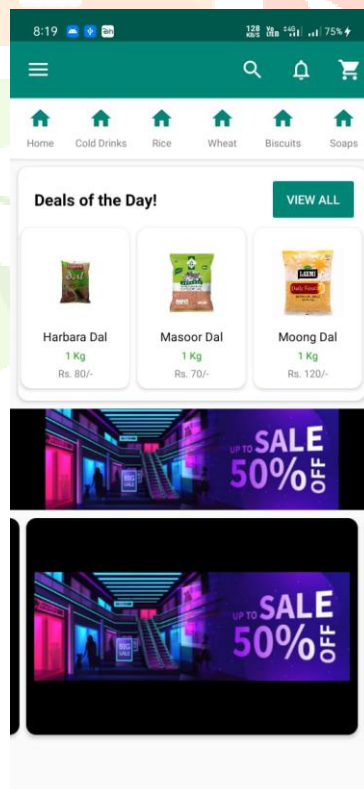

Fig.6 The grocery list page

The figure 6 shows the main list of items in the application. There is the list of all items properly segregated from where the person can select all the items.
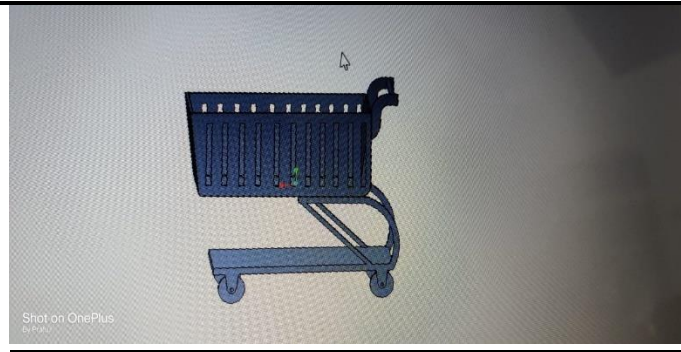
Fig.7 The design of the Smart trolley

The figure 7 represents the design of the smart trolley. This is how it will look like when the complete hardware will be built with all the sensors and actuators.

IV. CONCLUSION

This proposed model is easy to use, useful during any pandemic situations and does not require special training. This model works without any human interface and saves time of individuals and provides best service possible. Safety in terms of social distancing and contactless delivery is provided by implementing this project. Using smart trolley, the buyer doesn't need to stand in front of cash counter for billing the payment. Controlling is fully automated, purchasing time is reduced as standing in queue is avoided. Trolligent can be proved to be of great importance and used especially in Super-Markets and generally in sectors such as Agriculture, Medical and Libraries as well.

V. ACKNOWLEDGMENT

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