Shop Pro- Your Professional Cart

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Abstract- Even after the presence of E-commerce or the availability of multiple websites for the shopping as for buying purpose. People are still more diverted to supermarket/hypermarket. It doesn't sound promising to the world of e-commerce and also their situations are leaving very bad impact for the new generation of e-commerce which will come with respect to the pre-existing ideas for the e-commerce. According to the survey despite of e-commerce sites people tend to buy products from supermarkets for the sake of their self satisfaction. It may sound easy but in reality it is a tedious task.

Every person who has gone for shopping has to wait in long queues for billing, while buying products commonly mistakes happens like not finding the desired product which of tenly leads to the frustrations. To overcome the above problems we proposed an idea that will create a revolution in the world of supermarkets also helps in the Commercialization and Industrialization of Supermarkets or Hypermarkets.

Keywords- Arduino Mega 2560 microcontroller, LCD tablet barcode scanner, Proximity Sensor, Dc motor, Smart RFID tags, Reader and battery backup.

I. INTRODUCTION

The idea of Multidisciplinary stood out from the pre-existing idea of smart trolley in UK. In UK supermarket this type of idea is implementing and the idea eventually convenient and time saving. Mostly the idea has certain boundaries like self-check out. So substantially we can say idea requires more magnification for the future generation.

In our multidisciplinary trolley we came with an idea of automatic navigation towards the desired product, item that you eagerly to buy.

Specifications of multidisciplinary with respect to the pre-existing idea of self-checkouts.

First we divided the whole system into five parts.
1) Feasibility Check- Generate how to use tools methods, and process to generate idea.
2) Analysis- To analyze the requirement of the desired products of users, definition and also for the commercialization.
3) Project Design and Architecture- We are confronting with new technologies, tools, object oriented design that will be adopted to make this project real.
4) Implementation Design- To ensure the product is implemental according to the idea, Navigation Algorithm(like Djiktra's Algo) for identifying the shortest distance, hardware tools, centralize database and software for e-billing.
5) Results- To give well and secure methodology in the hands of commercialization and to make the industry seater revolutionize.

Multidisciplinary Trolley Design Analysis
It Consist of the following components
1) Trolley design and user interface
2) Connectivity to the stare database
3) Wireless access
4) Networking
5) Scanning
6) Power
7) Billing system and method for receipt

II. DESCRIPTION OF PROPOSED MODEL

Many persons who went for daily marketing found in difficulty to locate the products, items so these things eventually leads to the unnecessary frustration, make market a hectic.

When all the items have been selected then finally one has to stand in long queue for the billing purpose.

So, all the above mentioned statement makes shopping a quite time consuming and hectic task Now, everything is very apparent and in order to ease these problems, we came up with an idea of smart shopping trolley (Multidisciplinary in nature) which at first can accept and display all the available products, way the are required by the customer.

After selecting the products according to the requirements, the trolley in next compile all the selected products to the nearest location in the Supermarket and start displaying the exact location along with it, also start advances to words the direction of an item which is at the top of the compiled list.

Moving in direction of products are done with the help of RFID (Tag and Reader). Every item in the Supermarket has a RFIDD oriented reader.

User remains behind the trolley while the trolley is advancing towards the item the user most be in particular range near the trolley otherwise it will stop heading towards the item.To avoid collision we are using the proximity sensor and also the weight sensor (also uses for the security purpose).

After this the user scans the item using barcode scanner and finally complete the checkout process when all of the item have been to cast.

Money will be deduct from the users accounts which is already registered on shop pro android application after which the bill is generated.

III. PROPOSED METHODOLOGY

It is the automated billing for a user during shopping primarily based on RFID supported with other technical fields.

Hardware Requirements

<u>Arduino Mega 2560</u>: The microcontroller board Arduino Mega 2560, has 54 pins for digital input/output (I/O) and has 15 pins that can be used as pulse-width modulation (PWM), USB connection part. Microcontroller has the ability to compile the code respectively according to the requirements of the system.
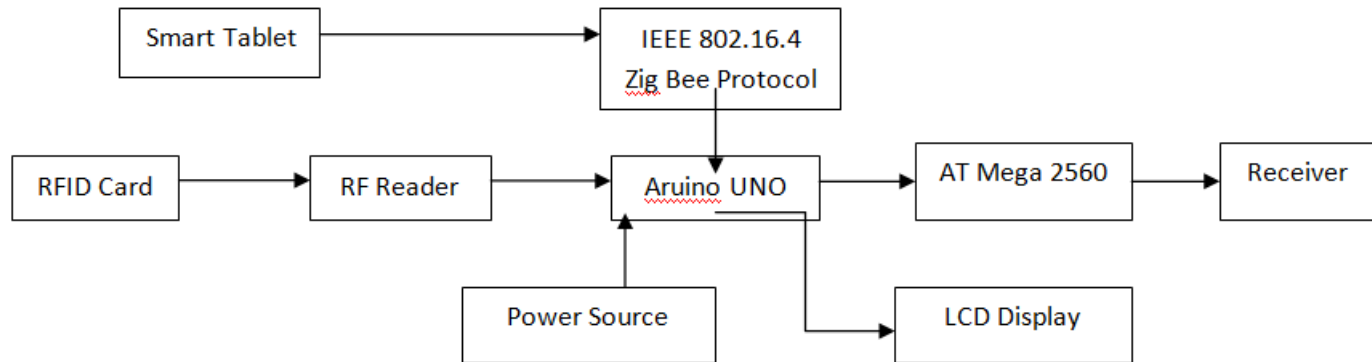

Fig.1: Block Diagram of Smart Trolley

Fig.2: Diagram from Receiver Side

RFID Tags

These tags comprise of a microchip for the purpose of storage, unique id storage and a coil which acts as an antenna for radiating its stored data. Substantially RFID tags are battery associated but we have to ensure the type of tags. They could be either active or passive.

Passive tags are used which does not have a battery as soon as the tag come in the RFID reader coverage range the reader emits RF signals which gives power to passive tags and it re-emits the signal with data to the reader.

Purpose of RFID tags is to uniquely identify product and protest against theft.

Mother Driver

It is used to drive to drive the motor in the project by maintaining the PVVM speed the motor speed can be controlled.

Motor driver that is using for the constant supply is MD30C. Design to drive a medium to high powered brushed DC motor. Its capacity is up to 80A for 1 second when as its peak.

LCD Display

Portable computer for the user interface, typically with mobile operating system and touch screen display. Rechargeable

linked with android applications and attached to the centralized database for the display of bills and goods.

Proximity Sensor

It is able to detect the presence of nearby object and restricts the trolley to collision. It often emits and electromagnetic field or a ray of radiation in the field. It is situated at the top of the trolley for the convenience to users.

Barcode Sensor

For the billing purpose we are using the barcode sensor. It is a mixture of multiple electronic devices like sensor for light and memory. It works according to the code which is printed on the product. That code has the sufficient amount of information for the billing point of view. It simply scans the product and store the information for a while and transfer the information to the centralized database system for the final proceedings of billing. It is fixed near to the handle of the trolley to facilitate the scanning of products.

IV. Software Requirements

Programming Languages

C- Embedded C: that is used by the hardware that is RFID receiver and tags that will in navigation and mapping of price.

JAVA- It is used on the front end to display find billed amount to the customer in the host computer when find payment is being processed.

Database- Microsoft access is a database management system (DBMS) from Microsoft that combines the relational Microsoft Jet Database Engine with a graphical user interface(GUI) and software development tools.

Networking- It should be robust cost effective reliability and minimum consuming energy factor should also be required. For the wireless communication b/w them have so many options but eventually selected wireless sensor networks(WSN). This will increase the pace with suitability.

It has multiple types of sensor which helps in connectivity of multiple nodes in order to transfer the data packets/information from one trolley to another. When user buys a product and scans it and put the item into the trolley its barcode is send through sensor to the specified base station by using IEEE802.15.4(ZigBee Protocol).

It transfer data to longer distances by allowing the data above the existing mesh network of WSN along with the minimum power consumption up to the distance of 10 to 100 meter range.

V. RESULT

Nowadays innovative thinking is predominantly being directed in products, and we have to perpetuate this thing for the future generation. This proposed idea helps in saving time, reducing unnecessary efforts.

For mobile self-checkouts, flexibility to make transactions easier to the users.

VI. CONCLUSION

Deploying Multidisciplinary trolley to the market helps not only the peoples and buyers but also the retailers. It has a huge potential to sort existing problems with supermarkets and users.

Security and legal protection must be given high consideration for this project; however this is not necessary at this moment because it is just a presentation of an idea and industry plan with no prototype model developed yet.

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