Group 1-3 Futuristic Trolley

Project Summary

The future trolley was designed to improve and facilitate the user's shopping experience. This is achieved by uploading the user's shopping list to the trolley, showing the user the most efficient path to purchase the goods required and speeding up the check out process. It also enables the supermarket owners keep track of inventory. The shopping list is send using email.

The future trolley comprises of four main subsystems. Firstly, the supermarket server stores the users' shopping lists and transfers them to the trolley when the user RFID is scanned. There are two modes that the user can choose, one being collection of the sent items and the other being self shopping. The server also keeps track of the inventory while the user shops and displays a warning message when the supply drops past a set value.

Secondly, the trolley server communicates with the supermarket server and controls the other subsystems on the trolley. This subsystem comprises of an RFID reader, Bluetooth, LCD display and keypad. Furthermore, the trolley server stores user data and account balance with EEPROM and displays the name of the user when the user RFID is scanned and subtracts the cost of the purchases during check-out from the user account. The RFID reader detects item and user RFIDs and updates the trolley server accordingly. Communication between the trolley and supermarket server is achieved through Bluetooth.

The trolley server offers different modes which the user can select. These include the automatic mode, where the user will be brought on the quickest route to purchase the items on the shopping list; Manual mode, where the user can manually select which item location he wants to reach; There is also a recipe function where the user can add items to the shopping list and a function to show items in the shopping cart. The user can also check the price of items.

Thirdly, the LED matrix map subsystem uses a BFS algorithm to map out the shortest distances to the location of an item. The shortest path is displayed on the LED matrix. The current position is updated using RFIDs placed at different locations within the store. User can also request aid from a help button.

Finally, the advertisement subsystem displays advertisements by detecting the colour of the different areas of the supermarket. While the security subsystem uses an IR transmitter and a buzzer to alert security of any shoppers trying to leave the store without payment.