Low Cost, User-Friendly, Integrated Shopping Cart System to Motivate Usage of Smart Shopping Carts in Retail Industries

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The main goal of retail industries today is to provide a comfortable shopping experience to their customers overcoming the traditional ways of doing shopping. This paper addresses an approach to this fact by implementing a low cost, user-friendly and integrated shopping cart which can be used in the retail industry to provide a better shopping experience for the customer. This system comprises an automated shopping cart, the smartphone which is used as the display device and a website. The system is best suitable for supermarkets where instead of customers having to wait in long queues to check out items, they can pay for the items at the cart using a debit or credit card. The website enables the customer to create shopping lists wherever they are and use it while shopping. The web interface attached to the cart shows the customer's current position, information of the product and the shortest path to the products and it was achieved by using the Dijkstra algorithm which was implemented using the Hipster Java Library. A model layout, similar to the shopping mall, was considered and measurements were taken of that. These measurements were broke down to similar points proportionate to the actual location points and by using the Dijkstra algorithm, the actual shopping cart locations were identified. The website is used by two main users, the admin and the customer. The admin can change the data on the website and data related to the android application. The customers can retrieve the information of the shopping mall. Indoor navigation of the cart was implemented using Bluetooth beacons. Coverage of three Bluetooth beacons was used to calculate the location. Through this research, low-cost methods to develop a smart shopping cart was identified and it was made user-friendly by implementing an easy to use website. This research can be helpful in identifying inexpensive and handy technologies to improve the usage of smart shopping carts in the retail industries.

Keywords: Shopping cart, Dijkstra algorithm, Bluetooth beacon, Smartphone, Hipster java library