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RFID-Based Smart Shopping Trolley

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Abstract: *A design case of prototyping an intelligent shopping cart system for retail environments is designed to overcome the inconvenience of long queues and manual billing processes in traditional shopping methods. This prototype aims to enhance the shopping experience by integrating automation and real-time tracking of purchased items. The system uses RFID technology to detect products as they are added to the cart. Each item tagged with an RFID label is automatically scanned when placed in the cart, and the corresponding amount is added to the total bill. This real-time billing process ensures transparency, efficiency, and a user-friendly experience for customers.Unlike traditional billing systems that require manual scanning at the counter, this smart cart offers a seamless self-checkout experience. The integration of a microcontroller, RFID reader, and display unit enables automatic calculation and display of the total amount. At the end of the shopping session, the customer can directly view and pay the final bill without the need to wait in queues. This project addresses the automation of shopping processes and aims to minimize waiting time, improve billing accuracy, and reduce human effort. The main perspective of the project is to create a smart retail solution that enhances convenience while promoting a modern and efficient shopping environment.*

Keywords: Smart shopping cart, RFID, automation, self-checkout

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