

# Smart Shopping Trolley that Follows Customer

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**Abstract:** *In modern supermarkets and shopping malls, customers often experience inconvenience while pushing heavy shopping trolleys during shopping. To improve the shopping experience, a Smart Shopping Trolley that follows the customer is proposed. The system is designed to automatically move behind the customer using sensors and a microcontroller-based control system. Ultrasonic sensors are used to detect the distance between the trolley and the customer as well as to identify obstacles in the path. The microcontroller processes the sensor data and controls the motors to move the trolley in the required direction while maintaining a safe distance from the customer.*

*The proposed system aims to reduce physical effort and provide a convenient and efficient shopping experience. By automating the movement of the trolley, customers can focus on selecting products without worrying about pushing the cart. The system can also improve retail automation and customer satisfaction in supermarkets and shopping malls. In the future, the smart shopping trolley can be enhanced by integrating technologies such as Internet of Things (IoT), computer vision, and artificial intelligence for better tracking and intelligent navigation.*

**Keywords:** Smart Shopping Trolley, Autonomous Shopping Cart, Ultrasonic Sensor, Customer Tracking, Retail Automation

