Arduino Project Proposal

Team members

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Project overview

Our project, The Smart Shopping Cart, is equipped with a QR code scanner and object-following technology to enhance the shopping experience. Shoppers scan product QR codes using the built-in scanner, which automatically updates the cart's inventory list, showing the total cost. The cart is also designed to follow the shopper autonomously using object-following sensors that track the user, allowing for a hands-free shopping experience.

Project Description

The project involves a smart shopping cart that automatically follows the user while shopping. The cart integrates a system for QR code scanning to identify items as they are placed into the cart, allowing for real-time bill generation. This system automates the shopping process, eliminating the need for manual scanning at checkout, and enhances the shopping experience with its autonomous movement and seamless billing.

Components Required

S.no	**Item type**	**Item name**	**Quantity**	**Cost**
1	**Sensor**	**Ultrasonic sensor**	**2**	**LAB**
3	**Display**	**LED display**	**1**	**LAB**
4	**Motors**	**Stepper motors**	**4**	**LAB**

5	**Microcontroller**	**Arduino**	**1**	**LAB**
6	**Microcontroller**	**ESP32**	**1**	**LAB**
6	**Body**	**Wheels**	**4**	**200**
7	**Sensor**	**Load sensor**	**1**	**250**
8	**Camera**	**Camera (QR scanner)**	**1**	**300**
9	**Camera**	**Camera (for image processing)**	**1**	**300**
			Total	**1050/-**

Project objectives

1. Convenience: The QR code scanner allows for quick and easy product entry, eliminating the need to manually search for prices or check items.
2. Hands-free Shopping: Object-following technology enables the cart to automatically follow the shopper, reducing the need to push or maneuver the cart.
3. Real-time Price Tracking: Shoppers can instantly see the total cost of items as they are scanned, helping them stay within budget.
4. Improved Efficiency: The cart streamlines the shopping process, making it faster and more organized.
5. Reduced Checkout Time: With all items pre-scanned, checkout is much quicker, as there is no need to rescan products at the register.

Expected Outcomes:

Increased Shopping Speed: The use of QR code scanning and object-following technology should lead to faster product selection and navigation throughout the store.

Streamlined Checkout: With all items scanned during shopping, checkout times will be significantly reduced, potentially eliminating long lines.

Increased Adoption of Technology: This project will demonstrate the practicality of integrating technology into everyday tasks, encouraging further innovation in retail environments.