# Human Following Smart Trolley with Barcode Scanner

*Naveed Buhari, IV Year , Krithik Sathya, IV Year , Aasish M, IV Year , Fabrizio J, IV Year,*

*2023-24 Budget (Rs 12000)*

**Guide: Dr. B. Prabavathy, Department of Computer Science and Engineering**

## Project Description

- Developed an affordable human following smart trolley with barcode scanner that autonomously follows users using IR and UV sensors, eliminating the need for manual pushing and enhancing accessibility for elderly and mobility-impaired shoppers.
- Integrated a real-time barcode scanning and billing system with an OLED display, enabling users to track their total purchase cost instantly while shopping.

## Objectives

- To design a smart trolley that follows the user autonomously using IR and UV sensors.
- To implement a real-time barcode scanning system for seamless product identification.
- To display item prices and total cost instantly using an OLED screen.
- To enhance shopping convenience, especially for elderly and differently-abled individuals.

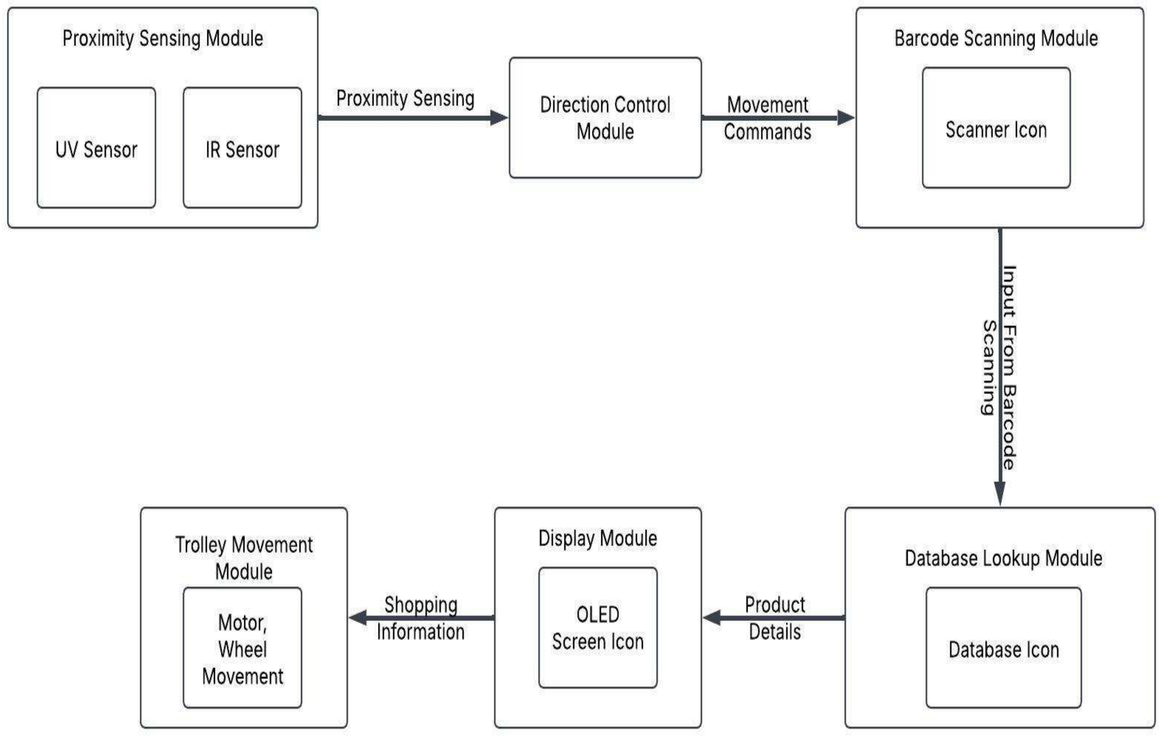
## Novelty

- Integrates human-following capability with real-time billing in a single compact system.
- Eliminates the need for manual trolley handling and traditional checkout counters.

## Deliverables

- Fully functional human-following smart trolley prototype
- Integrated barcode scanning with OLED billing display
- Paper Publication

## System Architecture




## Results

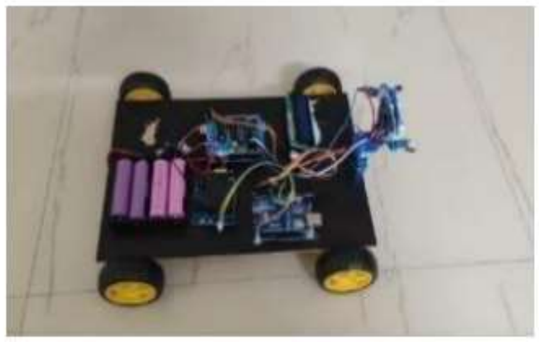


**Fig. 1** Complete prototype of the autonomous shopping trolley

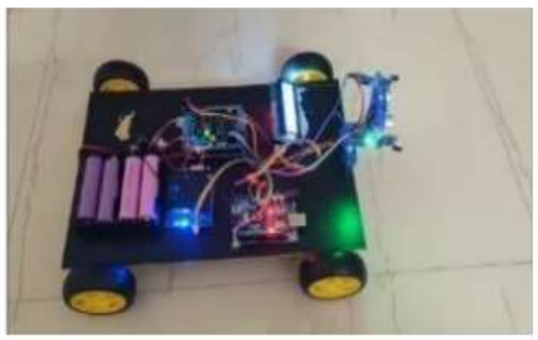


**Fig. 2** Assembled trolley with electronic components powered on

**Fig. 3** Barcode scanning module in action

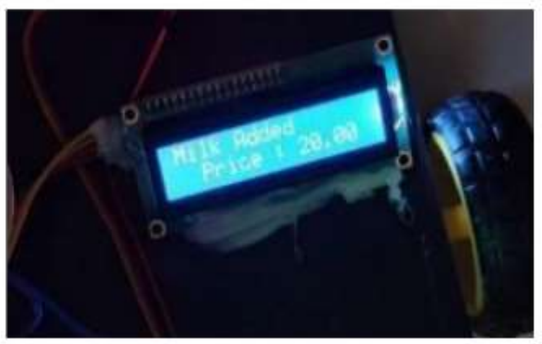



**Fig. 4** Real-time price display after scanning an item

## Future Development

- Integration of AI for personalized product recommendations
- Implementation of advanced navigation using machine learning

## Outcome of the Project Impact on Industry/Society

- **Enhanced Shopping Accessibility:** The trolley provides significant support to elderly and physically challenged individuals by reducing the need to push a cart, making shopping more inclusive and comfortable.
- **Operational Efficiency:** Real-time product scanning and billing reduce queue times and manual labor, improving overall retail efficiency and customer satisfaction..
- **Cost-Effective Retail Automation:** Utilizes affordable sensors and components to bring automation to small and medium-scale retail environments without the high infrastructure cost of RFID-based systems.

## Conclusion and Outcomes

- The project successfully demonstrated a functional prototype that autonomously follows users and tracks product costs in real-time.
- It provides an affordable solution to enhance retail automation while improving accessibility and customer convenience.