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IoT based smart cart using RFID and NodeMCU

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Abstract:

The advent of Internet of Things (IoT) technology has revolutionized various industries, including retail, by enabling the development of innovative solutions to enhance customer experiences. In this project, we propose an IoT-based smart shopping cart system utilizing Radio-Frequency Identification (RFID) technology and NodeMCU microcontroller.

The primary objective of this project is to streamline the shopping experience by automating the process of item identification, tracking, and payment. The smart shopping cart is equipped with RFID readers and sensors that detect and record the items placed inside the cart. Each product is tagged with an RFID tag containing relevant information such as product details and pricing. The NodeMCU microcontroller, acting as the central processing unit of the smart cart, communicates with the RFID readers to capture the data of the scanned items. The collected information is then transmitted to a centralized database or server via Wi-Fi connectivity for further processing. Additionally, the system incorporates a user-friendly interface, accessible through a mobile application or web portal, allowing shoppers to view their current cart contents, receive product recommendations, and facilitate seamless checkout. Furthermore, the smart shopping cart system offers features such as real-time inventory management, personalized promotions, and analytics to retailers, enabling them to optimize their operations, enhance customer engagement, and increase sales revenue. In summary, our IoT-based smart shopping cart system offers a convenient, efficient, and immersive shopping experience for consumers while providing retailers with valuable insights and tools to improve their business processes. Through the integration of RFID technology and NodeMCU microcontroller, this project demonstrates the potential of IoT solutions in revolutionizing the retail industry.

Keywords:

RFID, ESP8266 NodeMCU, Internet of Things (IoT), Smart Shopping cart, WiFi