

ABSTRACT

The existing Experience Center system exhibited limited functionality and lacked user interactivity, consisting primarily of static displays of images and videos across multiple monitors. To address these limitations and enhance visitor engagement, a product identification system was designed and implemented utilizing Radio Frequency Identification (RFID) technology and an ESP32 microcontroller. The system comprises a single RFID scanner unit, incorporating an MFRC522 module and ESP32, responsible for processing scanned data and transmitting it to a centralized server. Upon scanning an RFID card, all monitors within the Experience Center environment dynamically update to present product-specific content corresponding to the registered card. The information is displayed on each monitor through a dynamic, web-based interface. Evaluation results demonstrate that the system is capable of accurately identifying two distinct products with 100% reliability. Furthermore, the system supports full Create, Read, Update, and Delete (CRUD) operations on the web interface, ensuring consistent synchronization between the product dashboard and the associated database.

Keywords: RFID, Product Identification, ESP32, MFRC522, Experience Center, Interactive Display System