

Smart Shop Bag

**Ranga, H.M.G.S.^{1*}, Mohamed, M.R.R.¹, Wimalasena, K.W.T.D.¹,
Bandara, A.M.M.H.I¹**

¹*Department of Electrical and Electronic Technology, Faculty of Technology,
Rajarata University of Sri Lanka.*

**ent1718080@tec.rjt.ac.lk*

The project presents the development and implementation of a Smart Shopping Bag leveraging Radio-Frequency Identification (RFID) technology. This innovative solution aims to revolutionize the traditional shopping experience by integrating *RFID* tags, and a microcontroller into a user-friendly and interactive system. The Smart Shopping Bag offers real-time tracking and management of purchased items using *RFID* technology. *RFID* tags attached to products enable seamless identification and automatic updates to the bag's contents. Communication with a mobile app or web interface ensures user engagement and convenience. The system delivers instant updates on the bag's contents, allowing users to review their purchases, receive personalized recommendations, and efficiently manage their shopping experience. The integration prioritizes user privacy, employing secure communication protocols to safeguard sensitive information. The project encompasses comprehensive hardware and software implementation, incorporating RFID readers, microcontrollers, and communication modules. Rigorous testing and iterative development guarantee the system's reliability, accuracy, and user satisfaction. With its user-centric design and forward-thinking technology, the Smart Shopping Bag project offers a glimpse into the future of retail. It not only streamlines the shopping process but also sets the stage for enhanced customer interactions, efficient inventory management, and a personalized shopping journey. As technology continues to shape the retail landscape, this project stands at the forefront of creating intelligent and connected shopping solutions.

Keywords: *Smart Shopping Bag; RFID Technology; Real-time tracking; User-friendly interface; Retail innovation*