

ABSTRACT

The increasing public awareness of health has driven the demand for smarter and more integrated fitness equipment. However, most conventional treadmills still lack the capability for automatic and personalized activity tracking. This study proposes the development of a Smart treadmill system based on the Internet of Things (IoT), integrating an ESP32 microcontroller, a Hall Effect Sensor, and an RFID scanner as a solution for real-time user activity monitoring. The ESP32 functions as the main processing unit, managing user authentication via RFID and calculating speed, distance, and estimated calories burned from the digital signals generated by the Hall Effect Sensor. All activity data is stored in a database and visualized through a web application to facilitate monitoring and tracking of workout history. Usability evaluation of the system is conducted using the System Usability Scale (SUS) method to measure the effectiveness, efficiency, and user satisfaction of the developed system. The results of this study are expected to serve as a reference for the development of functional and user-friendly smart fitness devices.

Keywords: smart treadmill, internet of things, hall effect sensor, system usability scale, RFID authentication