

ABSTRACT

Internet of Things (IoT) in fitness equipment has opened up opportunities for monitoring physical activity, enabling users to accurately and personally track their performance. This study proposes a solution in the form of an IoT-based monitoring system developed for Elliptical Trainer, integrated with Radio Frequency Identification (RFID) and Hall Effect sensors. The system combines RFID sensors for user identification and Hall Effect sensors for measuring distance, which is then used to estimate burned calories. Most fitness centers are currently unable to provide a workout history. The system developed in this study allows real-time monitoring of workout progress on the Elliptical Trainer, delivering immediate and accurate information to users regarding their performance during exercise sessions. To evaluate the system's usability and ease of use, the study employs a quantitative approach using the System Usability Scale (SUS) method by distributing questionnaires to a group of users. The results indicate that the system received a high usability score, meaning it was well-received and easy to use from the users' perspective. Based on accuracy testing of the distance and calorie data displayed by the system, high accuracy levels were achieved an average accuracy of 91.60% for distance and 94.80% for calories. The system also demonstrated good usefulness and user-friendliness, with an average SUS score of 78.9. This score reflects that the system is acceptable to users and easy to operate.

Keywords: Internet of Things (IoT), Elliptical Trainer, System Usability Scale (SUS), Radio Frequency Identification (RFID), Hall Effect.