

Abstract — The increasing popularity of the Fitness as a Service (FaaS) business model gives us an insight into a significant surge in public interest in health and fitness. However, most of the fitness tracking solutions that are already out there depend on wearable devices like fitness bands and smartwatches. These devices track general activity well but often fail during weightlifting. They are not as good for strength training because they can be uncomfortable to use, cost a lot, and don't always get complex motion patterns.

This research uses an approach by uses a non-wearable, Internet of Things (IoT)-based fitness monitoring device made only for dumbbell-based weightlifting. The system will use some sensors, such as the MPU6050 inertial sensor, to get motion data in real time and the RC522 RFID module to identify users by name. These parts work together to gather performance data for each user, like the number of repetitions, the length of the workout, and the number of calories expended. This data is then sent to a web-based dashboard for real-time feedback and progress tracking.

To evaluate the effectiveness of the tools, this research will apply the System Usability Scale (SUS) method to ensure the usability of the developed system, ensuring that it is user-friendly and practical. The research passes the stages of designing, developing, and testing the system to measure its accuracy and usability.

Keywords— *Internet of Things (IoT), System Usability Scale (SUS), MPU-6050 Sensor, Inertial Sensor, Fitness as a Service (FaaS).*