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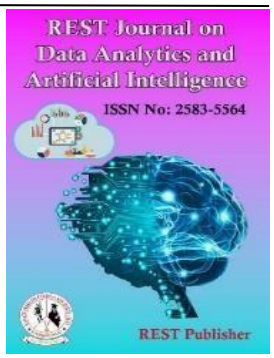


# Continuous Athlete Monitoring Wearable Device Using Machine Learning

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**Abstract:** *Nowadays, wearable techniques are widely used in machine learning. Among the various application, IoT based machine learning devices are used widely in health care application for reducing the risk factor. So, this project introduced a sensor-based wearable device for sportspersons' continuous health monitoring system. The goal of the project is to assists each athlete's health and to reduce the coach's work using machine learning. Firstly, the dataset will be collected from the previous athletes who wore this device. The device will be trained with the dataset by pre-processing feature selection data. The main use of this device is to suggest an athlete run fast/slow based on surroundings. And also assists athlete in what to eat and how to train. It will monitor the athlete's health condition and compare data with the dataset with the use of the Machine Learning Algorithm J48. J48 algorithm creates a decision tree for machine learning is applied to obtain the athlete's health condition. The accuracy level of the J48 algorithm is 97.73%.*

## 1. INTRODUCTION

A great target is to offer a multipurpose system that not only can be used to monitor fitness athletes' performance but also used in rural areas and Countries with low healthcare capabilities and budgets. Implement additional health measurements that help to make the right decision of seeking medical attention. To predict health issues. Predicted Data will be compared with the previous data set with the recommendation algorithm of the J48algorithm. Expand the decision-making by automatically transmitting the signals and health data over a long distance to parents, siblings, friends (same city, same country, or even different countries) by using the cell phone network for the dataline. Expand sports coverage to long-range sports (biking, running a Marathon, hiking. Keep the rate affordable and keep the usage easy andfriendly. Increase the performance of anathlete. The areas of IoT, telemedicine and biomedical sensors were researched to reach the design and method of implementing a multipurpose wireless observing system. The importance of a wireless system for sportspersons is outlined in identifying the patient's important health parameters and activities remotely with the assistance of sensors situated on the human body. This proposes a real-time multipurpose system based on IoT that can share real- time medical data between the athlete and trainers. This proposed system has an extensive application area uses in monitoring of an athlete's health status and fitness level. *Motivation* Due to the increasing usage of wireless technologies and the miniaturization of electronic sensors, progress in wearable health observing technologies has been improved drastically, with strong potential to alter the future by using Internet of Things (IoT) active health observing sensors for monitoring athletes through their regular daily routines.. The objective of this proposal is to develop a low-cost, high-quality multipurpose wearable smart system for healthcare monitoring of fitness athletes. *Overview* The main aim of fitness bands is to keep you motivated during your regular workouts by providing necessary information regarding your fitness level over the entire day to improve your sports activity.The athlete has all the information needed for prompt, targeted intervention. This project presents a novel approach to observing athletes' behavioural changes to predict a decline in motivation. Additionally, data and information gathered by such systems and methods may assist in post- event analysis for sports person and their instructors, e.g., to evaluate past acts and to assist in improving future acts Athletic performance observing systems and methods, many of which utilize, in some manner, global positioning data, provide data and information to athletes and/or to equipment used by athletes during an athletic event. Such systems and methods optionally may offer real time information to the sportsperson while the event takes

place, e.g., to assist in reaching the pre-set aims. Additionally, data and information gathered by such systems and methods may assist in post-event analysis for sportspersons and their trainers, e.g., to evaluate past performances and to assist in improving future performances.

## 2. CONTRIBUTION OF WORK

The Internet of Things (IoT) based wearable sensor devices are being used to gather the sports person. The wearable devices are resolve problems present in the traditional health information collection process J48 algorithm is used to improve the accuracy of sports person health and activities by integrating the wearable device based data for processing. The created system uses the deep leaning concept to train the patient medical data and enhance the earlier medical history examination process The J48 Algorithm improves the overall real-time sports person health data examination process in the wearable device concept.

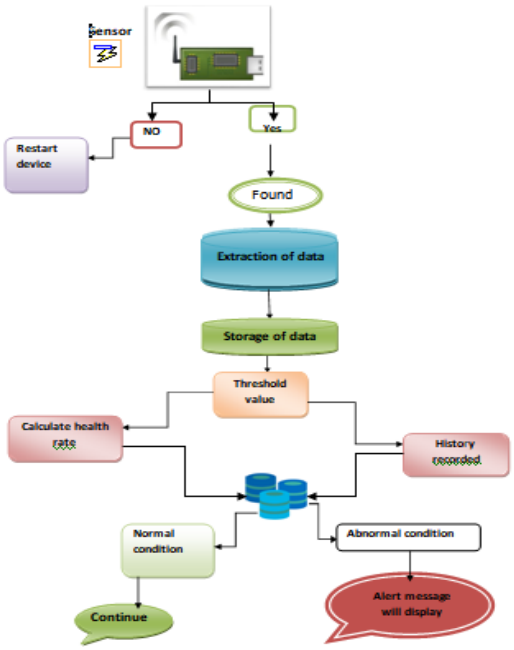


**FIGURE 1.** System architecture

Advantages Cost-effective- athlete can be monitored remotely from any location. It reduces the time wastage. Fast services: the system enables immediate assistance to the athlete by the trainers. Management on real timebasis. Coach will be monitoring the athlete's health status and receive Notifications of any abnormalities. What is a wearable sensor? Wearable sensors, just as the name implies, are integrated into wearable objects or directly with the body in order to help observing health and/or offer clinically relevant data for care. However, current focus has shifted to wearable sensing platforms, exploiting stretchable and flexible electronics. How athletes are using wearable devices? The increasing use of wearable sensors in sport cannot be avoided. The unobtrusive measurement systems are able to offer sportspersons and coaches with data regarding the range of motion, accelerations and impacts, among other indicators of performance or injury risk in real-time.

## 3. RESULT AND ANALYSIS

In this project analyze the efficiency of the shoe based sports person health monitoring system. During this process, the system uses the J48 algorithm to create the health monitoring process. As discussed earlier, the system uses the Health dataset consists of instances and attributes which are captured with the help of sensors. The sensors are placed in the shoe and doing several physical activities. Based on the activities data is collected that is stored in the database for further

processing. Thus, shoe provided data effectively analyze patient health continuously without making any delay. In addition to this, the introduced this approach successfully train the sensor data that reduces the miss-classification error rate also improve the overall recognition rate which is mentioned in the contribution of the work. The gathered sensor information is processed by the library in which data is divided into testing (40%) and training (60%).

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