UNIVERSITI TEKNOLOGI MARA

I0T FITNESS JACKET: ENHANCING HEALTH MONITORING USING ARDUINO

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ABSTRACT

An innovative application of IoT technology through the development of a Fitness Jacket integrated with Arduino, aimed at enhancing health monitoring and optimizing performance during physical activities. Many individuals have difficulty monitoring their health performance during exercise which can lead to exercising while sick or over-exerting themselves. The integration of IoT technology into a fitness jacket addresses this need by offering a wearable solution that combines multiple sensors and wireless connectivity. This jacket can automatically sense the temperature and heart pulse rate. Arduino allows developers to integrate various sensors such as heart rate monitors and temperature sensors modules (LM35) into the fabric of the jacket. The processed information can also be accessed from a web server, built on the HC-05 Bluetooth module that is connected to Arduino. The integration of IoT and Arduino technology in the jacket allows for continuous monitoring, analysis, and optimization of health and performance, ultimately promoting a healthier and more active lifestyle. Future research can be done include expanding the jacket's capabilities by integrating additional sensors to enhance the overall user experience.

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INTRODUCTION

1.1 Introduction

Regular exercise is critical in sustaining a healthy lifestyle in the age of digital health. Traditional fitness programs, on the other hand, frequently lack real-time monitoring and security elements. The rise of IoT provides potential to solve these constraints by incorporating smart sensors into wearable devices. The Internet of Things fitness jacket combines many sensors with enhanced connectivity to give users useful insights and safe exercise sessions.[4]

Taking into account the most current technical breakthroughs worldwide, the proposed study effort proposes the concept of tracking troops' health problems. This allows the individual to track their fitness level and design tactics to accomplish their goals. The individual will receive all of the information from the phone via notification, and their fitness level can be tracked and quick or necessary action plans implemented. Using the phone information, we may divide the zones into sectors based on whether the individual is in good enough shape to exercise or not. Depending on the zone they are in, this can help them plan the safety activities they need to take to avoid being sick while exercising. [1]

The main difficulty is efficiently integrating these three components into the IoT Fitness Jacket, addressing any technological issues, assuring accurate readings, and protecting user security. The project should seek to build robust algorithms, hardware configurations, and software implementations that solve these hurdles, ultimately providing individuals with a dependable, secure, and complete health monitoring solution.

The fundamental goal of this technical paper is to propose the construction of an Internet of Things fitness jacket with a temperature sensor, pulse sensor, and keypad security system. The temperature sensor will allow the user's body temperature to be continuously monitored, ensuring optimal workout conditions and preventing overheating or hypothermia. The pulse sensor will record the user's heart rate, allowing for real-time monitoring of cardiovascular health and more effective exercise regimens. The keypad security system on the jacket will offer a customised security feature, allowing users to protect their personal things while exercising in public places.