

CARACTERÍSTICAS HARDWARE DE LAS APLICACIONES DEL AIoT EN SALUD

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RESUMEN

El Internet de las cosas (IoT) y la inteligencia artificial (IA) han dado lugar a la inteligencia artificial de las cosas (AIoT), una tecnología que combina la interconexión de dispositivos cotidianos a través de internet, permitiendo nuevas oportunidades para mejorar la eficiencia, la productividad y la calidad de vida en diversos sectores. El presente artículo tiene como objetivo explorar las características de hardware que se utilizan para las aplicaciones en el sector de la salud, para ser más precisos aquellos hardware de sensado, de procesamiento y las tecnologías de comunicación utilizadas con mayor frecuencia en el sector AIoT. Se analizaron varias teorías relevantes relacionadas con el IoT y la IA, así como teorías específicas relacionadas con el hardware utilizado en el sector de la salud, se realizó una detallada revisión bibliográfica en bases de datos de investigación (IEEE Xplore) para identificar las características y los avances en el campo de la AIoT en el ámbito de la salud. La metodología empleada se basó en el análisis comparativo de diferentes dispositivos de IoT utilizados en el sector de la salud, además de las características de hardware de sensado, procesamiento y las tecnologías de comunicación más utilizadas en estas aplicaciones, considerando factores como la precisión, la eficiencia energética y la seguridad de los dispositivos, dándonos como resultados dispositivos como electrodos (ECG) y dispositivos de medición de temperatura como los más utilizados en hardware de sensado, el uso de microcontroladores con diferentes características como los más utilizados en hardware de procesamiento y para la tecnología de comunicación, se evidencio el uso del BLE (4.0 y 5.0) como el más utilizado para estos dispositivos, cabe mencionar que el uso de Wi-Fi también fue empleado en algunos de estos.

Se espera que este estudio contribuya a un mejor entendimiento de las características de hardware utilizadas en las aplicaciones de AIoT en el sector de la salud, aquellas que pueden facilitar la monitorización remota de pacientes, permitiendo a los profesionales de la salud acceder a datos en tiempo real y realizar un seguimiento más preciso del estado de salud de los pacientes, brindando así una eficiente atención y una mejor calidad de vida.

Palabras clave: IoT, AIoT, IEEE, Microcontroladores, ECG, BLE.

ABSTRACT

The Internet of Things (IoT) and Artificial Intelligence (AI) have given rise to the Artificial Intelligence of Things (AIoT), a technology that combines the interconnection of everyday devices through the internet, enabling new opportunities to improve efficiency, productivity, and quality of life in various sectors. This article aims to explore the hardware characteristics used for applications in the healthcare sector, specifically sensing hardware, processing hardware, and communication technologies most frequently used in this sector.

Several relevant theories related to IoT and AI, as well as specific theories related to the hardware used in the healthcare sector, were analyzed. A detailed literature review was conducted in research databases (such as IEEE Xplore) to identify the characteristics and advancements in the field of AIoT in healthcare. The methodology employed was based on a comparative analysis of different IoT devices used in the healthcare sector, including the characteristics of sensing hardware, processing hardware, and the most used communication technologies. Factors such as accuracy, energy efficiency, and device security were considered. The results revealed that devices such as Electrocardiogram (ECG) electrodes and temperature measurement devices are the most commonly used sensing hardware in healthcare applications. Microcontrollers with various features were found to be the most utilized processing hardware. In terms of communication technology, Bluetooth Low Energy (BLE) (versions 4.0 and 5.0) emerged as the most widely used, while Wi-Fi was also employed in some cases.

This study contributes to a better understanding of the hardware characteristics used in AIoT applications in the healthcare sector. These characteristics can facilitate remote patient monitoring, enabling healthcare professionals to access real-time data and achieve more accurate tracking of patients' health status. Ultimately, this enhances efficient healthcare delivery and improves the quality of life for patients.

KeyWords: IoT, AIoT, IEEE, Microcontrollers, ECG, BLE.

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