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The Role of Internet of Things (IoT) for Life : An Overview

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Abstract

This paper discusses the role of IoT in human life. The benefits of IoT are to lighten the workload and increase the effectiveness of a tool. This paper uses the literature review method derived from articles and books. Articles that focus on IoT will be clearly reviewed. There are 4 articles to be reviewed. 1 international article and 3 national articles. It's time for IoT to be used for developing countries. The use of IoT will improve the quality of life. There are limitless benefits for IoT applications in every way. The Internet of Things holds important promise to provide social and economic benefits for growing and developing economies. This includes areas such as home electronics, water quality and use and health care

Keywords: *Role, IoT, Life*

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INTRODUCTION

The Internet of Things or IoT basically refers to the many devices and systems around the world that are connected to each other using the internet and can share data with each other (Madakam, S.,et al. 2015). The Internet of Things can make the world smarter and more responsive by combining digital technology and physical devices.

Today, with computers that have relatively affordable prices and wireless or wireless networks everywhere, it is possible to change anything, from things as small as pills or something that looks as big as an airplane, these things become part of from IoT.

Internet of Things is a description of physical networks or "things" that are installed using sensors, software and other technologies with the aim of being able to connect and exchange data between divisions and other systems that use the internet (Jin, J.,et al., 2014) These devices can be in the form of household appliances that you can encounter everyday, to sophisticated industrial equipment.

Internet of Things is able to connect all different devices by adding sensors and digital intelligence, so that it will allow users to communicate in real-time without having to involve human intervention.

Currently, there are more than 7 billion devices connected to the Internet of Things, and experts estimate that by 2025 the number will grow to 22 billion.

In the past few years, the Internet of Things has become one of the most important technologies of the 21st century. Currently, we can connect various everyday items, such as kitchen equipment or vehicles to the internet by installing a device.

Unlimited communication can be done with every person, process, and object (Attaran, M., 2017). With low-cost computing, cloud, big data, analytics, and mobile technologies, all devices can share and collect data. As users, humans will only be involved as little as possible in the implementation process.

In today's interconnected world, digital systems are able to monitor, record, monitor, and also adjust all interactions between connected things. The physical world can meet and cooperate with digital world systems.

RESEARCH METHOD

This study is research based on literature study. Study material is focused on articles that discuss IoT. There were 5 articles discussed, both articles from within the country and from abroad.

Discussions and reviews and reviews will provide additional explanations, different points of view and conclusions that are expected to be used as comparisons or as material to strengthen the articles reviewed. Apart from articles, the author has also added several books as additional references. Online book containing IoT material.

The articles that will be reviewed are as follows:

Table 1. The Articles of IoT

No	Title of Article	The author	Journal	Year
1	Rancang Bangun Alat Monitoring Dan Penanganan Kualitas Ait Pada Akuarium Ikan Hias Berbasis Internet Of Things (IOT)	Asmara, R. K. P.	Jurnal Teknik Elektro dan Komputer TRIAC	2020
2	Augmented Reality dalam Penggunaan Alat Rumah Tangga Berbasis Internet Of Things	Wydmann, R. C. J., & Mukhaiyar	JTEIN: Jurnal Teknik Elektro Indonesia	2020
3	Sistem monitoring kesehatan berbasis internet of things (IoT)	Ratna	AL-ULUM: JURNAL SAINS DAN TEKNOLOGI,	2020
4	Internet of Things (IoT).	Mouha, R. A.	Journal of Data Analysis and Information Processing	2021

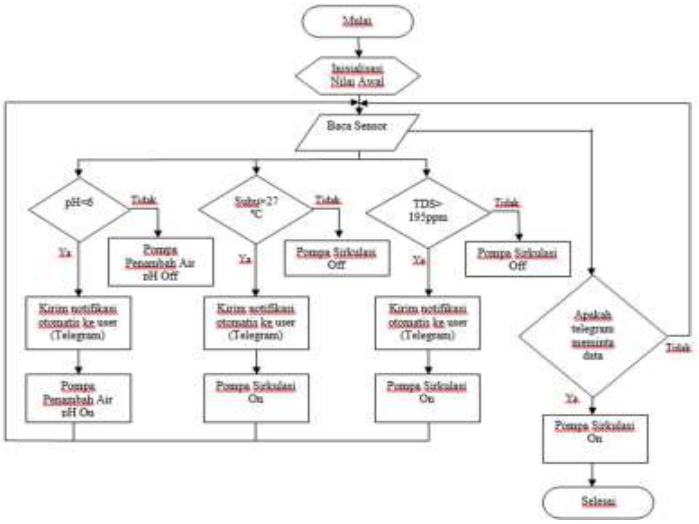
The number of articles that will be discussed is 4 articles. The article talks about IoT. There is 1 international article and 3 national articles. The international article is the Journal of Data Analysis and Information Processing and Wireless Networks. The national articles are TRIAC Journal of Electrical and Computer Engineering, JTEIN: Indonesian Journal of Electrical Engineering and Al-Ulum: Journal of Science and Technology.

DISCUSSION

The first article about the use of IoT is Design and Development of Tools for Monitoring and Handling Water Quality in Ornamental Fish Aquariums Based on

the Internet of Things (IOT). This article describes the use of IoT in aquarium water handlers. This is done so that water monitoring at water Ph and water temperature is always within reasonable limits, so that fish can live and develop. Water quality in iken ranges from 20 - 28 ºC, pH 4.0 - 6.0 and dissolved O2 2 - 8 ppm, optimum 5 - 6 ppm. In the design, a system for monitoring and controlling water quality in ornamental fish aquariums is made using a pH sensor, water temperature sensor, and a tds (total dissolved solid) sensor. The sensors will be integrated with the microcontroller system, and the sensor reading data will be displayed in real time connected to the internet.

The flow chart in the design can be seen in Figure 1 below:



Calibrating sensors used with factory-made sensors, obtaining good calibration results (Pachano, J. E.,et al., 2022). In sensor testing, sensor data that has been obtained can be accessed directly via telegram by giving the available commands. Hardware testing of conditions that do not match the normal condition data used will provide an automatic warning notification to Telegram that the water conditions in the aquanum are in bad condition. Hardware tests for handling carried out when conditions do not match the normal condition data used give results that are not optimal because during water circulation the pH and Tds values influence each other. Designing the Internet of Things (IOT) esp8266 module (Wifl module), can provide convenience in monitoring devices that have been made on this tool as notification displays in real tune on Internet of Things (IOT) applications in Telegram. Notifications will appear automatically if the state of one of the water content changes below the predetermined average data. The application of using the Internet of Things on Telegram also helps monitor if the state of one of the contents and water changes below by placing an alert notification via the user on Telegram.

The second article is entitled Augmented Reality in the Use of Internet Of Things-Based Household Appliances. This article discusses, augmented reality will be embedded in an Android smartphone and can be controlled using finger gestures on the screen and displayed using a camera. Commands will be sent to the Raspberry Pi which acts as the MQTT server and will send them to NodeMCU via the internet to control household appliances. The server is connected to NodeMCU using the "mosquitto" MQTT protocol in sending commands. The result is that augmented reality applications created using Unity can run and connect all systems into one (Nguyen, V. T., & Dang, T. 2017, because there is one protocol that bridges them,

namely MQTT (Message Queuing Telemetry Transport). The household appliance that is used is the lamp that is in the house.

The third article is entitled "Internet of things (IoT) based health monitoring system. This article focuses on the use of IoT for medical devices, where the measurement values that appear on the LCD screen are the same as the values listed on the blynk application on an Android smartphone.

The hardware used in this health monitoring is, first, NodeMcu is an open source IoT (Internet of Things) platform. NodeMcu uses Lua as a scripting language but can also use Arduino programming language, both OLED 0.96" Display I2C is a 0.96 inch graphic display with 128x64 resolution using OLED technology and I2C serial communication (only need 2 IO pins for connection to Arduino / NodeMcu) Different with LCD technology, OLED screens can produce their own light from each pixel and don't need an additional backlight anymore, so that the appearance of the OLED screen looks brighter and clearer. OLED makes the display clearer than LCD. The three Pulse sensors are a heart rate sensor designed for Arduino.

This Health Monitoring System can send information to the doctor concerned along with patient information, the Internet of Things (Iot) Based Health Monitoring System (Ali, A., & Alshmrany, S.,2019) so that doctors can see the results of the patient's heart rate directly on the smartphone. This sensor can be used to simplify the integration between heart rate measurements and applications that will be developed. Pulse sensor includes an open source monitoring application. The pulse sensor has a feature, namely the sensor can work well at a voltage of 5V and 3.3V on the microcontroller. The sensor has a small size making it easy to use. There is a color coded cable with a 3-wire male terminal (ground, power, data) standard connector. The Pulse Sensor basically uses the photoplethysmograph principle, which is a well-known medical tool used for non-invasive heart rate monitoring. The depiction of a pulse wave is called a photoplethysmogram or PPG. The Pulse Sensor responds to relative changes in light intensity (Rascher, U., Liebig, M., & Lüttge, U. (2000). If the total light intensity is light and constant, then the signal value will still be at (or close to) 512 (midpoint of the ADC range). The more light the signal goes up. The green LED light that is reflected back to the sensor changes with each pulse. As the heart pumps blood around the body, each pulse beat is accompanied by a pulse wave (like a shock wave) that travels along the arteries to the capillary network where the Pulse Sensor is attached. Blood actually circulates in the body much more slowly than the pulse moves.

The fourth article is titled Internet of Things (IoT). The focus of this article discusses the benefits of IoT in terms of life. Sensors and actuators are one of the building blocks of IoT. In many IoT applications, you need one or more sensors to collect data and information about the system. Data is processed, and commands can be issued to triggers which in turn affect the system, and in other ways sensors collect data to be sent through networks and actuators which allow things to work like: Humidity sensors provide data to control irrigation systems; Traffic sensors provide data to control traffic lights; Occupancy sensors provide data to control the building environment. Sensors and actuators enable IoT solutions in every area of the IoT vertical from smart cities to smart agriculture, and from personal health to smart transportation.

Some of the many smartphone sensors and their main functions present in human devices the following most important are: Accelerometer (sensor detects acceleration, vibration and tilt to determine movement and precise orientation along the sensor's three dimensions), Gyroscope (orientation and direction details such as

above -down and left-right but with greater precision such as how much the device is tilted) and Fingerprint Sensor (measures the distance and pattern of unevenness between edges on the surface of your finger) and many more.

CONCLUSION

IoT can simplify various lines of life. IoT has gradually brought many technological changes to our daily life, which in turn helps to make our life simpler and more convenient, through various technologies and applications. There are limitless benefits for IoT applications in all fields (Das, S.,et all., 2021). The Internet of Things holds important promise to provide social and economic benefits for growing and developing economies. This includes areas such as home electronics, water quality and use and health care

IoT can minimize risks. On the one hand, it requires informed participation, dialogue and collaboration across multiple stakeholders to chart the most effective way forward, and the set of IoT challenges will not be limited to industrialized countries. Developing regions also need to respond to realize the potential benefits of the Internet of Things **(**Bandyopadhyay, D., & Sen, J. (2011). In addition, it is necessary to address the unique needs and challenges for implementation in less developed areas, including infrastructure readiness, market and investment incentives, technical skills requirements, and policy resources.

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