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Real-Time Server Room Monitoring System Using Internet of Things Technology

Y Tishan[1#] and I Ashly[2]

[1]Faculty of Computing, NSBM Green University, Homagama, Sri Lanka
[2]Faculty of Engineering, NSBM Green University, Homagama, Sri Lanka

[#]yasirutishan@hotmail.com

Abstract

The escalating expansion of server rooms and data centers underscores the urgency of ensuring their optimal performance and safeguarding. In this study, we propose a novel Internet of Things (IoT)-based server room monitoring system that leverages microcontrollers and sensors for continuous tracking of critical environmental parameters. This encompassing approach encompasses temperature, humidity, and power status, as well as early identification of potential threats such as vibrations, fires, and smoke. The core of our system integrates the versatile NodeMCU microcontroller, seamlessly interfacing with diverse sensors such as Smoke, Flame, AC Voltage, Temperature and Humidity, and Vibration sensors. Immediate notifications are facilitated through a combination of LED indicators and an audible buzzer, promptly alerting stakeholders when any monitored metric surpasses its pre-established threshold. Our solution extends accessibility through both mobile and web applications, affording user registration and streamlined access to pertinent real-time information. By enabling continuous monitoring and swift notifications, our system significantly bolsters the dependability and security of server rooms, empowering proactive maintenance and timely mitigation of potential anomalies. This research contributes a valuable IoT-centered innovation to server room monitoring, adeptly addressing the burgeoning demand for resilient and efficient monitoring mechanisms in tandem with the surging data requisites.

Keywords: *Internet of Things, Server Room, Arduino, Syncfusion Flutter, Google IoT Cloud*