Real Time Weather Monitoring and Reporting System Using IOT

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Abstract: *The Real-Time Weather Monitoring and Reporting System using IOT leverages interconnected sensors and microcontrollers to continuously collect and transmit environmental data such as temperature, humidity, and atmospheric pressure. This system enables accurate, real-time weather updates accessible through cloud platforms or mobile devices. By eliminating manual data collection, it ensures timely weather forecasting and enhances decision-making in agriculture, disaster management, and smart city applications. The integration of IOT ensures scalability, remote accessibility, and energy-efficient monitoring. This paper presents an advanced Internet of Things (IOT) based weather monitoring and reporting system designed to provide real-time environmental data collection and analysis. The proposed system integrates multiple sensors including DHT11 for temperature and humidity measurement, BMP180 for atmospheric pressure sensing, and rain detection sensors, all interfaced with an ESP8266 Wi-Fi module for wireless data transmission. The system enables continuous monitoring of weather parameters and provides accessible data visualization through web-based platforms and mobile applications. Experimental results demonstrate the system's effectiveness in providing accurate, real-time weather information with high reliability and low power consumption. The implementation offers significant advantages including remote accessibility, cost-effectiveness, and scalability for various environmental monitoring applications.*

Keywords: Internet of Things (IOT), Weather monitoring, Wireless sensor networks