IOT-Based Weather Monitoring System

Jadhav Bhagwati Sachin[1], Dakore Vaibhavlaxmi Ashok[2],
Tote Krushnai Sidheshwar[3], Kawathe Mayuri Dinkar[4], Prof. Chavhan A. Y[5]
[1,2,3,4]Students, Diploma in Computer Engineering
[5]Professor, Diploma in Computer Engineering
Vishweshwarayya Institute of Engineering and Technology, Almala, Maharashtra, India

Abstract: *The IoT-based Weather Monitoring and Reporting System developed in this work delivers real-time updates on key environmental parameters such as temperature, humidity, soil moisture, atmospheric pressure, and rainfall. It is particularly useful for scientists, researchers, and environmental analysts who need access to data from remote locations. Traditional SMS-based systems are limited by the number of recipients and slower transmission times. In contrast, the proposed IoT solution uses cloud-based connectivity, allowing instant and global access to data. The system includes both hardware and software components. An Arduino microcontroller forms the core, connected to various sensors including the DHT11 for temperature and humidity, BMP180 for pressure, and other sensors for rainfall and soil moisture. Data from these sensors is sent through the ESP8266 Wi-Fi module, powered by a USB Type B or 5V DC source. The system is integrated with both the Blynk platform for mobile application and the ThingSpeak website. Blynk offers a user-friendly interface and allows up to 30,000 SMS alerts, while ThingSpeak enables data logging with a daily limit of 8,000 entries. Sensor data is transmitted using authentication tokens for secure communication. This efficient and scalable setup supports climate research, disaster prevention, and smart environmental monitoring.*

Keywords: Weather Monitoring system, Interne of Things, ThingSpeak