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AC REMOTE MONITORING AND ALERT SYSTEM

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ABSTRACT:
Safety is crucial in areas where gas leaks can happen since mishaps can happen at any time. IoT-based solutions for detecting refrigerant leaks offer effective control and monitoring, guaranteeing prompt notifications and responses. When the system detects a leak, it uses Nodemcu and gas sensors to trigger safety features including buzzers, user notifications, and gas valve closures. An Android app receives data via Wi-Fi, informing users of temperature, humidity, and gas levels. Compared to manual methods, this automated system enables more accurate identification and faster response times. All things considered, it lowers hazards and improves safety in the transportation, industrial, and residential sectors.

KEYWORDS: Sensor, Installed, System, Notification, Leakage.

1. INTRODUCTION

The smart weather reporting system transforms how we track and retrieve weather data by utilizing IoT technologies. By allowing customers to receive real-time weather parameter data, it seeks to do away with the need for conventional forecasting services. Temperature, humidity, and precipitation sensors, as well as an Arduino UNO board that interprets the data, are essential parts of the system. A cloud server receives the processed data from a Wi-Fi module and updates it for remote access via a mobile application or web server. From any location in the world, users may monitor real-time weather data and create alerts for particular circumstances. The system runs constantly, gathering and sending environmental data and enabling long-term analysis through graphical depictions of weather patterns. Weather parameter trends can be found by users, which aids in predicting and enables them to modify appliances or equipment appropriately. An essential component of the system's design, the wireless sensor network consists of monitoring centres, routers, gateway nodes, and end devices. End devices collect data and wirelessly transmit it for additional processing, guaranteeing effective information management. This enables smooth communication between sensors, cloud servers, and end users, giving them access to precise data and quick updates. Reliability is ensured while scalable weather data administration and storage are made possible by cloud technology integration. The cloud functions as a central location for all collected data, organizing and facilitating its presentation on a web server. Using IoT for environmental monitoring shows how useful it is and how it can change the way we use technology to solve problems in the real world. Through Internet-based smart device connectivity, this technology creates new opportunities for automation, environmental control, and better weather-based decision-making.The smart weather reporting system not only focuses on providing real-time weather updates but also emphasizes the practical applications of environmental data. By using IoT-connected devices, the system enables users to adjust appliances, prepare for changing weather conditions, or respond to emergencies. Additionally, it supports environmental research and planning by providing a reliable source of weather statistics that can be analyzed for

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long-term patterns and trends. This feature is particularly beneficial for agriculture, transportation, and disaster management sectors, where accurate weather data can the graphical representation of trends makes it easier for users to visualize weather changes, thus enhancing decision-making and proactive prevent potential losses and improve operational efficiency measure

II. LITERATURE REVIEW

The author of this paper explains how the weather prediction system is becoming a significant issue in every weather extreme event that has a negative impact on the system's ability to anticipate the weather and affect both lives and property. Thus, the accuracy of meteorological data is one of the most significant barriers to enhancing weather prediction skills and fortifying resistance to the adverse effects of weather report conditions. The author explains that due to a lack of weather observation, Uganda and several other developing nations have struggled to produce timely and accurate meteorological data.The high expense of creating automated weather scenarios includes limited weather monitoring. The national meteorological services of the individual nations are eligible for the limited financing. The author first addresses the issues in this suggested approach before putting them into practice. The author suggested a wireless sensor network-based automatic weather monitoring station. The author intends to create three generations of AWS prototypes, or automatic weather stations. Depending on the generation and requirement, the author of this study assesses the first-generation AWS prototype in order to enhance the second generation. In order to have an automatic weather station, the author suggests improving nonfunctional requirements including power consumption, data accuracy, dependability, and data transfer. In order to create a reliable and reasonably priced Automatic Weather Station (AWS), the non-functional need vanished with cost reduction. As a result, the proposed work will enable developing nations like Uganda to purchase AWS in appropriate quantities. in order to enhance weather forecasting An Internet of Things-based weather monitoring system is presented by the author in [2]. Sensors can be used to get the environmental parameter in this study. To scale the numerous parameters, such as humidity, temperature, pressure, and rain value, the author employs an LDR sensor in addition to another sensor. Additionally, the system uses the temperature prototype to determine the dew point value. The value of the specific space, room, or location can be determined using the temperature sensor. The light intensity can be utilized as the author explains with the aid of the LDR sensor. The author utilized an extra feature of the weather monitoring system in this article, which is an SMS alert system that is triggered when the values of the sensing parameters—such as temperature, humidity, pressure, light intensity, and rain value—exceed. Additionally, the author includes an alerting system for tweets and emails. The MCU 8266 node and a number of sensors are used by the author in this system. The author of this study [3] illustrates a low-cost live weather monitoring system with an OLED display, showcasing the different areas where the Internet of Things has led to novel developments in the system. The writer explained An innovative new system It gauges the state of the weather in real time. Everyone benefits greatly from weather monitoring, including farmers, businesses, everyday workers, and educational institutions. So, the author by designing a live weather monitoring system reduced the difficulty level for farmers and business as well. The author's OLED display in this paper will show the current weather and The author's suggested methodology retrieves data from the cloud using an Arduino-based WeMo's D1 board with an ESP8266-EX microprocessor. The D1 wife module from WeMo was created using the ESP-8266EX microcontroller. Its flash memory is 4MB.One of the best that uses the Arduino IDE and Node MCU for programming. The author of this paper measures the weather using only two devices—We Mos and OLEDs. Following the connection, the data will be stored in the cloud. The weather data will be displayed on a thing talk website. The technology uses a thing talk cloud and an OLED to display the data. The author wants to use an OLED display to get real-time weather information. In order to help everyone plan for our daily lives, the author in [4] suggested a system that tracks and forecasts the weather. This exercise proved beneficial in both industry and agriculture. The author employs two phases of the weather management system to accomplish tracking and forecasting weather information. wherein they used data from sensors, bus mobility, and deep learning technology to enable a real-time weather reporting system in stations and buses. The friction model is used to forecast the weather. The study integrates

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the power of local information processing based on the sensing measurements from vehicles such as buses. According to the author, step I involves training a multilayer perception model, long-term memory, and weather sensing. It will then be verified using test environment temperature, humidity, and air pressure data. The training is used to learn the weather data time series in Stage II.The author compared the actual data from the environment protection administrator and central Bauer of the Taichung observation system, which calculates the prediction of accuracy, with the anticipated weather data to determine whether or not the system was performing as intended. The author concludes by discussing the suggested system's five dependable weather monitoring capabilities.

III APPLICATIONS OF CORTEN STEEL

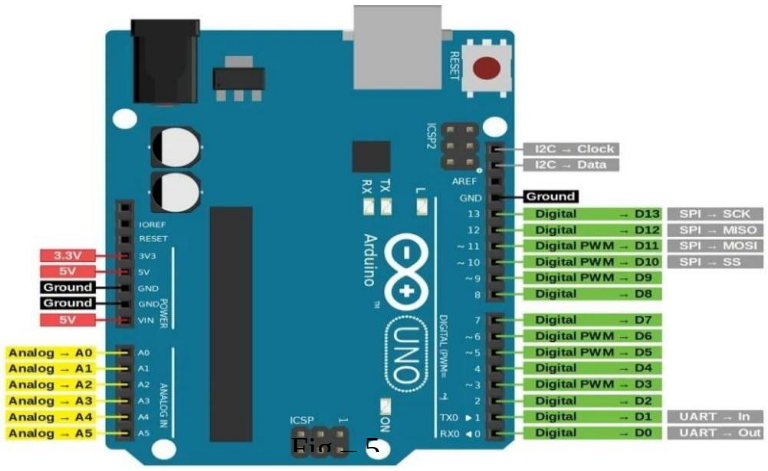

Fig - 5

Fig:1 GSM Module

The following IoT devices frequently contain ESP8266 modules: Smart locks and surveillance cameras are examples of smart security technologies. HVAC systems and thermostats are examples of smart energy devices. Intelligent industrial equipment, such as PLCs (programmable logic controllers). Wearable health monitors are among the smart medical equipment. Methane, butane, LPG, and smoke are among the gases that can be detected by the MQ-2 sensor; however, it is not possible to differentiate between different gases. They are unable to identify the gas as a result. When detecting a single gas, the module form of this sensor is helpful and does not require any microcontroller interface. The MQ-6, M-306, and AQ-3 sensors are thus some of the substitutes for the MQ-2 gas sensor. Applications of GSM Modules: Because GSM modules enable wireless communication, they are extensively utilized in a variety of industries. APPLICATIONS OF THE DHT-11 SENSOR: This sensor is used in various applications such as humidity. and temperature values in heating, ventilation and air conditioning systems. It is also used as a preventive measure in homes where people are affected by humidity. Offices, cars, museums, greenhouses and industries use this sensor for measuring humidity values and as a safety measure. The compact size and sampling rate made this sensor popular among the hobbyists.Applications for Jumper Wires: In many engineering and electrical applications, jumper wires are crucial connectors. Before settling on a permanent arrangement, engineers and enthusiasts can construct and test circuits through prototyping and bread boarding. They are frequently utilized in microcontroller projects, assisting in the effective conveyance of signals by connecting sensors, displays, and actuators to platforms such as Arduino and ESP8266Uses for Buzzers: Because buzzers may produce sound alerts in a variety of settings, they are

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extensively utilized in many different applications. In alarm and security systems, they are essential for intrusion detection, fire alarms, and broad alert notifications, guaranteeing security and prompt action in case of an emergency. They can offer audible feedback in microcontroller-based and Internet of Things applications thanks to their incorporation with embedded systems, which improves the intuitiveness of interactions. Thing Speak's applications include a wide range of data monitoring and control applications. Thing Speak is a robust IoT analytics platform. Through sensor data collection and cloud storage for analysis, it allows real-time tracking of temperature, humidity, and air quality in weather monitoring. In order to ensure ideal crop growth, the platform also helps farmers monitor soil moisture, irrigation levels, and plant health.where people are affected by humidity. Offices, cars, museums, greenhouses and industries use this sensor for measuring humidity values and as a safety measure. The compact size and sampling rate made this sensor popular among the hobbyists. Applications of Jumper Wires: Jumper wires serve as essential connectors in various electronics and engineering applications. In prototyping and bread boarding, they allow engineers and hobbyists to build and test circuits before committing to a permanent setup. They are widely used in microcontroller projects, helping connect sensors, displays, and actuators to platforms like Arduino and ESP8266 for efficient signal transmission. Applications of Buzzers: Buzzers are widely used in various applications due to their ability to generate sound alerts in different environments. In security and alarm systems, they play a crucial role in fire alarms, intrusion detection, a Applications of Thing Speak: Thing Speak is a powerful IoT analytics platform widely used for various data monitoring and control applications. In weather monitoring, it enables real-time tracking of temperature, humidity, and air quality by collecting data from sensors and storing it in the cloud for analysis. The platform also enhances smart agriculture by helping farmers monitor soil moisture, irrigation levels, and plant health, ensuring optimal crop growth.

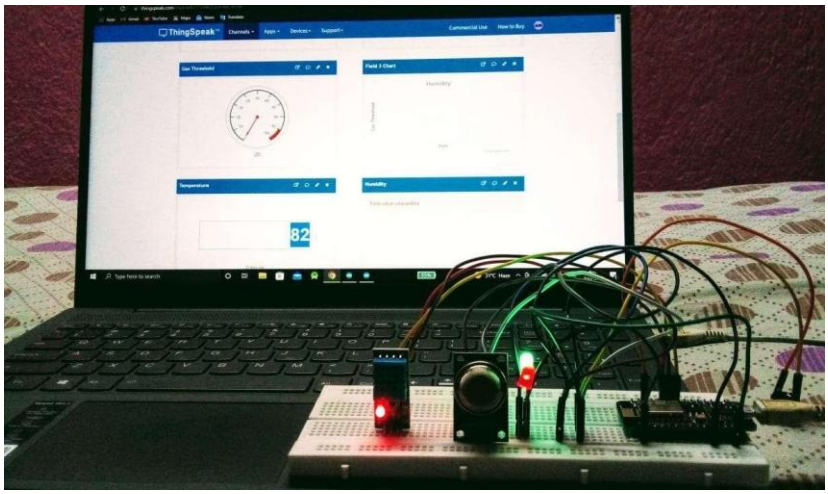

Fig:2 View of the proposed system

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Fig:3 Experimental work

V. CONCLUSION

The GSM-module-based Internet of Things-based AC remote monitoring and control system has shown itself to be a dependable and effective way to remotely operate air conditioners. Energy economy, convenience, and system dependability have all been greatly increased by the combination of GSM-based communication, temperature monitoring, and automated control. The outcomes of the trial have shown that the system can monitor in real time, giving users timely alerts and enabling them to take the required steps from a distance. Users can effortlessly operate cooling systems without being physically present thanks to the capability of controlling AC units via SMS commands. Additionally, by lowering wasteful energy use when cooling is not needed, the temperature-based automation feature makes the system more efficient. Notwithstanding its benefits, the system has some drawbacks, including reliance on the availability of the GSM network, delayed SMS responses, and restricted compatibility with cutting-edge AI-based automation. Future improvements like cloud and Wi-Fi connection, support for mobile applications, and AI-driven predictive control, however, can overcome these drawbacks. To sum up, this system offers a workable, affordable, and expandable solution for industrial and smart home automation applications. The system can further minimize energy consumption and boost overall efficiency by integrating future improvements like real-time data analytics and machine learning for adaptive cooling. This study provides a solid basis for upcoming studies and advancements in Internet of Things-based intelligent climate management systems

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