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CLOUD BASED BLOOD PRESSURE MONITORING SYSTEM

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ABSTRACT

The number of cases in sanitarium keep adding every time and, some case's blood pressure must be measured by medical staff regularly. This means that the medical staff need to attend to the case routinely and several readings are needed in each session to make sure the results are accurate. Thus, there's a need to simplify the monitoring process inside hospitals. IoT Blood Pressure Monitoring System is built in this study to cover any blood pressure scenario. This design makes use of NodeMcu as a portal for seeing the blood pressure value online. Result showed that the design is able to transfer data from blood pressure sensor through the network using USB TTL periodical string which is directly attached to the NoduMcu. stoner can also view the blood pressure reading continuously from think speak pall operations and mobile service. likewise, the system can measure the value of blood pressure directly when stoner is in sitting position.

Keywords: NodeMCU, ESP8266 wi-fi module, Thing speak, GSM module, DHT11 sensor, BP sensor

I. INTRODUCTION

A cloud-based blood pressure monitoring system is a technology that allows patients to monitor their blood pressure remotely and securely. It involves using a blood pressure monitoring device that is connected to the internet and sends data to a cloud-based platform for storage and analysis. The system can be designed to send automatic reminders to

patients to take their blood pressure readings at scheduled times. The readings are then transmitted to the cloud platform where they are analyzed and stored securely. This allows patients and their healthcare providers to access the data from anywhere, at any time. Some of the benefits of a cloud-based blood pressure monitoring system include Improved patient outcomes: Patients can monitor their blood pressure regularly and detect any changes early on, which can help prevent serious health complications. Better disease management Healthcare providers can use the data collected by the system to develop personalized treatment plans that are tailored to each patient's unique needs. Cost-effective Remote monitoring can reduce the need for frequent hospital visits, resulting in cost savings for both patients and healthcare providers. Improved patient engagement. Patients can be more engaged in their own healthcare when they have access to their own health data and can see how their lifestyle choices affect their blood pressure. Overall, a cloud-based blood pressure monitoring system is a promising technology that can help improve patient outcomes, reduce healthcare costs, and promote patient engagement in their own healthcare.

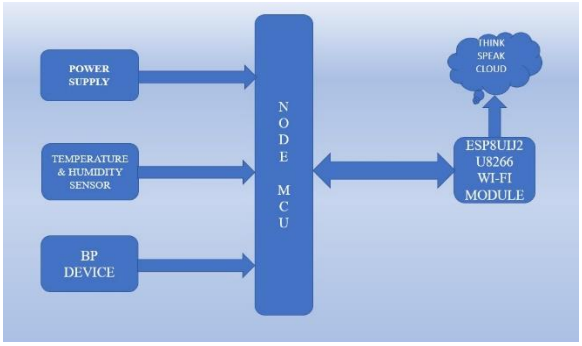

Figure.1 Block Diagram

II. Existing system

The first system uses raspberry pi as the major interface which measure pulse rate, heart rate and blood pressure using respective sensors. The measured parameters of an individual will be uploaded to the cloud. This medical history can be retrieved to patient's mobile and even doctor can monitor whenever required. This system is quite complex which uses many devices such as raspberry pi Rate and blood pressure using respective sensors. The measured parameters of an individual Arduino and various sensors. The the first system uses raspberry pi as the major interface which measure pulse rate, heart heart rate is measured from the Arduino and sent to raspberry pi while temperature sensor and camera are directly interfaced.

All the collected information is displayed in an LCD and at the mean time this will be sent to the cloud. This data can be downloaded through the website whenever required.

III. Proposed system

Esp8266 Wi- Fi module is a low-cost affordable device which is used to connect to Wi- Fi networks and communicate with other bias and through internet. ESP8266 can be programmed using the Arduino IDE, Micro Python, Lua, or C/ C programming languages. ESP8266 is considerably used in IoT operations, analogous as home automation, smart lighting, and remote monitoring NodeMCU is an open-source development board and firmware predicated in the considerably used ESP8266- 12 E Wi- Fi module. This is also an open source IOT platform. This module is programmed with the simple and important LUA programming language or Arduino IDE. With just a numerous

line of law it allows to establish a Wi- Fi connection and define input/ affair legs accordingly by turning the ESP8266 into a web garçon and a lot further. It's the Wi- Fi fellow of Ethernet module. NodeMCU is a versatile and user-friendly development board that has come a popular choice for IoT prototyping and development. A common temperature and humidity sensor is the DHT11. The sensor includes a dedicated NTC for temperature measurement and an 8-bit microcontroller for handling the temperature and humidity readings as journal data. The sensor is also factory calibrated and hence easy to chapter with other microcontrollers. The sensor can measure temperature from 0 °C to 50 °C and humidity from 20 to 80 with a delicacy of ± 2 °C and ± 5 °C. It has 3 legs GND, VCC and data leg which is connected to Node MCU. The collected readings are displayed in the web runner.

IV. Implementation and results

The working of a cloud-based blood pressure monitoring system involves the following steps:

Blood pressure monitor: The individual uses a blood pressure monitor, which can be connected to a mobile device or computer.

Data upload: The readings are automatically uploaded to a cloud-based server, where they can be accessed by the individual and healthcare providers.

Data analysis: The system may also include features such as reminders to take readings, personalized insights and recommendations based on the data collected, and the ability to share data with healthcare professionals or family members.

Access to data: Healthcare providers and the individual can access the data collected from the system for analysis and tracking.

Treatment decisions: The healthcare provider can use the data to make informed decisions about treatment plans and medication adjustments, if necessary.

Overall, the system is designed to help individuals better manage their blood pressure, prevent serious health complications, and provide healthcare providers with accurate and up-to-date information for informed decision-making.

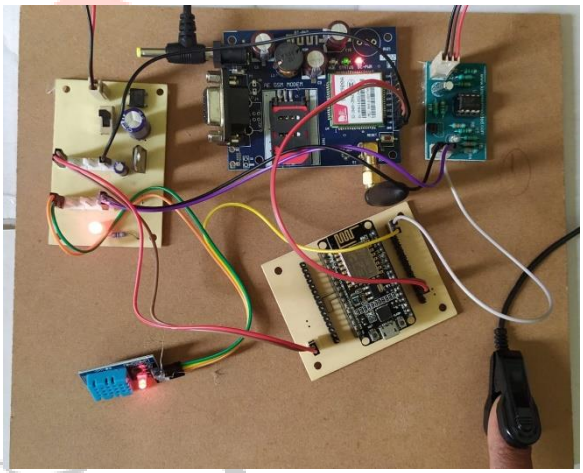

Figure 3. output result

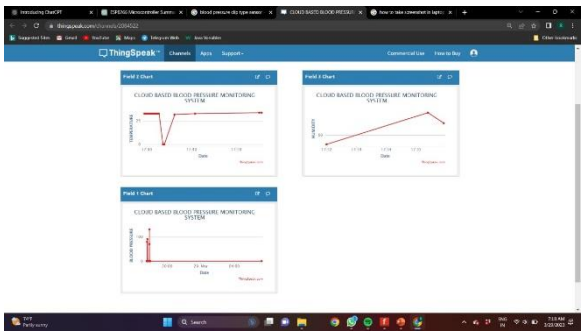

Figure 4. Accuracy graph

V. Advantages

- It can be implemented in villages.

- The data is stored in cloud for 6 months.
- Remote doctor will be available.
- It is easy to monitor, portable and economical.

VI. Disadvantages

- As this system needs internet connectivity it is difficult in few areas where there is less signal coverage.
- Supply power is required for functioning which may not be available.

VII. Applications

- Used to know the Blood pressure.
- Used to find the humidity.
- Used to know the body temperature.
- User can get the message of readings through GSM.

VIII. Conclusion

- Internet of things plays the major role in this project as it includes web applications for health monitoring and SMS through GSM.
- It has graphical representation for sensor readings which can be easily understood.
- This system monitors body temperature, humidity, blood pressure and this can be observed by the remote doctor virtually.
- These sensor values are monitored in the web continuously and necessary medical support can be provided.

IX. Future scope

- The importance and fruitful benefits of implementation of IoT in remote health monitoring systems. The compact sensors with IoT will make a huge impact on every patient's life, that even though they are away from home and physician, this helps them to reduce the fear of danger. The sensory data can be acquired in home or work environments.
- Also, the challenges in sensing, analytics and prediction of the disease are also highlighted and those can be addressed to provide required medication.
- This system can be implemented in rural areas where a speaker should be attached as an output through which user can understand his health condition.

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