ASANSOL ENGINEERING COLLEGE

TEAM CORE FOUR PRESENTS

"IOT BASED PATIENT HEALTH MONITORING SYSTEM USING ESP32 WEB SERVER"

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BILL OF MATERIALS

Following are the components required for making this project. All the components can be purchased from Amazon. The components purchased link is given below.

| S.N.	COMPONENTS NAME	QUANTITY	PRICE
1.	ESP32 Board	1	340
2.	MAX30100 Pulse Oximeter Sensor	1	180
3.	DS18B20 Sensor	1	160
4.	DHT11 Sensor	1	150
5.	Resistor 4.7K	1	10
6.	Connecting Wires	16	64
7.	Breadboard	1	90

OVERVIEW

With tons of new healthcare technology start-ups, IoT is rapidly revolutionizing the healthcare industry. Keeping track of the **health status** of your **patient** at home is a difficult task because of the busy schedules and our daily life work. Specially **old age patients** should be periodically monitored. So we propose an **innovative system** that automated this task with ease. Our device puts forward a smart **patient health tracking system** using **Web Server** so that the **Patient health** parameters like **Heart Rate** and **Blood Oxygen level** along with **body temperature** can be monitored.

So in this project, we will learn how to make **IoT Based Patient Health Monitoring System Project**. We will use the **MAX30100/102 Pulse Oximeter sensor** to measure the Heart Rate/Pulse(BPM) as well as the Blood Oxygen Level(SpO2). We will use a **DS18B20 Temperature Sensor** to measure the temperature of the body. Similarly Patient needs to be placed in a room with a certain temperature and humidity level so that he doesn't feel uncomfortable. In order to do that we need to monitor the room temperature and humidity as well. So we will be using **DHT11 Humidity & Temperature Sensor**.

Here is the earlier basic version of this project using Pulse Sensor & LM35 Temperature Sensor, you can follow that as well: IoT Based Patient Health Monitoring using ESP8266.

This sensor is integrated **pulse oximetry** and **heart-rate** monitor sensor solution. It combines two **LED's**, a **photodetector**, optimized optics, and low-noise analog signal processing to detect pulse and heart-rate signals. It operates from **1.8V** and **3.3V** power supplies and can be powered down through software with negligible standby current, permitting the **power supply** to remain connected at all times.
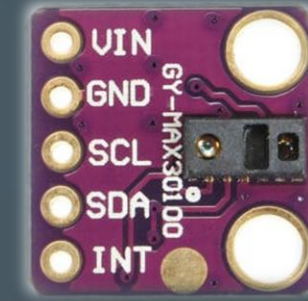

MAX30100 Pulse Oximeter Sensor

DS18B20 Temperature Sensor

This is a pre-wired and **waterproofed version of the DS18B20 sensor.** Handy for when you need to measure something far away, or in wet conditions. The Sensor can measure the temperature between **-55 to 125°C** (-67°F to +257°F). The cable is jacketed in PVC.

The **DHT11** is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive **humidity sensor** and a **thermistor** to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed).
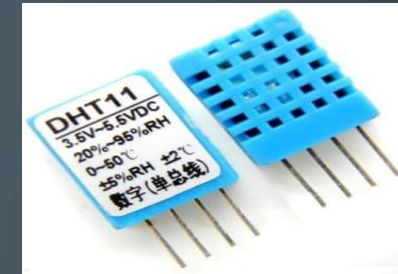
DHT11 Humidity & Temperature Sensor
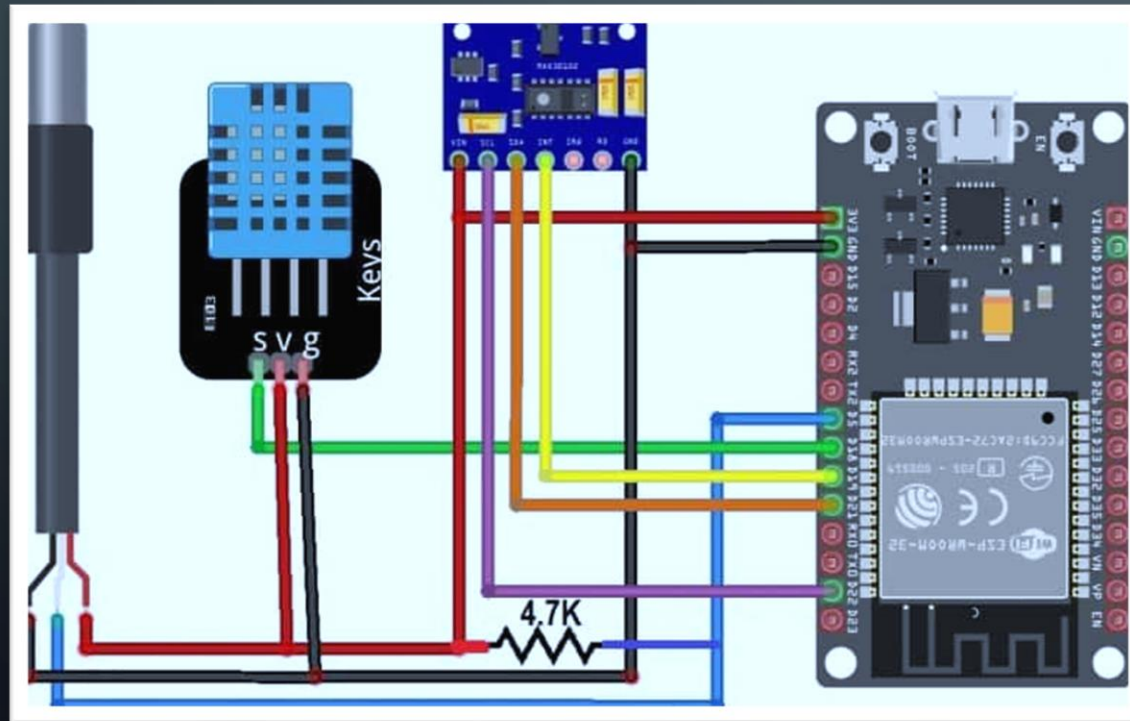
The designing of IoT Based Patient Health Monitoring on ESP32 Web Server. So the **circuit diagram** for **interfacing MAX30100, DHT11 & DS18B20** with **ESP32** is here
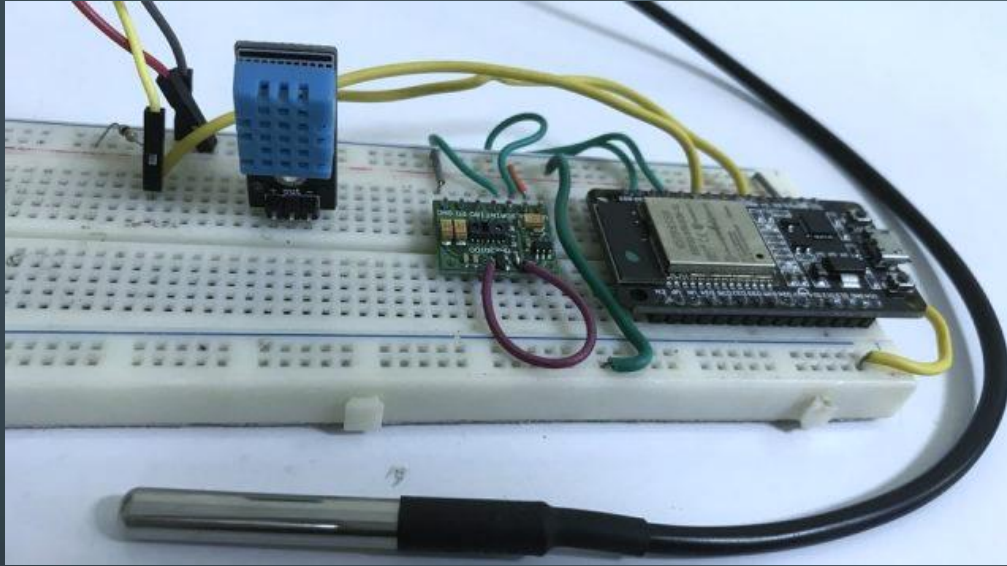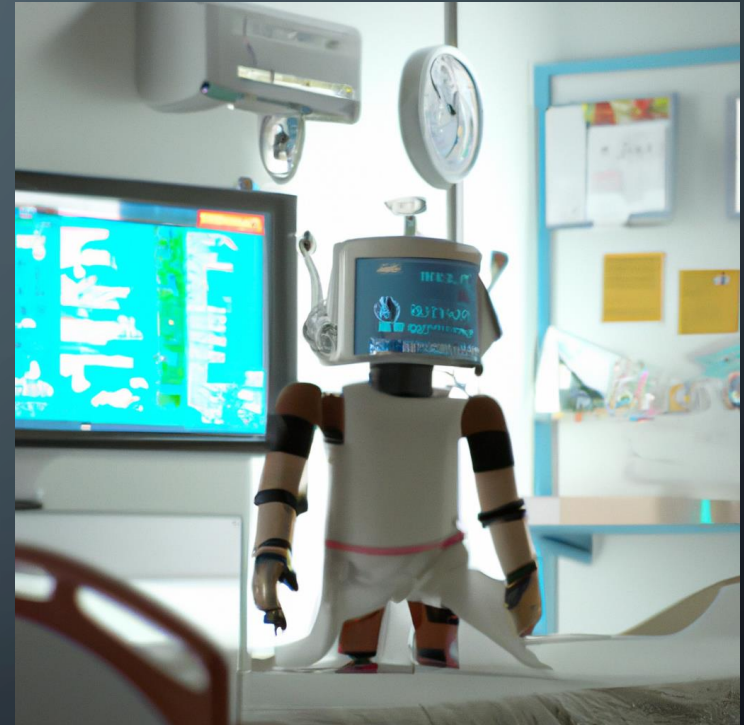
Here I assembled the circuit on a breadboard.

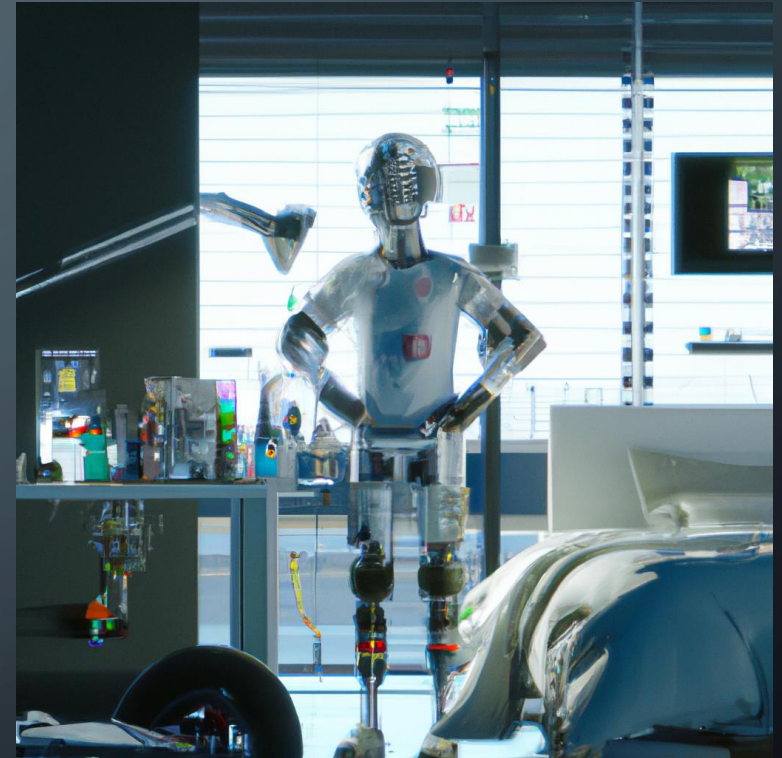# ADVANTAGES OF IOT BASED PATIENT HEALTH MONITORING ON ESP32

The ESP32 is a low-cost and low-power system on a chip (SoC) with Wi-Fi and Bluetooth capabilities. This makes it an ideal choice for building Internet of Things (IoT) applications, such as patient health monitoring systems.

The ESP32 can also be used to create secure and reliable patient health monitoring systems. The data collected can be used to track a patient's health over time, allowing for better diagnosis and treatment.

APPLICATIONS OF IOT BASED PATIENT HEALTH MONITORING ON ESP32

The ESP32 can be used to create patient health monitoring systems for hospitals and other healthcare facilities. The data collected can be used to track a patient's health over time and provide better care.

The ESP32 can also be used to create remote patient health monitoring systems. Sensors can be used to collect data from patients in remote locations, which can then be sent to a cloud platform for storage and analysis.

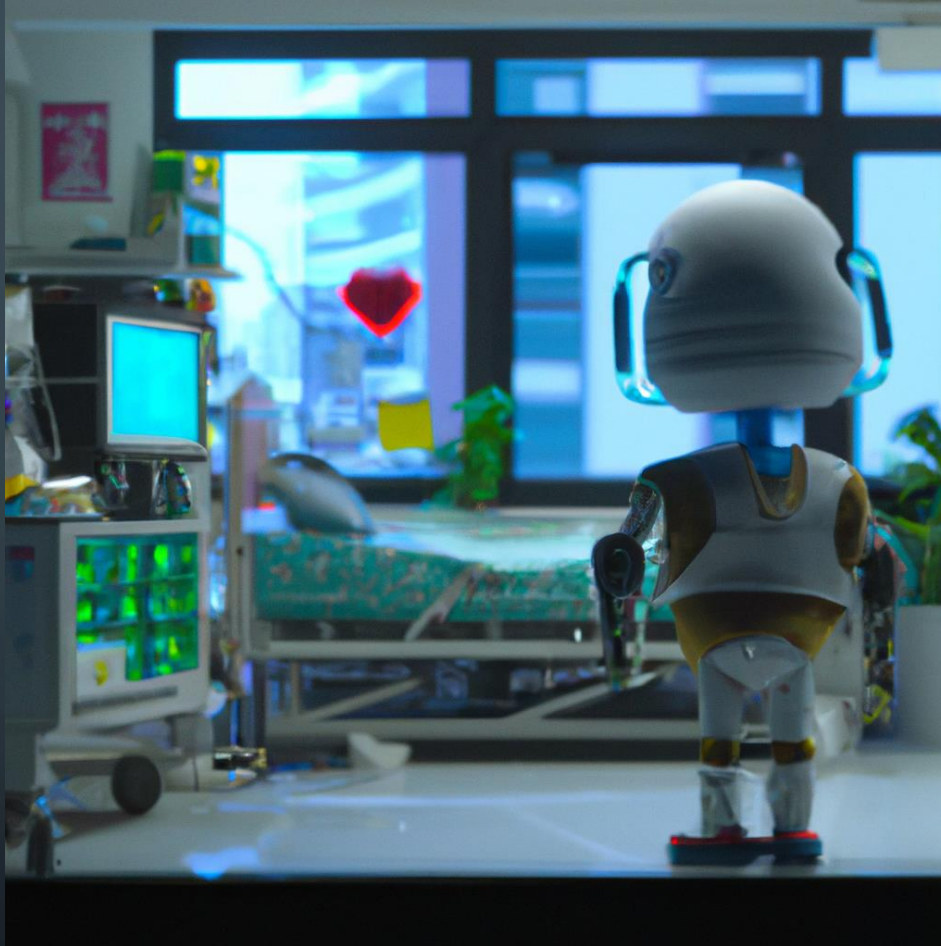# APPLICATIONS OF IOT BASED PATIENT HEALTH MONITORING ON ESP32

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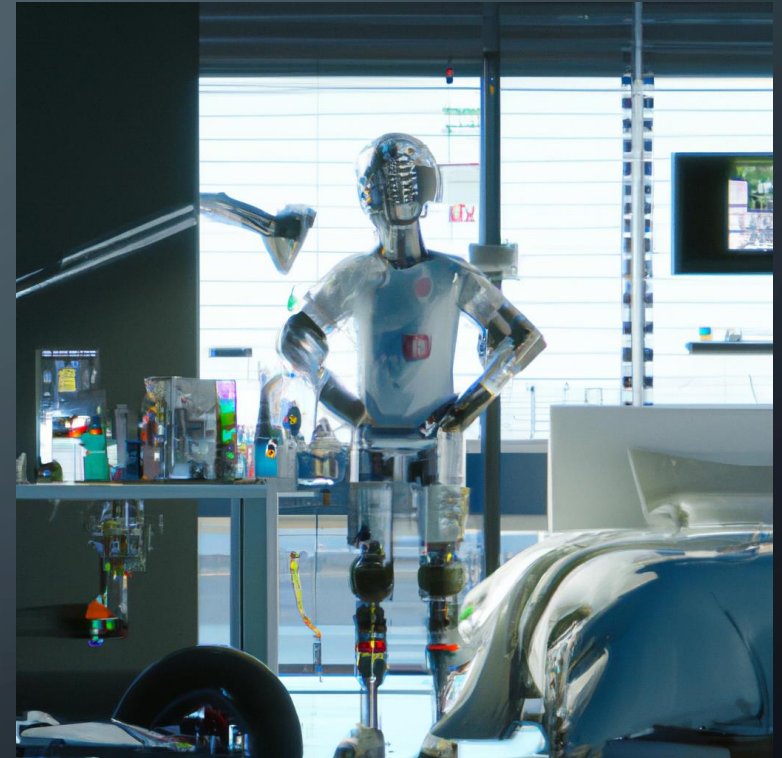
CONCLUSION

The ESP32 is a low-cost and low-power system on a chip (SoC) with Wi-Fi and Bluetooth capabilities. It is an ideal choice for building Internet of Things (IoT) applications, such as patient health monitoring systems.
The ESP32 can be used to create secure and reliable patient health monitoring systems. The data collected can be used to track a patient's health over time, allowing for better diagnosis and treatment.

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THANK YOU

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