**Ultrasonic sensor with an ESP8266 and send the data to ThingSpeak**

To use an ultrasonic sensor with an ESP8266 and send the data to ThingSpeak, you’ll need the following components and steps:

**Components Needed**

1. **ESP8266 Module** (e.g., NodeMCU or Wemos D1 Mini)
2. **Ultrasonic Sensor** (e.g., HC-SR04)
3. **Breadboard and Jumper Wires**
4. **Power Supply** (USB or battery)

**Wiring the Ultrasonic Sensor to ESP8266**

* **HC-SR04 Pins:**
  + VCC to 3.3V on the ESP8266
  + GND to GND on the ESP8266
  + Trigger to a digital pin (e.g., D1)
  + Echo to another digital pin (e.g., D2)

**Code Example**

You'll need the Arduino IDE to program the ESP8266. Install the necessary libraries (ESP8266WiFi and HTTPClient).

#include <ESP8266WiFi.h>

#include <ESP8266HTTPClient.h>

const char\* ssid = "YOUR\_SSID";

const char\* password = "YOUR\_PASSWORD";

const char\* apiKey = "YOUR\_THINGSPEAK\_API\_KEY";

const char\* server = "api.thingspeak.com";

const int trigPin = D1;

const int echoPin = D2;

void setup() {

Serial.begin(115200);

WiFi.begin(ssid, password);

pinMode(trigPin, OUTPUT);

pinMode(echoPin, INPUT);

while (WiFi.status() != WL\_CONNECTED) {

delay(1000);

Serial.println("Connecting to WiFi...");

}

Serial.println("Connected to WiFi");

}

void loop() {

long duration, distance;

// Trigger the sensor

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

duration = pulseIn(echoPin, HIGH);

distance = duration \* 0.034 / 2; // cm

Serial.print("Distance: ");

Serial.println(distance);

if (WiFi.status() == WL\_CONNECTED) {

HTTPClient http;

String url = String("http://") + server + "/update?api\_key=" + apiKey + "&field1=" + String(distance);

http.begin(url);

int httpCode = http.GET();

if (httpCode > 0) {

String payload = http.getString();

Serial.println(httpCode);

Serial.println(payload);

} else {

Serial.println("Error on HTTP request");

}

http.end();

}

delay(2000); // Send data every 2 seconds

}