Technology GURU BD

Engr. Osman Billah, B.Sc. Engr EEE, M.Sc. Engr CSE, PhD Researcher

Experiment: Raspberrypi and Ulrtasonic sensor with Thingspeak

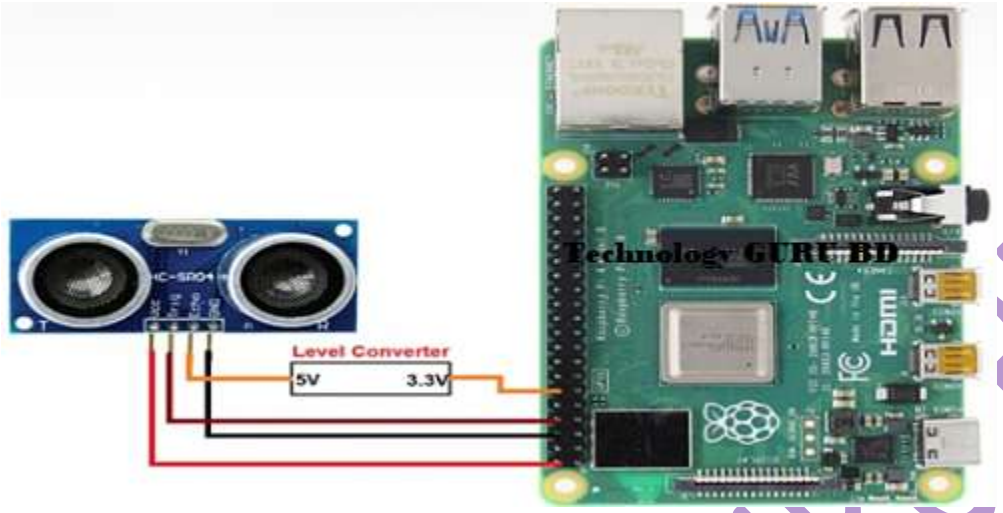

Fig: Circuit Diagram

<untitled> ultrasonic_thingspeak.py

```
1  import RPi.GPIO as GPIO
2  import time
3  import requests
4
5  # ThingSpeak settings
6  THINGSPEAK_API_KEY = 'SVJM2BCWMSV4NNHS'  # Replace with your Write API Key
7  THINGSPEAK_URL = 'https://api.thingspeak.com/update'
8
```

Shell

```
Measured Distance: 41.12 cm
Data sent to ThingSpeak.
Measured Distance: 12.66 cm
Data sent to ThingSpeak.
Measured Distance: 67.79 cm
Data sent to ThingSpeak.
Measured Distance: 107.92 cm
Data sent to ThingSpeak.
Measured Distance: 52.67 cm
```

Code:

```
import RPi.GPIO as GPIO
import time
import requests
# ThingSpeak settings
THINGSPEAK_API_KEY = 'YOUR CHANNEL WRITE API KEY'  # Replace with your Write API Key
THINGSPEAK_URL = 'https://api.thingspeak.com/update'
# GPIO pins
```

```
TRIG = 23
ECHO = 24
# GPIO setup
GPIO.setwarnings(False)
GPIO.setmode(GPIO.BCM)
GPIO.setup(TRIG, GPIO.OUT)
GPIO.setup(ECHO, GPIO.IN)
def get_distance():
    GPIO.output(TRIG, False)
    time.sleep(0.5)
    GPIO.output(TRIG, True)
    time.sleep(0.00001)
    GPIO.output(TRIG, False)
    while GPIO.input(ECHO) == 0:
        pulse_start = time.time()
    while GPIO.input(ECHO) == 1:
        pulse_end = time.time()
    pulse_duration = pulse_end - pulse_start
    distance = pulse_duration * 17150
    return round(distance, 2)
try:
    while True:
        dist = get_distance()
        print(f"Measured Distance: {dist} cm")
        # Send to ThingSpeak
        payload = {'api_key': THINGSPEAK_API_KEY, 'field1': dist}
        response = requests.get(THINGSPEAK_URL, params=payload)
        if response.status_code == 200:
            print("Data sent to ThingSpeak.")
        else:
            print("Failed to send data.")
        time.sleep(15)  # ThingSpeak allows one update every 15 seconds
except KeyboardInterrupt:
    print("Stopped by user.")
    GPIO.cleanup()
```

ThingSpeak Environment :

Technology GURU BD

Engr. Osman Billah, B.Sc. Engr EEE, M.Sc. Engr CSE, PhD Researcher

Ultrasonic Function

Fig:1

Fig:2

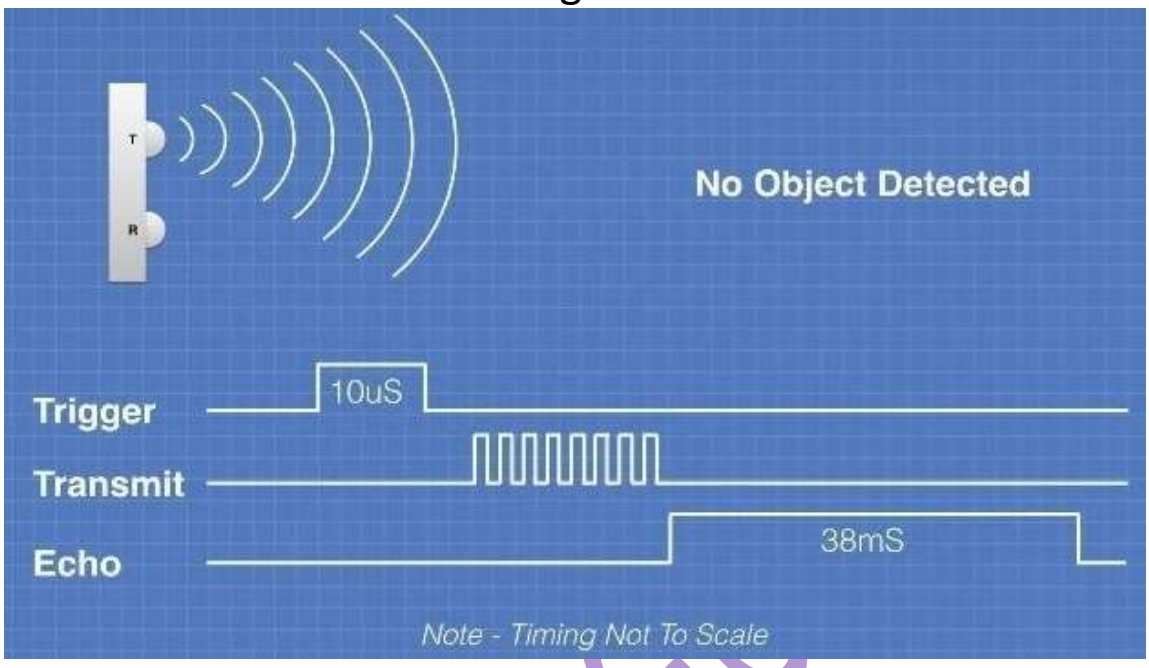

Fig:3

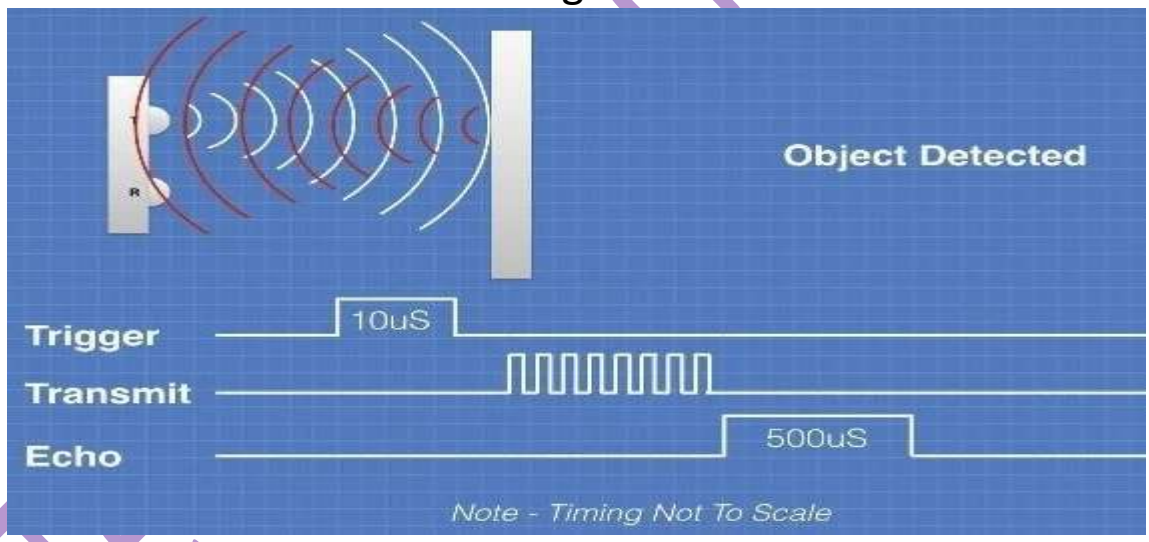

Fig:4

Engr. Osman Billah, B.Sc. Engr EEE, M.Sc. Engr CSE, PhD Researcher

Alternate code:

```
import RPi.GPIO as GPIO
import time  GPIO.setmode(GPIO.BCM)
#ThingSpeak settings
THINGSPEAK_API_KEY='YOUR CHANNEL WRITE API KEY'# Replace with your write api key
THINGSPEAK_URL='https://api.thingspeak.com/update'
GPIO_TRIG = 11
GPIO_ECHO = 18
GPIO.setup(GPIO_TRIG, GPIO.OUT)
GPIO.setup(GPIO_ECHO, GPIO.IN)
GPIO.output(GPIO_TRIG, GPIO.LOW)
Time.sleep(2)
GPIO.output(GPIO_TRIG, GPIO.HIGH)
Time.sleep(0.00001)
GPIO.output(GPIO_TRIG, GPIO.LOW)
while GPIO.input(GPIO_ECHO)==0:
start_time = time.time()
while GPIO.input(GPIO_ECHO)==1:
Bounce_back_time = time.time()
pulse_duration = Bounce_back_time - start_time  distance = round(pulse_duration * 17150, 2)
print ("Distance:",distance,"cm")
GPIO.cleanup()
```