

```

int trigPin = 3;    // Trigger2
int echoPin = 4;    // Echo2

//calculation variables

int constant= 4770;

//when an object is detected by the algorithm a flag is raised
//the algorithm stops checking for obstacles until the flag is lowered
int flag= 0;

//threshold for determining if an obstacle is present
int threshold1 =200;
int threshold2 =-200;

//interference count
int  count,a,b;

//error indicator

int error= 0;

unsigned long delays;

//bluetooth set up
#include <SoftwareSerial.h>
SoftwareSerial BTserial(9, 10); // RX | TX

void setup() {
  //bluetooth set up
  BTserial.begin(9600);

  //serial monitor for debugging
  Serial.begin (9600);

  //Define trigger inputs and echo outputs
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);

  //initialize intereference count to 0
  count= 0;

```

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}
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```
void loop() {
```

```
    //get sensore reading
    digitalWrite(trigPin, LOW);
    delayMicroseconds(2);
    digitalWrite(trigPin, HIGH); //send out trigger pulse
    delayMicroseconds(10); //pulse in only works for pulses 10 microseconds or longer
    digitalWrite(trigPin, LOW); //end trigger pulse
    delays = pulseIn(echoPin, HIGH); // calculate time difference between when the
    trigger pulse was sent and when the echo pulse was recieved
```

```
    //reject noise
    if ( delays > 10000 || delays<400){ error=1;}
    else{ error=0;}
```

```
    if(error == 0){
        //only run algorithm if sensor is outputting sensible data
        //calculate how much sensors readings deviate from the constant
        a= delays-constant; //sensor 1 reading's deviation from constant
        b=abs(a);
```

```
//if flag is lowered check for interference
    if( flag == 0){
```

```
        if( a>threshold1){
            //pothole detected
```

```
            flag=1; //raise flag to prevent double counting
            BTserial.write("<POT>\n");
            Serial.print("Obstacle Detected");
            Serial.print("a:");
            //count+=1;
```

```
        }
```

```
        else if(a<threshold2){
            flag=1; //raise flag to prevent double counting
            BTserial.write("<DEB>\n");
```

```

    Serial.print("Obstacle Detected");
    Serial.print("a:");
    //count+=1;

}

}

//if flag isn't lowered check if were back on level ground
else{

    if( b<75 ){
        //obstacle detected

        flag=0; //lower flag so we can check for a new obstacle

        Serial.print("Back on level ground");
        Serial.println();

    }

}

}

Serial.print("count:");
Serial.print(count);
Serial.println();
delay(60);

// output delay of current pulse
Serial.print("Delay: ");
Serial.print(delays);
Serial.println();
//Serial.print("Flag:");
//Serial.println();
//Serial.print(flag);
//Serial.println();
Serial.print("a:");
Serial.println();
Serial.print(a);
Serial.println();
//Serial.print("b:");
//Serial.println();
//Serial.print(b);
//Serial.println();

```

```
//Serial.println();  
}
```