TEAM-9

NAVIGATING INSOLE

Code:

#include <SoftwareSerial.h>

#include <TinyGPS++.h>

SoftwareSerial SerialGPS(4, 3); // RX, TX

TinyGPSPlus gps;

const int leftVibrationPin = 2; // Connect to any digital pin for left vibration motor

const int rightVibrationPin = 8; // Connect to any digital pin for right vibration motor

const int trigPin = 6; // Connect to the trig pin of the ultrasonic sensor

const int echoPin = 7; // Connect to the echo pin of the ultrasonic sensor

double targetLat = 0.0; // Initialize with default values

double targetLng = 0.0;

void setup() {

Serial.begin(9600);

SerialGPS.begin(9600);

pinMode(leftVibrationPin, OUTPUT);

pinMode(rightVibrationPin, OUTPUT);

pinMode(trigPin, OUTPUT);

pinMode(echoPin, INPUT);

// Prompt the user to enter target coordinates

Serial.println("Enter target latitude:");

while (!Serial.available()) {

// Wait for user input

}

targetLat = Serial.parseFloat();

Serial.println("Enter target longitude:");

while (!Serial.available()) {

// Wait for user input

}

targetLng = Serial.parseFloat();

// Display entered coordinates

Serial.print("Target Coordinates: ");

Serial.print("Latitude: ");

Serial.print(targetLat, 6);

Serial.print(", Longitude: ");

Serial.println(targetLng, 6);

}

// Function to measure distance using the ultrasonic sensor

double getDistance() {

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

return pulseIn(echoPin, HIGH) \* 0.034 / 2;

}

void loop() {

while (SerialGPS.available() > 0) {

if (gps.encode(SerialGPS.read())) {

// Check if GPS fix is valid

if (gps.location.isValid()) {

// Get current latitude and longitude

double latitude = gps.location.lat();

double longitude = gps.location.lng();

// Calculate the difference in coordinates

double latDiff = targetLat - latitude;

double lngDiff = targetLng - longitude;

// Measure the distance using the ultrasonic sensor

double distance = getDistance();

// Adjust the vibration motors based on the differences and obstacle detection

if (lngDiff > 0.001 && distance > 10) {

// Move right, activate right vibration motor

digitalWrite(leftVibrationPin, LOW);

digitalWrite(rightVibrationPin, HIGH);

Serial.println("Move right");

} else if (lngDiff < -0.001 && distance > 10) {

// Move left, activate left vibration motor

digitalWrite(leftVibrationPin, HIGH);

digitalWrite(rightVibrationPin, LOW);

Serial.println("Move left");

} else if (distance <= 10) { 1

// Obstacle detected, vibrate both motors

digitalWrite(leftVibrationPin, HIGH);

digitalWrite(rightVibrationPin, HIGH);

Serial.println("Obstacle detected");

} else {

// No movement,stop both vibration motors

digitalWrite(leftVibrationPin, LOW);

digitalWrite(rightVibrationPin, LOW);

Serial.println("NO movement");

}

}

}

}

}