

# Beacon Tracking using Arduino

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## 1 ALGORITHM-1

### 1.1 *Components*

<https://github.com/sachinomdubey/Arduino/blob/main/Beacon%20Tracking/Algorithm%201/Component%20List.pdf>

### 1.2 *Wiring Diagram*

<https://github.com/sachinomdubey/Arduino/blob/main/Beacon%20Tracking/Algorithm%201/Figures/Wiring%20Diagram.pdf>

### 1.3 *Codes*

#### 1.3.1 *ESP32 code:*

- Connect the ESP32 board to Laptop/PC using Type-B USB cable.
- Open the [Algorithm1\\_ESP32.ino](#) file in Arduino IDE.
- From Tools menu, select suitable "Board" and "Port" for your ESP32 board.
- Compile the code by clicking on "Verify" option.
- Upload the code to ESP32 using the "Upload" option.

#### 1.3.2 *Arduino code:*

- Connect the Arduino uno board to Laptop/PC using USB cable.
- Open the [Algorithm1\\_Arduino.ino](#) file in Arduino IDE.
- From Tools menu, select Board as "Arduino Uno" and suitable "Port" on which the Arduino board is connected.
- Compile the code by clicking on "Verify" option.
- Upload the code to ESP32 using the "Upload" option.

### 1.4 *Working*

- 1) Initially, ESP32 mounted on the car will read RSSI (Radio Signal Strength Indicator) levels

in forward, right and left direction by suitable in-place rotation.

- 2) Average of 20 RSSI values are taken while measuring RSSI level in a particular direction. This is done in order to read accurate RSSI levels.
- 3) The car then rotates towards the direction having the highest RSSI level.
- 4) Further, It moves forward with a distance depending on the free space available in front of it. The free space in front of the car is measured using ultrasonic sensor.
- 5) By repeating above steps again and again, the car navigates towards the beacon.

### ***1.5 Observation/Conclusion***

- The algorithm described above is very basic and crude way to navigate toward the beacon. Frequent left and right rotation is required to identify the direction having the maximum RSSI level.
- Using this algorithm, only 60-70 percent of the time (i.e. 60-70% Accuracy), the car rotates and moves towards the correct direction. Due to low accuracy, The car may take time to reach till the beacon.