

RTES Rendezvous



NYU

TANDON SCHOOL
OF ENGINEERING

Final Project Description | EL-6483 RTES 2019

Objective

Design a team of 5 bots which can:

- Navigate through an obstacle course successfully. The obstacles will be walls higher than the Bot height.
- The bots are based on a microcontroller with WiFi Communication built-in. This is used to guide the bot towards a WiFi Access Point Beacon.
- There will be a central Wi-Fi beacon access point in the obstacle course, the bots will need to calculate their relative distance to the beacon through signal strength measurements.
- They will then navigate through the course to meet at the beacon. The meeting area will be circular and will have a radius calibrated to the strength of the WiFi beacon.
- The beacon's Wi-Fi access details will be provided.

Materials Required:

1. Microcontroller Board – [Adafruit HUZZAH32 – ESP32 Feather Board](#) – Provided by NYU
2. Car Kit
3. Additional Sensors – Used for Obstacle Avoidance

Technical Description / Rules

- You are allowed to use additional sensors to make system more efficient.
- The bots should be able to navigate autonomously to the beacon, without human intervention.
- They should do this irrespective of their starting positions, in a certain range of distance, where the signal is perceivable.
- There will be Groups of 10, with 5 teams per group. There will be 2 people in each team. Each team work on a bot for a total of 5 bots per group.
 - [Enter Team Details Here](#)
- Each team will navigate the course simultaneously.
- Reaching the beacon first earns extra credit.

Feasibility:

- Radio Communication enabled devices usually have a perceived signal strength indicator parameter.
- This parameter can be used to estimate distance from Source of signal.
- This parameter doesn't require need for much data exchange as just establishing and maintaining a stable connection will give the RSSI value.
- Some Microcontrollers support automatic beacon monitoring (Time Stamp Calculations).

Additional Details to follow.