

## Wk 8 Assignment

Due: Monday, Nov. 21, 11:59pm EST

### 1 Objective:

The objective of this assignment is to implement the BUG1.

**Requirements:** You MUST use MATLAB to complete this assignment.

#### 1.1 Task 1: BUG1 Algorithm (40 points)

In this exercise, you will implement the BUG1 algorithm on a mobile robot using either a 360° field of view range finder. You are given the MATLAB file `BUG1_user.m` and the following USARSim files:

- `USARBot(wk7).ini`: Replace the `USARBot.ini` file located in your Unreal Tournament 2004 folder under the `System` directory with this new file. You can do this by deleting the original file and saving this file into the `System` directory and renaming it `USARBot.ini`.
- `bugmap.ut2`: Save this file into your Unreal Tournament 2004 folder under the `Maps` directory.
- `bugMap.bat`: Save this file into your Unreal Tournament 2004 folder under the `USAR_Maps_Files` `RunClientOnly` directory.

To start USARSim, double-click on `bugMap.bat`. Implement the BUG1 algorithm covered in class using either the range finder. Remember, you can treat the range finder as contact sensor. Name your script `BUG1_user` where you should replace `user` with your Drexel domain login.

### 2 Extra Credit

#### 2.1 Extra Credit 1 (10 points)

Implement the BUG2 Algorithm using the same USARSim map files. Name your script `BUG2_user` where you should replace `user` with your Drexel domain login.

#### 2.2 Extra Credit 2 (10 points)

Implement the Tangent BUG Algorithm using the same USARSim map files. Name your script `TBUG_user` where you should replace `user` with your Drexel domain login.