CPE470/670

Project 2. Mobile Robot Path Planning using Artificial Potential Field

1. Design an Artificial Potential Controller to allow a mobile robot to follow/track a virtual moving target.
2. Write Matlab or C/Cpp code (or other languages you prefer) to implement your designed potential controller.
3. Write a report of the project
    a. Noise free environment (robot is assumed to localize itself accurately without noise, and be able to sense target position accurately):
        - Plan the target to move in a linear/line trajectory and plot the tracking results: (i) trajectories of the target and robot, (ii) tracking error between the target and robot, and (iii) robot's heading;
        - Plan the target to move in the sine wave trajectory and plot the tracking results: (i) trajectories of the target and robot, (ii) tracking error between the target and robot, and (iii) robot's heading.
    b. Noisy environment (robot is assumed to be able to sense the target, but with noise). You can use Gaussian noise model (randn function), a similar noise function in the project 1:
        - Add noise to the target position. Then, plan the target to move in a linear/line trajectory and plot the tracking results: (i) trajectories of the target and robot, (ii) tracking error between the target and robot, and (iii) robot's heading;
        - Add noise to the target position. Then, plan the target to move in the sine wave trajectory and plot the tracking results: (i) trajectories of the target and robot, (ii) tracking error between the target and robot, and (iii) robot's heading.
    c. Put all the source code/software in the Appendix with instruction of running the code

4. **Project Deadline: Thursday, Nov. 11th, 2016**
   - **Return report (hard copy) in the class**
   - **Email your electronic report with source code and instructions to run your code to my email: bravehung@yahoo.com**