Lab #1 Report

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1   Potential Fields

1.1   Usage

We ended up using reflective fields around the obstacles as they seemed to work better than the tangential fields. At first, we had a guy moving really slow and he followed the fields exactly. But, as we speed him up, we found that he could get caught in the tangential fields on the four l's world. By having the walls repulsive with $\beta = 1$ and s equal to the maxDistance from the center of the obstacle to the furthest out edge, making a disk, plus 5 ($s = maxDistance + 5$) the agent could successfully navigate through the obstacles.
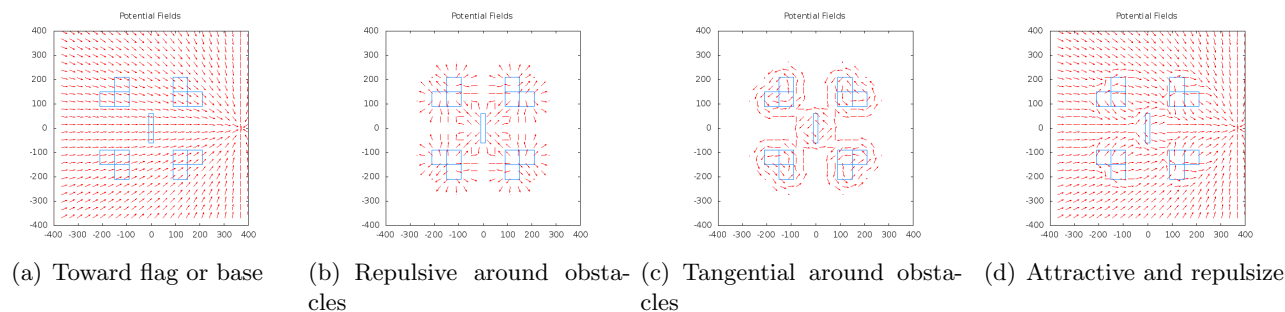
1.2   four_ls

(a) Toward flag or base   (b) Repulsive around obstacles   (c) Tangential around obstacles   (d) Attractive and repulsize

Figure 1: Potential fields in the FourLS World

1.3   rotated squares

(a) Attractive Fields   (b) Repulsive Fields   (c) Tangential Fields   (d) Attractive and Tangential
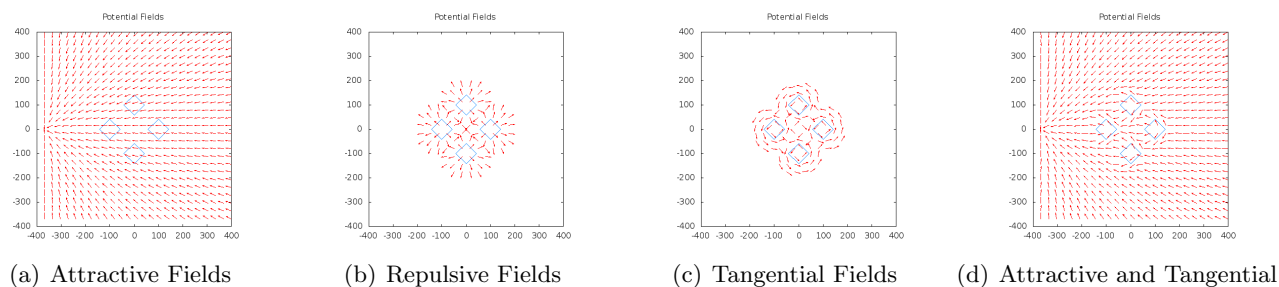
Figure 2: Potential fields in the rotated box world

2   Tests

We tested our agent against Daniel Brown and Ryan Hintze's agent. Our PF agent lost against theirs. We had our PF agent going really slow to guarantee that he followed the field path. After we ran the tests, we tweaked the values of the different fields as well as our controller and were significantly able to increase speed.

3   Time

Taylor spent about 20 hours, with about 2 hours getting used to the language (Scala). Tyler spent about 17 hours.