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CSCE574 – Robotics  
Spring 2014 – Homework 10

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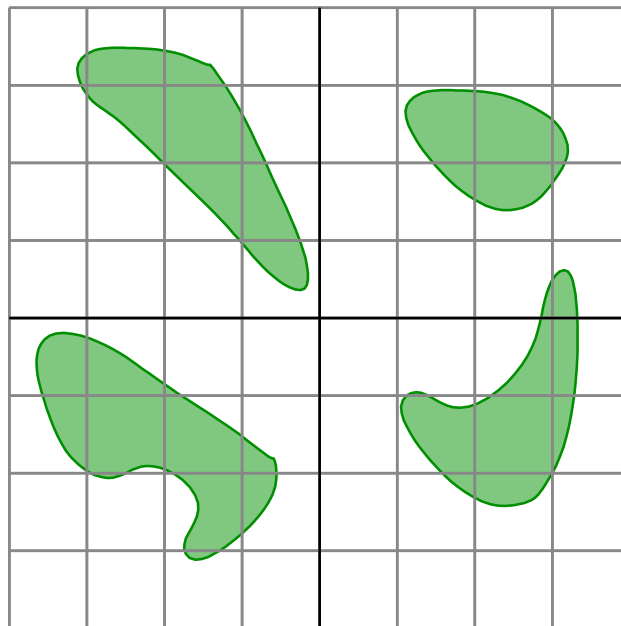
Assigned: April 3

Due: April 8

\_\_\_\_\_

name

Suppose a robot has a 2-dimensional planar configuration space that looks like this. There are four curved C-space obstacles. The grid marks are there only to show coordinates – the robot is *not* constrained to move one grid cell at a time!



The initial configuration is the lower-left corner at  $(-4, -4)$ . The goal configuration is in the upper-right corner, at  $(4, 4)$ . Build a PRM to solve this problem.

1. Use a calculator or computer to generate 25 (pseudo-)random configurations within the range shown above. Mark the samples on the picture above.

I generated the samples for this problem using \_\_\_\_\_ .

2. Discard any samples that fell within any C-space obstacle.

There were \_\_\_\_\_ obstacle configurations.

3. For each free sample configuration, along with the initial and goal states, attempt to make a straight-line connection to every other free sample configuration within (approximately) two units. Draw these connections above.

I successfully made \_\_\_\_\_ connections.

Does the resulting roadmap successfully solve this path planning problem? \_\_\_\_\_