

CSCI-4290/6290: Robot Motion Planning
Lecture 6: September 16, 2005
Visibility Graphs

Announcements

- Solutions to Questions 5 and 6 of Assignment 1 are due today.
- Assignment 2 is due on October 1, 2005.

Today's Class

In the last class, we looked at geometric transformations for articulated robots, and a representation of the rotational motion of an object in 3D using the axis-angle representation and using quaternions.

We will today consider one of the earliest motion planning techniques, *visibility graphs*, to plan the motions of a translating robot in the plane.

1. Roadmap methods
2. Visibility graphs
3. Reduced visibility graphs
4. Computing the visibility graph using rotational sweep
5. Extensions to the visibility graph: generalized visibility graph, visibility graph in 3D

Reading

Chapter 5.1, Choset et al.

Chapter 6.2.4, LaValle.

Additional Reference

Chapter 15 of *Computational Geometry: Algorithms and Applications*, second edition, by M. de Berg, M. van Kreveld, M. Overmars, and O. Schwarzkopf, Springer, 2000.

Next Class

Voronoi diagrams.