CSCI-4290/6290: Robot Motion Planning
Lecture 6: September 12, 2003
Visibility Graphs

Announcements

- Solutions to Questions 5 and 6 of Homework 1 are due today.

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 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 5–5.2, *Planning Algorithms* by LaValle.
Chapter 4.1 and Appendix D, Latombe. (optional)

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.