

CSCI-4965/6963: Robot Motion Planning
Lecture 5: September 13, 2001
Visibility Graphs

Announcements

Assignment 1 is due on Monday, September 17.

Today's Class

In the last class, we looked at computing configuration space obstacle regions, and a representation of the rotational motion of an object in 3D using quaternions. Today we 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 4.1 and Appendix D, Latombe.

Additional References

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.