

CSCI-4290/6290: Robot Motion Planning
Lecture 12: October 3, 2003
Collision Detection

Announcements

- Assignment 3 is due on Friday, October 10.
- Prof. Gregory Chirikjian from Johns Hopkins University will talk about “Mathematical and Computational Models in Robotics and Structural Biology” on Monday, October 6, 4:00–5:00 p.m. in Walker 5113.

Today’s Class

Today we look at *collision detection* and *distance computation*. Collision detection algorithms are particularly useful for motion planning in high dimensional configuration spaces, where computing an explicit representation of the c-obstacle regions is difficult.

1. Collision detection
2. Two phase approach
3. Bounding volumes and hierarchical methods
4. Incremental methods

Reading

Chapter 6.1, *Planning Algorithms* by LaValle.

Collision and Proximity Queries, by Ming Lin and Dinesh Manocha, from the *Handbook of Discrete and Computational Geometry: Collision detection*, 2003 (to appear).

Next Class

Probabilistic roadmaps.