

CSCI-4290/6290: Robot Motion Planning
Lecture 18: November 1, 2005
Nonholonomic Motion Planning

Announcements

- For graduate students taking CSCI-6290: Please send me email indicating your top choices of papers for class presentation by the end of the day today.
- Devin Balkcom from Dartmouth University will be speaking on “Model-Based Robotics: Fast Cars, Robot Origami, Sensorless Assembly” on Thursday (November 3) at 4pm in JEC 3117.

Today’s Class

Today we look at *nonholonomic robots* and techniques to perform motion planning for such systems. The primary example of nonholonomic robots we will consider are car-like robots. Other related systems are tractor-trailers, hovercraft, and satellites.

1. Nonholonomic robots and constraints
2. Dubins paths, Reeds and Shepp’s paths
3. Maneuvers for a car-like robot
4. Two-phase nonholonomic motion planning

Reading

Chapter 12, *Fundamentals of Mobile Robotics*, by Wes Huang.

Chapters 13–13.1 and 15.3, LaValle.

Chapter 12 (especially 12.5), Choset et al.

Next Class

Nonholonomic motion planning