

CSCI-4290/6290: Robot Motion Planning  
Lecture 16: October 25, 2005  
**Probabilistic Roadmaps 2**

## Announcements

- Assignment 4 is due on Friday, October 28.
- For graduate students taking CSCI-6290: A preliminary list of papers that can be selected for class presentation is available on the course web page. Please send me email by Monday, October 31 indicating your top two choices of (sets of) papers.

## Today's Class

Today we continue our discussion of the *probabilistic roadmap* technique by considering some PRM variants.

1. Obstacle-Based PRM
2. Medial Axis PRM
3. Lazy PRM: This is a single query PRM variant that attempts to improve performance by reducing the number of collision checks.
4. Visibility PRM

## Reading

Chapter 7–7.2, Choset et al.

Chapter 5 (especially 5.6), LaValle.

## Additional References

“A Randomized Roadmap Method for Path and Manipulation Planning”, N. M. Amato and Y. Wu, IEEE International Conference on Robotics and Automation, pages 113-120, Minneapolis, MN, April 1996.

Motion Planning for a Rigid Body Using Random Networks on the Medial Axis of the Free Space, Steven A. Wilmarth, Nancy M. Amato, Peter F. Stiller, Proceedings of the 15th Annual ACM Symposium on Computational Geometry (SoCG'99), June 1999, pp. 173-180.

Path Planning Using Lazy PRM, R. Bohlin and L.E. Kavraki, *IEEE International Conference on Robotics and Automation*, pages 521–528, San Francisco, April 2000.

Visibility based probabilistic roadmaps for motion planning, T. Simeon, J.-P. Laumond, and C. Nissoux. *Advanced Robotics Journal* 14(6) (2000).

## **Next Class**

Rapidly-exploring random trees (RRTs)