

CSCI-4290/6290: Robot Motion Planning  
Lecture 13: October 14, 2005  
**Probabilistic Roadmaps**

## Announcements

- Assignment 3 is due today at the beginning of class.
- The midterm exam is on Friday, October 21 in class.

## Today's Class

Today we look at *probabilistic roadmaps*. These sampling-based methods are currently the most popular method for motion planning in high dimensional configuration spaces, where computing an explicit representation of the c-obstacle regions is difficult.

1. Probabilistic roadmaps (PRMs)
2. Preprocessing phase: construction step, expansion step
3. Query phase

## Reading

Chapter 7, Choset et al.

Chapter 5 and especially 5.6, LaValle.

## Additional References

L. E. Kavraki, P. Švestka, J.-C. Latombe, and M. H. Overmars, "Probabilistic Roadmaps for Path Planning in High-Dimensional Configuration Spaces", *IEEE Transactions on Robotics and Automation*, Vol. 12, No. 4, pages 566–580, August 1996.

## Next Class

Probabilistic roadmap variants.