

CSCI-4290/6290: Robot Motion Planning  
Lecture 11: September 30, 2003  
**Randomized Planning with Potential Functions**

## Announcements

- Assignment 2 is due tomorrow by 11:59pm. Please see the Assignment 2 web page for submission instructions.
- Assignment 3 will be handed out on October 3.
- Dr. Gregory S. 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 *randomized path planning with potential functions*. This variation of potential field methods was developed for high dimensional configuration spaces. It uses randomization to avoid being trapped in local minima.

1. Challenges of using potential functions for high dimensional configuration spaces
2. Best-first motions and random motions
3. Randomized Path Planner (RPP)

## Reading

Chapter 7.4–7.5, Latombe.

## Additional References

Robot Motion Planning: A Distributed Representation Approach, J. Barraquand and J.-C. Latombe, *International Journal of Robotics Research*, Vol. 10, No. 6, pages 628–649, December 1991.

## Next Class

Collision detection.