

CSCI-4965/6963: Robot Motion Planning
Lecture 18: November 1, 2001
**Nonholonomic Motion Planning,
and Collision Detection**

Announcements

- Course project proposal is due on Monday, November 5.
- Assignment 5 is due on Thursday, November 8.

Today's Class

1. Multilevel path planning for nonholonomic robots using semiholonomic subsystems:
Ben Potsaid will continue our discussion of *nonholonomic motion planning* by describing a complete planner for tractor-trailer robots with multiple trailers.
2. V-Clip (Voronoi-clip) algorithm for collision detection:
Jeong Kim will then describe a robust algorithm for *collision detection* and distance computation between polyhedral objects.

References

Multilevel path planning for nonholonomic robots using semiholonomic subsystems by S. Sekhavat, P. Svestka, J.-P. Laumond, M.H. Overmars. *International Journal of Robotics Research*, Vol. 17, No. 8, pages 840-857, August 1998.

V-Clip: Fast and Robust Polyhedral Collision Detection, by Brian Mirtich. *ACM Transactions on Graphics*, volume 17, number 3, pages 177-208, July, 1998.

Next Class

Visibility roadmaps, and Hierarchical generalized Voronoi graphs