

CSCI-4965/6963: Robot Motion Planning
Lecture 25: November 29, 2001
Parts Feeding

Announcements

- The course project due date is now 11:59pm on Tuesday, December 4. Remember, your project counts for 30% of your grade.
- You should create a web page for the project and make your project material available there. Also submit your project code using the assignment submission procedure.

Today's Class

Today we consider *parts feeding*, the process by which parts that are to be assembled by a robot are fed in a specified position and orientation. Parts feeding involves parts transfer and parts orienting, and is a form of motion planning with movable objects. We consider nonprehensile manipulation, where the object is not grasped and its motions are governed by the task mechanics and geometry.

1. Parts transfer
2. Parts orienting
3. Configuration space representation for manipulation planning

References

Posing polygonal objects in the plane by pushing, S. Akella and M. T. Mason, *International Journal of Robotics Research*, volume 17, number 1, pages 70-88, January 1998.

Stable Pushing: Mechanics, Controllability, and Planning, K. M. Lynch and M. T. Mason, *International Journal of Robotics Research*, volume 15, number 6, pages 533-556, December 1996.

Parts Feeding on a Conveyor with a One Joint Robot, S. Akella, W. H. Huang, K. M. Lynch, and M. T. Mason. *Algorithmica*, volume 26, number 3/4, pages 313-344, 2000.

A Reconfigurable Parts Feeder with an Array of Pins. S. J. Blind, C. C. McCullough, S. Akella, and J. Ponce, *IEEE International Conference on Robotics and Automation*, pages 147-153, San Francisco, CA, April 2000.

Next Class

Motion planning for flexible objects.