

CSCI-4965/6963: Robot Motion Planning
Lecture 24: November 26, 2001
Assembly Planning, and Carton Folding

Announcements

- Please sign up for a time to demo your final course project.
- You should create a project web page and make your project material available there.

Today's Class

Today we will look at applications of motion planning techniques to computer-aided design and automated manufacturing.

1. Assembly planning:

Michael Balma will talk about motion strategies for *assembly planning*. Assembly planning involves finding a sequence of motions to assemble a product from its component parts, and can be viewed as a particular case of multiple robot coordination.

2. Carton folding:

Carton folding is a packaging task that involves manipulation and motion planning of (non-rigid) hinged objects. By treating the object to be manipulated as an articulated robot, carton folding sequences can be automatically generated. Potential applications include automated manufacturing and the design of 3D microelectromechanical systems (MEMS) devices.

Reading

Chapters 11.6 (assembly planning) and 8.3 (articulated robots), Latombe.

References

A General Framework for Assembly Planning: The Motion Space Approach. D. Halperin, J.C. Latombe, and R.H. Wilson. *Algorithmica*, volume 26, number 3/4, pages 577-601, 2000.

Folding Cartons with Fixtures: A Motion Planning Approach. Liang Lu and Srinivas Akella. *IEEE Transactions on Robotics and Automation*, volume 16, number 4, pages 346-356, August 2000.

Next Class

Manipulation planning and parts feeding.