CSCI-4965/6963: Robot Motion Planning
Lecture 26: December 3, 2001
Motion Planning for Flexible Objects

Announcements

- Course project is due by 11:59pm, Tuesday, December 4. Please email me your project web page address.
- Project demos will be in the Amos Eaton 117 lab unless otherwise arranged.

Today's Class

We have previously looked at motion planning for rigid objects and articulated objects. Today we will discuss path planning for flexible objects, such as elastic plates and cables. Spline representations are used to model the continuous deformations of the objects with a finite set of parameters. A variation of the PRM approach is used to generate paths.

1. C-space representation of flexible objects
2. Elastic object modeling using Bezier curves and splines
3. Constraints: manipulation, minimum energy deformations, elastic limits
4. f-PRM motion planner

References

Planning Paths for Elastic Objects under Manipulation Constraints, F. Lamiraux and L.E. Kavraki, *International Journal of Robotics Research*, volume 20, number 3, pages 188–208, 2001.

Towards Planning for Elastic Objects, L. E. Kavraki, F. Lamiraux, and C. Holleman. In *Robotics: The Algorithmic Perspective*, P. K. Agarwal, L. E. Kavraki, and M. T. Mason (editors), pages 313–325, A. K. Peters, Natick, Massachusetts, 1998.

Next Class

Complexity of motion planning, and course wrap-up