

1050-74-165

Matthew P. Bell* (mbell@cs.dartmouth.edu), Hanover, NH , and **Devin J. Balkcom** (devin@cs.dartmouth.edu). *Knot tying with single-piece fixtures.*

Manipulation of flexible objects like string and cloth poses a challenge to robotic and human manipulation due to the difficulty of regrasping a flexible object. Without sensing, it becomes nearly impossible to guess where a grasp should go. However, we can try to simplify the problem in several ways. For tying knots in string, we can use a fixture to continually grasp the string during the entire tying process. We have developed fixtures for overhand and square knots, and can use a slightly modified overhand fixture to tie the knot around an object. Additionally, we are exploring automated methods of designing these fixtures, as well as a new class of fixture that works reliably with string as well as wire. (Received March 03, 2009)