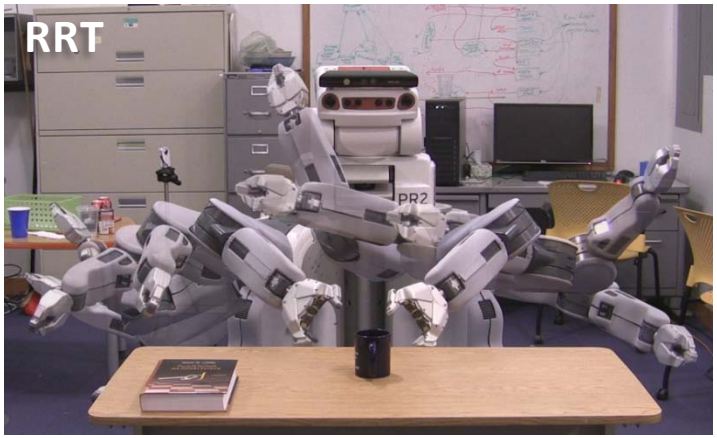
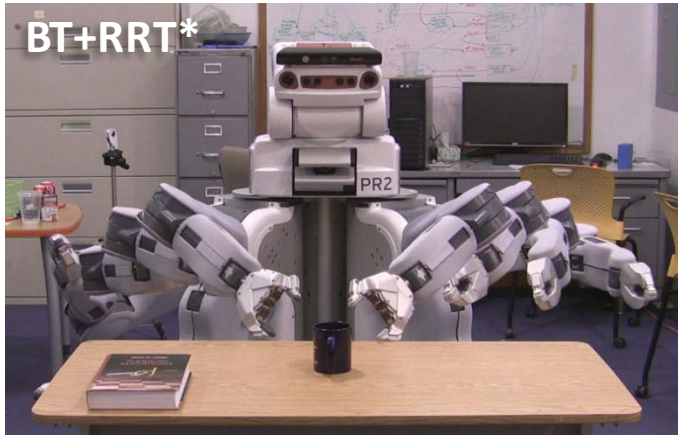
RRT* for Manipulation on the PR2





Time-lapse images of RRT and BT+RRT* trajectories after 2,000 iterations (12DOF)

Recent contributions:
Improving RRT* running time

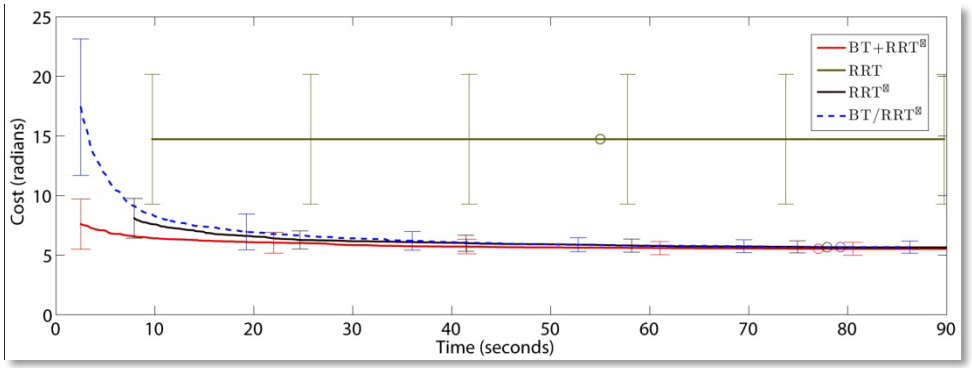
- Delayed Collision Checks, Ball Trees and Memoization for Collision Checks
- Running time less than twice that of RRT

Software Release:

- Currently collaborating with Prof. Lydia Kavraki et al. to release OMPL version (tentative date May 31st)
- Also collaborating with Rosen Diankov to release OpenRAVE plugin (tentative date mid-June)

Videos:

- http://people.csail.mit.edu/aperez/www/pr2



Solution cost as a function of computation time (7DOF).

RRT
First solution time: 9.75 s
First solution cost: 14.73
Final solution time: 54.96 s
Final solution cost: 14.73

BT+RRT*
First solution time: 2.52 s
First solution cost: 7.61
Final solution time: 77.14 s
Final solution cost: 5.52

Publication:

- A. Perez, S. Karaman, M. Walter, A. Shkolnik, E. Frazzoli, S. Teller, "*Asymptotically-optimal Manipulation Planning using Incremental Sampling-based Algorithms*," IROS, San Francisco, California, September, 2011. (submitted)

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