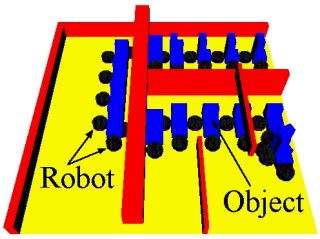
Robotics Cooperation 2
Chairs: Kamal Gupta, Kevin Lynch

Motion Planning for Cooperative Transportation of a Large Object by Multiple Mobile Robots in a 3D Environment

A. Yamashita[1], M. Fukuchi[1], J. Ota[1], T. Arai[1] and H. Asama[2]
[1]The University of Tokyo and [2]The Institute of Physical and Chemical Research (RIKEN)

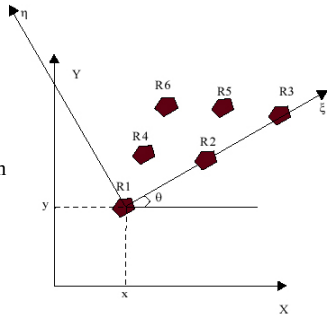
- A motion planning method for high DOF problems
- A local planner for stable manipulation
- A global planner for practical path searching
- Simulations and experiments in 3D environments



Robot Group Formations: A Dynamic Programming Approach for a Shortest Path Computation

Federico Gentili and Francesco Martinelli
Universit di Roma Tor Vergata

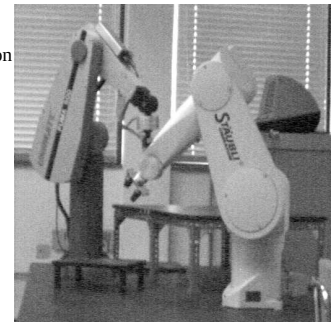
- Problem formulation
- A variational approach to solve the problem
- A dynamic programming algorithm gives an approximate solution
- Application to a 2 robot formation and comparison with heuristics



Analysis and Classification of Multiple Robot Coordination Methods

E. Todt, G. Raush and R. Suarez
Universidad Politecnica de Cataluna

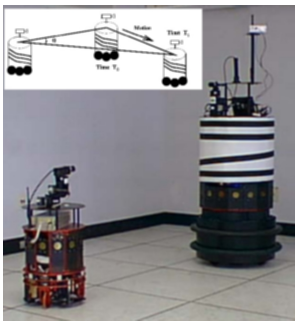
- Review of multiple-robot coordination methods
- Definition of a unified terminology for the problem
- Discussion of the used tools and proposed approaches
- Introduction to the field and a framework for new works



Multi-Robot Collaboration for Robust Exploration

I. M. Rekleitis[1], E. Milios[2] and G. Dudek[1]
[1]McGill University and [2]York University

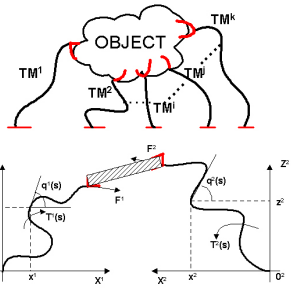
- Explore large areas with a pair (or team) of mobile robots.
- Keep some robots as mobile landmarks that help the localization of the mobile robots.
- Systematically explore the entire environment by subdividing it into trapezoids.
- Uncertainty reduction in the position of the robots leads to more accurate mapping.



A Two Level Hierarchical Fuzzy Controller for Hyperredundant Cooperative Robots

M. Ivanescu and N. Bizdoaca
University of Craiova

- Control of tentacle manipulators in cooperative tasks
- Two level controls: a conventional and an adaptive fuzzy controller
- Line and ellipse trajectory cooperative task simulations
- Simple fuzzy rules sets , notable stability and robustness control



Cooperative Transport in Unknown Environment

N. Miyata, J. Ota, Y. Aiyama, H. Asama and T. Arai
University of Tokyo

- Needs to assign various tasks keeping order or timing of execution
- Priority calculation for each unit of task that can be executed by one robot in a short time
- Task-assignment formulated as gassignment problemh using the priority
- Verification by a transport experiment using two real robots