Mobile Robots 2
Chairs: Yutaka Kanayama, Yangsheng Xu

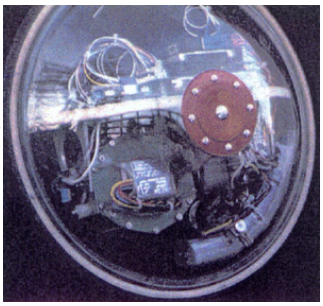
Robust Damping Control of Wheeled Mobile Robots
S. Lin and A. A. Goldenberg
University of Toronto

- Control of wheeled mobile robots with unknown dynamics and disturbances;
- Robust Damping Controller (RDC) proposed, global uniform boundedness guaranteed;
- Illustration of RDC's effectiveness through simulations and comparison;
- Simple controller structure and low computation cost.

MR-1 in Actions
(Engineering Services Inc., Canada)

Path Following of a Single Wheel Robot
Kwok Wai Au and Yangsheng Xu
The Chinese University of Hong Kong

- Development of an autonomous single wheel robot
- Model the robot's dynamics and study its nonholonomic nature and gyroscopical stabilization
- Design a velocity/torque control law to solve the path following problem
- Develop a controller for the robot following a straight line with balance



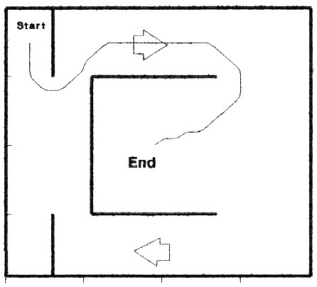
Interactive Motion Planning Using Hardware Accelerated Computation of Generalized Voronoi Diagrams
K. Hoff, T. Culver, J. Keyser, M. Lin and D. Manocha
University of North Carolina

- Fast motion planning in both static and dynamic environments
- Use discrete approximations of generalized Voronoi diagrams computed by polygon rasterization graphics hardware and standard Z-buffer
- Real-time path planning in a complex dynamic environment composed of more than 140,000 polygons and upto one order of performance improvement near narrow passages in configuration space
- Extensible to articluated and deformable objects

Path Tracking Control of Tracked Vehicles
M. Ahmadi, V. Polotski and R. Hurteau
cole Polytechnique Montral

Motion Planning in the Presence of Directional and Obstacle Avoidance Constraints Using Nonlinear, Anisotropic, Harmonic Potential Fields
Ahmad Masoud and Samer Masoud
Jordan University of Science and Technology

- A novel and complete motion planning method is suggested for guiding an agent to a target set along an obstacle-free trajectory while regulating the direction along with which motion is allowed to proceed inside the workspace.
- Nonlinear, Anisotropic, Harmonic potential fields are used for constructing the planner.
- Simulation experiments to verify the ability of the suggested planner to work in the presence of joint avoidance and directional constraints are provided.



Control of a Nonholonomic System with a Drift Term
F. Matsuno and K. Saito
Tokyo Institute of Technology