

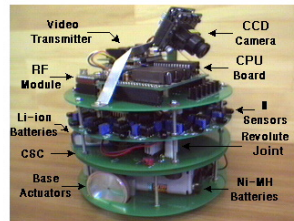
Manipulator Path Planning

Chairs: Sunil K. Agrawal, S. Zeghloul

Omni-directional Mobile Base OK-II

Myung-Jin Jung, Heung-Soo Kim, Sinn Kim and Jong-Hwan Kim
KAIST

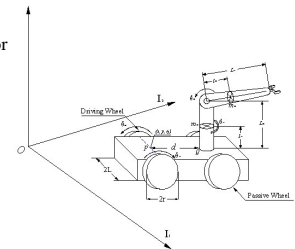
- Omni-directional motion with 2-WMR and revolute joint
- Kinematic, dynamic models and control laws derived
- Semi-autonomous: object locating, path planning and following
- OK-III, fully-autonomous robot, under development



On Tracking Control of Mobile Manipulator

Wenjie Dong, Yangsheng Xu and Qi Wang
The Chinese University of Hong Kong

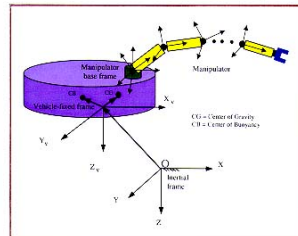
- Study the tracking control problem of mobile manipulators with regard to the dynamic interaction between the mobile platform and the manipulator
- Investigate its nonholonomic nature
- Propose a global tracking controller based on extended Barbalat's lemma
- Ensure the stability of the full state of the system in presence of dynamic interaction and system uncertainty



Dynamic Trajectory Planning for Autonomous Underwater Vehicle- Manipulator Systems

T. Podder and N. Sarkar
University of Hawaii at Manoa

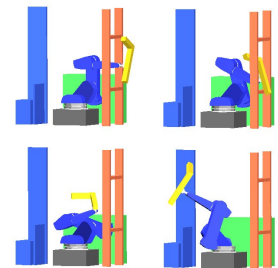
- Dynamics-based motion planning for heterogeneous systems
- Fourier series representation and weighted pseudoinverse
- Simulation results
- Smoother motion of the heavy subsystem and reduction of power and energy



A Local-based Method for Manipulators Path Planning in Heavy Cluttered Environments

C. Helguera and S. Zeghloul
Universite de Poitiers

- The constraints method
- A new task description
- The zig-zaging phenomenon
- Solving blockages with a local graph



Reactive Mobile Manipulation Using Dynamic Trajectory Tracking

P. Ogren, M. Egerstedt and X. Hu
Royal Institute of Technology

- Gripper trajectory tracking for a mobile manipulator is studied.
- Tracking is coordinated with obstacle avoidance base control.
- Deadlock free, robust and safe performance is proven.
- The algorithm is currently being implemented on the hardware.



Coordinated Trajectory Following for Mobile Manipulation

M. Egerstedt and X. Hu
Royal Institute of Technology

- Motion coordination for mobile manipulators is studied
- A model independent coordination strategy for multiple robot platforms is proposed
- A virtual vehicle approach is exploited for the coordinated tracking task
- A proven stable and robust coordinated performance is achieved

