

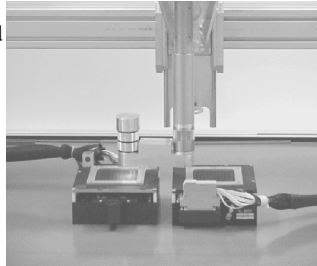
Control and Applications 2

Chairs: William Hamel, Krzysztof R. Kozlowski

Robust and Efficient Motion Planning for a Planar Robot using Hybrid Control

A. E. Quaid and A. A. Rizzi
Carnegie Mellon University

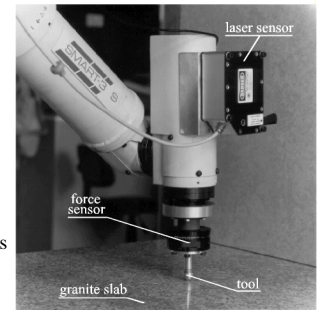
- Motivation for controller-based motion planning
- System description for planar robot
- Controller derivation
- Simulation results



Impedance Control for Industrial Robots

G. Ferretti, G. Magnani, P. Rocco, F. Ceconello and G. Rossetti
Politecnico di Milano

- Impedance control for an elastic joint
- The role of Coulomb friction
- An impedance controller for a multi d.o.f. manipulator
- Experimental results and conclusions

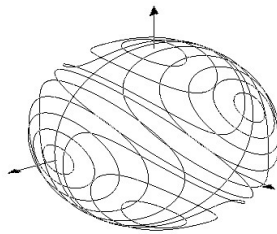


A New Class of Control Laws for Spacecraft Attitude Tracking using Switching and Trajectory Rescaling

P. Arambel¹ and V. Manikonda²

¹Scientific Systems Co., Inc and ²Intelligent Automation Inc.

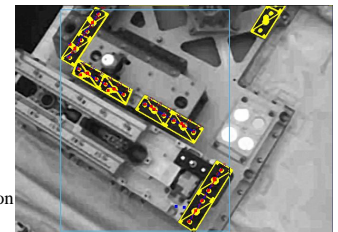
- Objective is to achieve robust attitude tracking in the presence of input constraints
- A quaternion feedback controller + switching strategy is presented to achieve globally exponentially stable tracking
- The controller overcomes problems associated with turn-around near the unstable equilibrium
- Reference trajectory rescaling is used for tracking with input constraints



On Satellite Vision-aided Robotic Experiment

Maarten Vergauwen, Marc Pollefeys, Tinne Tuytelaars and Luc Van Gool
Katholieke Universiteit Leuven

- Discussion of experiments on ETS-VII
- On-line and off-line calibration procedures
- Vision-aided robot guidance experiments
- Advanced uncalibrated computer-vision algorithms



A Value Measure for Data to Control Sensing and Motion Processes

P. A. L. Silverthorne¹ and H. Stephanou²

¹HelpMate Robotics, Inc. and ²Rensselaer Polytechnic Institute

- Software Architecture for Mobile, Armed, Sensate Robot
- Data's
- Simple (autonomous) Mobile Robot example illustrated
- Extension to advanced platform, more senses/actuators



Robust and Time-Optimal Control Strategy for Coarse/Fine Dual-Stage Manipulators

S. J. Kwon, W. K. Chung and Y. Youm

Pohang University of Science & Technology (POSTECH)

- Fast and Precise Tracking adopting Coarse/Fine actuation.
- A Smooth Sliding Control Strategy.
- Null Motion Control based on Dynamic Consistency.
- Experimental Simulation Results.

