

Control and Applications 1

Chairs: Erwin Prassler, Alberto Rovetta

Proposition and Basic Experiments of Shape Feedback Master-Slave Arm - On the Application for the Demining Robots

Shigeo Hirose and Keisuke Kato
Tokyo Institute of Technology

Single Rigid Body Representation, Control and Stability for Robotic Applications

H. Hemami¹ and B. Dariush²

¹The Ohio State University and ²Honda R&D Americas, Inc.

- Develop a convenient, robust, and stable algorithm to represent rigid body systems.
- Lyapunov's method is used to prove stability.
- The theory is verified using a single segment rigid body model.
- A simple, modular, and stable feedback structure has been developed.

Dynamic modeling and identification of earthmoving engines without kinematic constraints: application to the compactor

E. Guillo and M. Gautier

Institut de Recherche en Cybernetique de Nantes(IRCyN)

- A better knowledge of earthmoving engines behavior is needed
- Their diversity requires an extended classical robot description
- Dynamic modelling without kinematic constraints is proposed
- Dynamic identification is performed on an instrumented engine



An Industrial Application of Control of Dynamic Behavior of Robots - A Walk-Through Programmed Welding Robot

M. H. Ang Jr.¹, L. Wei² and L. S. Yong²

¹National University of Singapore and ²Gintic Institute of Manufacturing

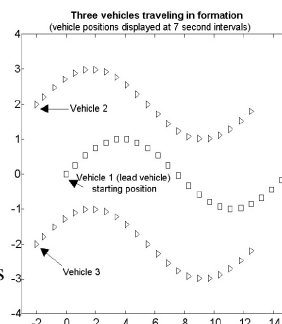
- A humanly-intuitive way to command motion of a robot
- Using
- Walk-through achieved with force sensor and motion response regulated according to desired dynamics
- Improved welding in shipyards due to better quality and ease in teaching



A framework for decentralized control of autonomous vehicles

Daniel J. Stilwell and Bradley E. Bishop
U.S. Naval Academy

- Goal: minimize communication among cooperating vehicles
- Environmental interactions are modeled as feedback paths
- Solution based on systems theory and observer design
- Design example with autonomous underwater vehicles



A Robotic Road Sweeper

E. Prassler¹, D. Schwammkrug¹, B. Rohrmoser² and G. Schmid³

¹University of Ulm, ²University of Stuttgart and ³Alfred Kaercher GmbH

- Hardware and Software Design
- Motion Planning for an Outdoor Cleaning Robot
- Experimental Results
- Conclusions

