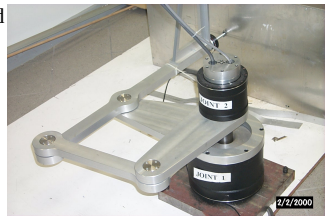
Neural Network Systems
Chairs: Marcelo H. Jr. Ang, Sukhan Lee

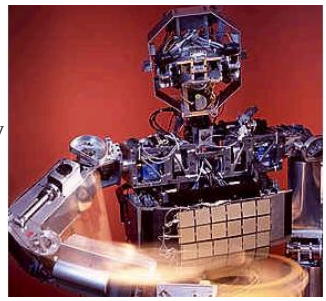
Neural Network Controller for Constrained Robot Manipulators
Shenghai Hu, Marcelo Ang Jr. and Hariharan Krishnan
The National University of Singapore

- Force and Motion Control using nonlinear transformatrion in task space to achieve decoupled dynamics
- New training signal for neural network compensation of errors leading to new learning laws
- Real-time implementation on experimental robot in lab
- Improved motion tracking



Tuning of Neural Oscillators for the Design of Rhythmic Motions
A. M. Arsenio
Massachusetts Institute of Technology

- No automatic parameter tuning methods available to date
- Internal dynamics analysis - Describing Functions, Symmetry
- Results for oscillator connected to (non) linear systems
- Automatic tuning using algebraic equations



Fast and Efficient Incremental Learning for High-dimensional Movement Systems
S. Vijayakumar and S. Schaal
University of Southern California

- Local linear regression spanned by few univariate regressions
- Adjusts local kernel metrics based on local information
- Computational complexity linear in number of inputs
- Handles redundant & high dimensional data efficiently

Vision-based Motion Planning For A Robot Arm Using Topology Representing Networks
Y. Fu[1], R. Sharma[1] and M. Zeller[2]
[1]Pennsylvania State University and [2]H&F Aeronautical Tech., Inc.

Stabilizing and Robustifying the Error Backpropagation Method in Neurocontrol Applications
M. O. Efe and O. Kaynak
Bogazici University

- Stabilization and Robustification
- Variable Structure Systems
- Neurocontrol
- Robotics

Radial Basis Artificial Neural Networks for Screw Insertions Classification
B. Lara, L. D. Seneviratne and K. Althoefer
King's College London

- Monitoring of screw insertions is vitally important for the automation of this process
- Radial Basis Function Neural Networks are used to distinguish successful from failed insertions
- After modest training, the network correctly classifies insertions
- A successful strategy for monitoring screw fastenings is presented