Identification
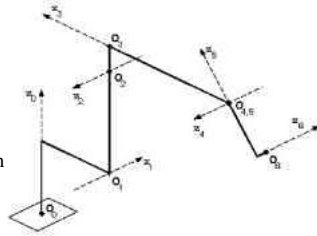## Chairs: Wisama Khalil, Jan Swevers

Calibration of a Motoman P8 Robot Based on Laser Tracking
W. S. Newman[1], C. E. Birkhimer[1], R. J. Horning[1] and A. T. Wilkey[2]
[1]Case Western Reserve University and [2]Ktech Corp.

- Motivation: improved calibration of an industrial robot

- Approach: use SMX laser tracker; compare circle-point to search methods

- Results: circle-point had higher RMS error, but better fit to validation data

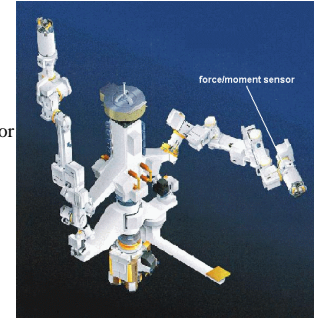- Conclusions: circle-point method is more reliable than alternative methods

On-Orbit Calibration of the SPDM Force/Moment Sensor
Farhad Aghili
Canadian Space Agency

- The calibration matrix of the SPDM force/moment sensor needs to be updated on orbit

- Inertial forces are applied as a result of the movement of the manipulator payload

- An Extended Kalman filter is employed to estimate the sensor's gain matrix

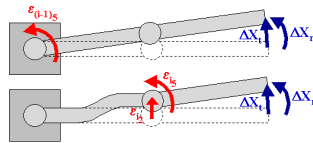- Simulation results demonstrated the convergence property of the estimator

An Analytical Method to Eliminate the Redundant Parameters in Robot Calibration
M. Meggiolaro and S. Dubowsky
Massachusetts Institute of Technology

- To improve robot calibration, redundant error parameters must be eliminated

- A general analytical method to eliminate the redundant parameters is presented

- Simulations are conducted to verify the method

- The method allows for improved calibration accuracy of any serial manipulator

Fuzzy linear regression for contact identification
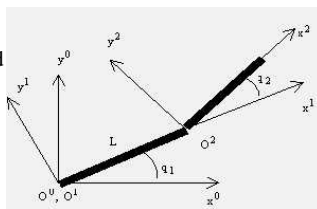M. Oussalah
Katholieke Universiteit Leuven

Comparison of weighted least squares and extended kalman filtering methods for dynamic identification of robots
Ph. Poignet[1] and M. Gautier[2]
[1]Laboratoire de Vision et Robotique de Bourges(A.S.A.R.) and
[2]Institut de Recherche en Cybernetique de Nantes(IRCyN)

- Identification of robot dynamic parameters

- Weighted least squares compared with extended kalman filtering

- Experimental identification of a 2 dof SCARA robot

- Close results provided good initial values for EKF

Fault Detection for Robot Manipulators with Parametric Uncertainty: A Predictive Error-Based Approach
W. E. Dixon, I. D. Walker, D. M. Dawson and J. P. Hartranft
Clemson University

- Problem Motivation

- Dynamic Model

- Prediction Error Based Fault Detection

- Experimental Results

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