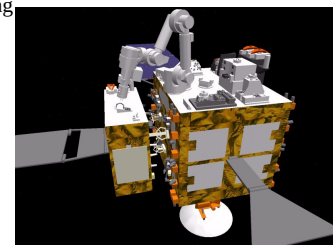
Space Robots and Rovers
Chairs: Richard Volpe, Kazuo Tanie

State Identification for Planetary Rovers: Learning and Recognition
Oliver Aycard[1] and Richard Washington[2]
[1]Leibniz-Imag and [2]NASA Ames Research Center

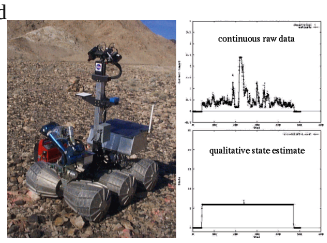
Autonomous Satellite Capture by a space Robot
Noriyasu Inaba and Mitsushige Oda
National Space Development Agency of Japan

- Highly required satellite capturing technique in space
- Space experiments on Japanese satellite
- Successful results of automatic capture using visual servo
- The demonstrated technique applied for future missions



On-Board Real-Time State and Fault Identification for Rovers
Richard Washington
NASA Ames Research Center

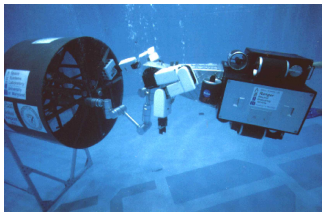
- Rovers must infer state from noisy, continuous data with limited computation
- Combination of Kalman Filters and POMDP belief states
- Prototype tested on Marsokhod planetary rover with broken wheel gear
- Computationally efficient hybrid state identification method



On-board Task Scheduling Algorithm for Spacecraft
I. J. Jeong[1], G. Papavassilopoulos[1] and D. S. Bayard[2]
[1]University of Southern California and [2]California Institute of Technology

Dynamic Tool Vectors for Robo-Centric Control
C. R. Carignan, D. L. Akin and J. Corde Lane
University of Maryland

- Free-flying robots need kinematic strategy which is independent of vehicle state
- Dynamic tool vectors allow tool and base to switch roles without redefining coordinates
- Simulation and experiment show strategy is effective for video/grapple arm operations
- Variable tool vectors allow arms to function in multiple roles in robot-centered coordinates



Recent Progress in Local and Global Traversability for Planetary Rovers
S. Singh, K. Schwehr, R. Simmons, T. Smith, A. Stentz, V. Verma and A. Yahja
Carnegie Mellon University