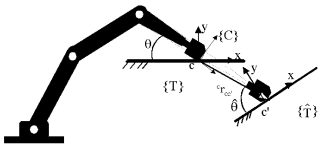
Grasping and Force Control
Chairs: Suguru Arimoto, Bruno Siciliano

A Position/Force Control for a Soft Tip Robot Finger Under Kinematic Uncertainties

Zoe Doulgeri[1], Andreas Simeonidis[1] and Suguru Arimoto[2]
[1]Aristotle University of Thessaloniki and [2]Ritsumeikan University

- Control with uncertain contact point and surface orientation
- Adaptive control with composite parameter update law
- Simulation results for a 3 dof planar robotic finger
- Asymptotic stability of force and estimated position errors



Geometrically Consistent Impedance Control for Dual-Robot Manipulation

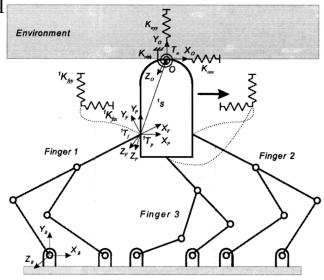
Fabrizio Caccavale[1], Stefano Chiaverini[2], Ciro Natale[1], Bruno Siciliano[1] and Luigi Villani[1]
[1]Universit degli Studi di Napoli Federico II and [2]Universit degli Studi di Cassino

- Two Robots Grasping a Rigid Object
- Task-Oriented Formulation
- Six-DOF Impedance Control
- Experimental Results

A Biomimetic Compliance Control of Robot Hand by Considering Structures of Human Finger

B. H. Kim[1], B. J. Yi[1], I. H. Suh[1], S. R. Oh[2] and Y. S. Hong[2]
[1]Hanyang University and [2]KIST

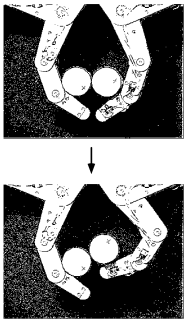
- Biomimetric Compliance Control Method
- Resolved Inter-Finger/Inter-Joint Decoupling Solver
- Improved Compliance Control
- Grasp Geometry and Geometric Structure of Finger important for successful compliance control



Rolling Based Manipulation for Multiple Objects

K. Harada, M. Kaneko and T. Tsuji
Hiroshima University

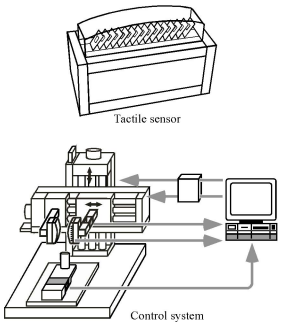
- We formulate the manipulation theory of multiple objects.
- We discuss the motion constraint of multiple objects.
- We discuss the dependency of contact force.
- Experimental results are shown to verify our idea.



Control of Grasping Force by Detecting Stick/Slip Distribution at the Curved Surface of an Elastic Finger

Takashi Maeno, Shinichi Hiromitsu and Takashi Kawai
Keio University

- Tactile sensor for grasping unknown object is expected to be developed.
- A method for grasping object using curved elastic finger is proposed.
- It is confirmed that object is grasped and lifted without slippage.
- The proposed sensor can be used for robot hands.



Motion-decoupled internal force control in grasping with visco-elastic contacts

D. Prattichizzo and P. Mercorelli
Universit di Siena

- General manipulation systems.
- Non-rigid contacts. Noninteracting force/motion control.
- State space design. Geometric approach.
- Force/motion decoupling as a structural property.