



Working group (GT3) : Multi-scale manipulation

Chairs :

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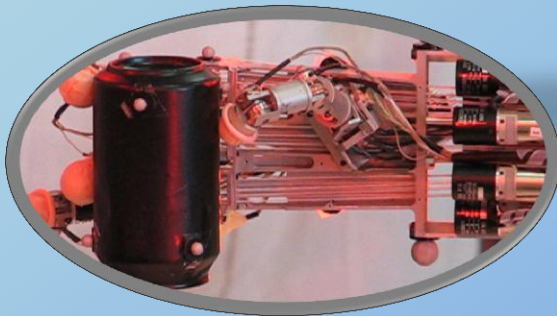
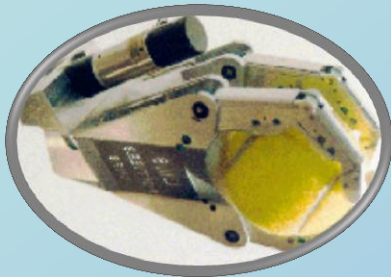
Pyramide – Tour 55 - Boîte courrier 173

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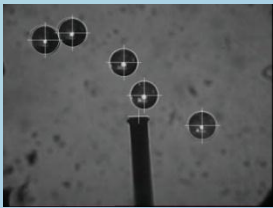
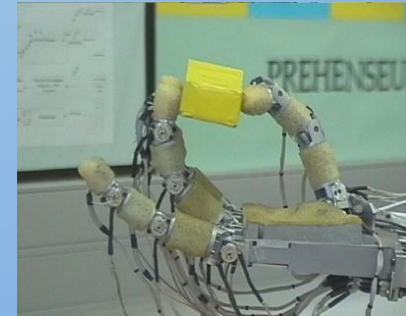
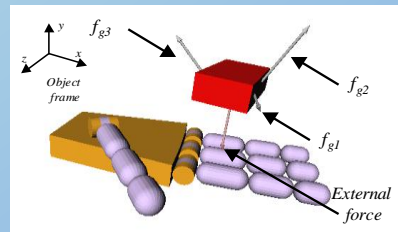


Content

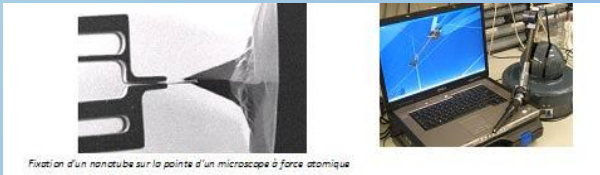
- Versatile grasping and dextrous manipulation
(macroscopic scale)
- Micro/nanomanipulation and microassembly
(micro, meso and nano scales)

The working group deals with several scales :

- The macroscopic scale



- The micro and nano scales



Fixation d'un nanotube sur la pointe d'un microscope à force atomique



- The mesoscopic scale

- *MACRO* :
 - Versatile grasping, dextrous manipulation, perception and coordination of movements, underactuation
 - Design and integration
 - *MICRO* :
 - Study of micro robotic systems of manipulation and assembly
 - Microrobotics and nanoscience
-
- *11 Working days (2007-2010) - including 2 joint micro/macro meetings;*
 - *Average of 20 participants per meeting;*
 - *Multidisciplinary research topics with various groups :*
Joint meetings with other GTs (GT1, GT6) and other GDRs (MACS, MNS, MECANO)

LABS INVOLVED

- *Labs involved in the macro meetings :*

CEA LIST LRM, GREAH, IRISA/INRIA, ISIR, LAAS, LIRMM, LISV, PPRIME, CESEM, Pôle 3C, ETIS, CEA LETI, IES, SYMME, FATRONIK FRANCE, BA SYSTEMS, ALDEBARAN, EUROFARAD.

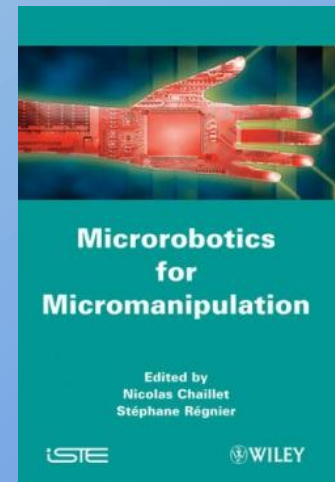
- *Labs involved in the micro meetings :*

CEA-LIST, FEMTO-ST, ISIR, IMEC, GIPSA LAB, LAAS, LISV, PRISME, SATIE-ENS, ULB, EPFL, CEA-LETI, INL Lyon

- Learning of robotic manipulation by mimicking and exploiting the sense of touch
 - CESEM - April, 2nd 2010
 - 6 presentations – 27 participants
- Two-days meeting co-organized with the MECANO GDR
 - UPMC - June, 15th and 16th 2010
 - 14 presentations - 30 participants
- Collaboration with the microsystem GDR
 - Participation to the annual meeting and new member of the board of the GDR
- Organization of a summer school by FEMTO-ST « Microrobotics and Self-assembly for Hybrid MEMS », Besançon, june 2010 (financial support of the GT)



- Prospectives micro/macro (April 2010)
- State of knowledge on prehension and robotic manipulation (87 pages – March 2010)
- English version of the microrobotics book (Wiley)
- In preparation, meeting on learning methods (macro) (April 2011 in Paris)
- In preparation, meeting on calibration methods (micro) (June 2011 in Besançon)



Christoph BORST

- Head of Department – Autonomy and Teleoperation
Institute of Robotics and Mechatronics
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"Towards human like grasping and manipulation -
Development of hands and manipulation skills at DLR"