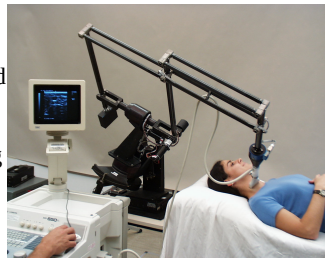
Surgical Robots
Chairs: Paolo Dario, F. Pierrot

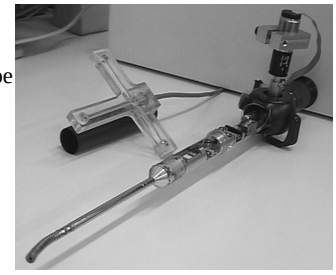
Motion/Force/Image Control of A Diagnostic Ultrasound Robot
W. H. Zhu, S. E. Salcudean, S. Bachmann and P. Abolmaesumi
University of British Columbia

- An Ergonomic Interface to Sonographers
- 6-DOF Fully Counterbalanced Robot Designed for Safety
- Velocity Controller Achieving Position/Force/Image Control
- Ultrasound Visual Servoing Demonstrated



A Semi-Automatic Handheld Mechatronic Endoscope with Collision-Avoidance Capabilities
S. D'Attanasio, O. Tonet, G. Megali, M. C. Carroza and P. Dario
Scuola Superiore Sant'Anna

- Add collision-avoidance loop in a servo-controlled endoscope
- Spatial accuracy of 1.8mm and refresh rate of 12Hz
- The sistem is suitable for clinical trials



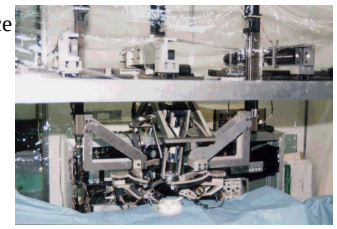
Realistic Force Feedback for Virtual Reality Based Diagnostic Surgery Simulators
V. Vuskovic, M. Kauer and G. Szekely
Swiss Federal Institute of Technology

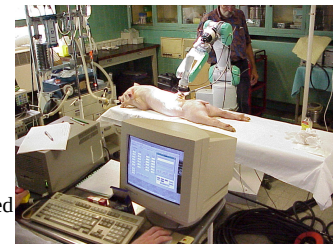
- Modelling of soft tissue deformation is central for general surgery simulators
- Here, a nonlinear viscoelastic model for soft biological tissues is used
- A novel device for in-vivo measurement of material parameters is presented
- First experiments on dead animal tissues with validations are given

Biomechanical Modeling of the Small Intestine as Required for the Design and Operation of a Robotic Endoscope
H. D. Hoeg[1], A. B. Slatkin[1], J. W. Burdick[1] and W. S. Grundfest[2]
[1]California Institute of Technology and [2]Cedars Sinai Medical Center

Tele-mico-surgery system with intelligent user interface
M. Mitsuishi[1], S. Tomisaki[1], T. Yoshidome[1], H. Hashizume[2] and K. Fujiwara[2]
[1]University of Tokyo and [2]Okayama University Medical School

- A tele-micro-surgery system with an intelligent user interface was developed.
- Automatic 3D positioning was realized using
- A micro-blood-vessel of a rat of 0.3mm diameter was successfully sutured.



Robotized Reconstructive Surgery: Ongoing study and First Results
Francois Pierrot[1], Etienne Dombre[1], Luc Teot[2] and Eric Degoulange[3]
[1]LIRMM, [2]Lapeyronie Hospital and [3]SINTERS

- Goal: Help in surgery for severely burnt patients
- Background: Study of expert surgeons behavior
- Mean: Force controlled robot
- Result: Good skin grafts obtained (on animal)