

## 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

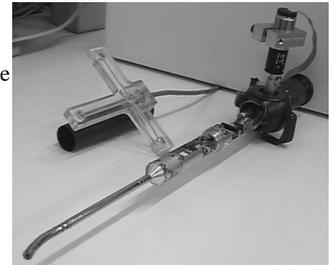
- An Ergonomic Interface to Sonographers
- 6-DOF Fully Counterbalanced Robot Designed for Safety
- Velocity Controller Achieving Position/Force/Image Control
- Ultrasound Visual Servoing Demonstrated



### A Semi-Automatic Handheld Mechatronic Endoscope with Collision-Avoidance Capabilities

S. D'Atanasio, 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 system 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

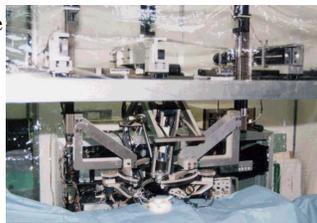
H. D. Hoeg<sup>1</sup>, A. B. Slatkin<sup>1</sup>, J. W. Burdick<sup>1</sup> and W. S. Grundfest<sup>2</sup>  
<sup>1</sup>California Institute of Technology and <sup>2</sup>Cedars Sinai Medical Center

### Tele-mico-surgery system with intelligent user interface

M. Mitsuishi<sup>1</sup>, S. Tomisaki<sup>1</sup>, T. Yoshidome<sup>1</sup>, H. Hashizume<sup>2</sup> and K. Fujiwara<sup>2</sup>

<sup>1</sup>University of Tokyo and <sup>2</sup>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<sup>1</sup>, Etienne Dombre<sup>1</sup>, Luc Teot<sup>2</sup> and Eric Degoulange<sup>3</sup>

<sup>1</sup>LIRMM, <sup>2</sup>Lapeyronie Hospital and <sup>3</sup>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)

