

PROGRAMME

Tuesday, November 11th

Monday, November 10th

- 13:00 Registration
- 14:00 Welcome
R. Dillmann
- 14:15 Opening speech: S. Haßfeld, Heidelberg, Germany
Perspectives in computer assisted surgery
- 15:00 MICRO SYSTEMS I
Session chair: J. Mühling
- Development and control of a minimanipulator for endoscopy
P. Bohner, Karlsruhe, Germany
- Micro-operation robot and control system used in biological and medical engineering
Z. Jian-xun, Tianjin, China
- Some aspects of using micromotors during diagnostics and medical treatment of man's diseases
V. Stepanov, Moscow, Russia
- A sensorised robotic system for computer-assisted colonoscopy
M.C. Carrozza, Pisa, Italy
- 16:45 Break
- 17:00 TELEROBOTICS I
Session chair: E. Holler
- Prototype of a new tele-robotic endoscope
A. Rovetta, Milano, Italy
- Proposal for remote robot programming in ENT surgery
M. Truppe, Vienna, Austria
- Precision robot-assisted surgery with motion feedback
M. Wapler, Stuttgart, Germany
- 18:15 End of day 1

- 08:30 ROBOT APPLICATIONS
Session chair: U. Voges
- Position detection of a surgical robot by fusing infrared and encoder data
C. Burghart, Karlsruhe, Germany
- Development of a x-ray image guided parallel robot for orthopedic surgery
G. Brandt, Aachen, Germany
- Robotics for hyperthermia and surgical applications
T.C. Lueth, Berlin, Germany
- Robot for massage
V. Golovine, Moscow, Russia
- 10:15 Invited talk: B. Davies, London, UK
Safety of robots in surgery
- 11:00 Break
- 11:15 MICRO SYSTEMS II
Session chair: T.C. Lueth
- An instrumented, steerable arthroscope for computer assisted knee surgery
P. Dario, Pisa, Italy
- Development of robot assisted minimally invasive neurosurgery and clinical application
T. Wang, Beijing, China
- Surgical simulation: Research review and PC-based spine biopsy simulator
K. Cleary, Washington DC, USA
- 12:30 Lunch
- 14:00 Invited talk: M. Börner, Frankfurt, Germany
Experiences with a computer assisted robot (Robodoc) for cementless hip replacement
- 14:45 Break
- 15:00 TELEROBOTICS II
Session chair: A. Rovetta
- Evaluation of ARTEMIS, the advanced robotics and telemanipulator system for minimally invasive surgery
U. Voges, Karlsruhe, Germany

A distributed software architecture for medical telemanipulation systems
S. Hepper, Karlsruhe, Germany

Improvement of medical teleoperation by endoscopic guidance system
H. Breitwieser, Karlsruhe, Germany

The universal master concept and different control coordinate systems
H. Breitwieser, Karlsruhe, Germany

- 16:45 End of day 2
- 19:00 Workshop dinner

Wednesday, November 12th

- 08:30 Invited talk: P. Dario, Pisa, Italy
Robots and micromachines for medical applications
- 09:15 Telesurgery presentations
- 10:30 Break
- 10:45 Invited talk: M. Nord, Strasbourg, France
Surgical training: The possible role of robotics, virtual reality and teletransmissions
- 11:30 VIRTUAL REALITY
Session chair: P. Meinzer
- Multimodal interactive simulation of soft-tissue sarcoma surgery
C. Di Somma, Genova, Italy
- Virtual reality for plastic and reconstructive surgery procedures
E. Raposio, Genova, Italy
- Generating finite element meshes from volumetric medical images
H.A. Grabowski, Karlsruhe, Germany
- Tracing of thin tubular structures in CT-data
W. Stein, Heidelberg, Germany
- 13:15 Closing remarks

ORGANIZATION

The workshop is promoted by Australia, Austria, China, France, Germany, Italy, Japan, Russia, Spain and the USA, represented by:

N. Caplan, NSF (USA)
G. Giralt, CNRS-LAAS (France)
V. Gradetsky, Robotics Co. Ltd (Russia)
M. Hamano, MITI (Japan)
P. Kopacek, IHRT, TU Wien (Austria)
T. Martin, Forschungszentrum Karlsruhe (Germany)
G. Mosci, Telerobot (Italy)
J. de No, CSIC (Spain)
S. (Rama) Ramakrishnan, CSIRO (Australia)
G. Zhenbang, Shanghai University (P.R. of China)

The workshop is co-sponsored by:

- DKFZ, Deutsches Krebsforschungszentrum (Heidelberg, Germany)
- FZK, Forschungszentrum Karlsruhe (Karlsruhe, Germany)
- IPR, Universität Karlsruhe (Karlsruhe, Germany).

Organizing committee:

R. Dillmann (IPR)
E. Holler (FZK)
H.P. Meinzer (DKFZ)

Programme Committee:

P. Dario, University of Pisa, Italy
R. Dillmann, IPR, University of Karlsruhe, Germany
G. Giralt, CNRS-LAAS, France
E. Holler, FZK, Germany
P. Kopacek, IHRT, TU Wien, Austria
U. Kühnapfel, FZK, Germany
H.P. Meinzer, DKFZ, Germany
J. Mühling, University of Heidelberg, Germany
U. Rembold, IPR, University of Karlsruhe, Germany

WORKSHOP LOCATION

Deutsches Krebsforschungszentrum (DKFZ)
Kommunikationszentrum
Im Neuenheimer Feld 280
D-69120 Heidelberg
Tel.: (+49)(6221)422354 (Mrs. I. Kocks)
<http://www.dkfz-heidelberg.de/abt2170/weg.htm>

MOTIVATION

Application of robotics in medicine has become a rapidly evolving area of research and development with an immense potential for improving the quality of medical care while also reducing the cost. Research efforts and accomplishments in this field are concentrated in several technical areas, like micro robotics, simulation, imaging, telepresence, multimedia communication and virtual reality while applications can be seen in diagnostics, therapy, and rehabilitation, as well as in other areas.

SCOPE OF THE WORKSHOP

The workshop will review and discuss the major advances in science and technology with respect to medical robots and systems, thus describing the current state of the art for applications of medical robotics. In particular, the following areas will be taken into account:

- Microsystem applications in medical robotics
- Low cost robotics for diagnostics, therapy, and rehabilitation
- Human anatomy modelling
- Navigation, registration, and matching in surgery
- Robotics and real-time imaging
- Surgical simulation, training, and planning
- Telerobotics and telemanipulation

INFORMATION

Workshop fee: 100 DM

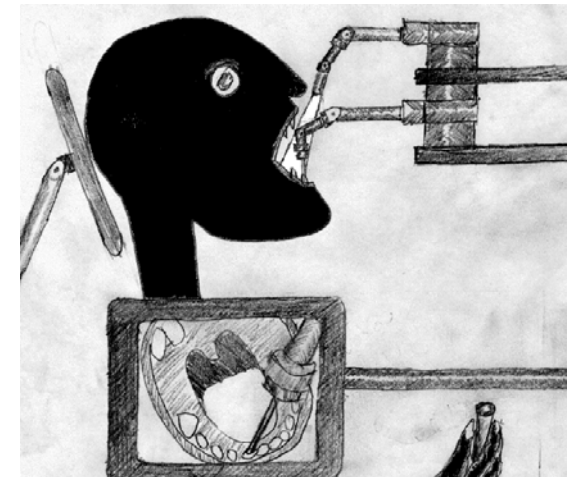
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IARP

INTERNATIONAL ADVANCED ROBOTICS PROGRAMME

2nd Workshop on Medical Robotics



PROGRAMME

November 10-12, 1997
Heidelberg - Germany