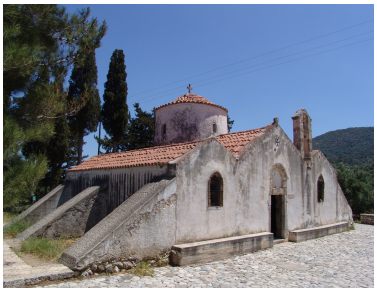
International Summer School
Advances in Medical imaging

Hotel Miramare, Aghios Nikolaos, Crete, Greece, 24-29 April 2006



Organizers

Commission V - Close-Range Sensing: Analysis and Applications
Working Group V / 6: Medical image analysis human motion and body measurement

Sponsors

Department of Rural and Surveying Engineering, The Aristotle University of Thessaloniki

Material of the Presentations

http://www.homometrica.ch/isprs/

International Summer School
Advances in Medical imaging

(http://www.homometrica.ch/isprs/)

Objectives:
The School aims to bring together young scientists and developers from different disciplines (medical doctors, radiologists, computer graphics and 3D modeling engineers, photogrammetrists, digital image analysts, etc), the common denominator being their interes in Medical Image Analysis, to study and discuss the latest developments in digital imaging, recording and modeling in medical applications.

Scientific Committee:
- Prof. Petros Patias, *Aristotle University of Thessaloniki, Greece.*
- Dr. Nicola D'Apuzzo*, Homometrica Consulting, Switzerland.*
- Prof. Gábor Székely, *Swiss Federal Institute of Technology, Switzerland.*
- Prof. Hans-Peter Meinzer, *University of Heidelberg, Germany*
- Prof. Dr. Petros Koidis, *Aristotle University of Thessaloniki, Greece.*
- Prof. Serge Van Sint Jan, *University of Brussels, Belgium.*
- Dr. Harvey Mitchell, *University of Newcastle, Australia.*

Lecturers:

Prof. Petros Patias, *Aristotle University of Thessaloniki, School of Surveying Engineering, Greece.*

Dr. Nicola D'Apuzzo, *Human Body Measurements Consultant, Homometrica Consulting, Zurich, Switzerland.*

Prof. Gábor Székely, *Swiss Federal Institute of Technology, Computer Vision Laboratory, Medical Image Analysis and Visualization Group, Switzerland.*

Prof. Hans-Peter Meinzer, *University of Heidelberg, German Cancer Research Center, Dept. of Medical and Biological Informatics, Germany*

Prof. Dr. Petros Koidis, *Aristotle University of Thessaloniki, School of Dentistry, Dept. of Fixed Prosthesis & Implants Prosthodontics, Greece.*

Prof. Serge Van Sint Jan, *University of Brussels, Department of Anatomy, Belgium.*

Dr. Harvey Mitchell, *University of Newcastle, Faculty of Engineering and Built Environment, Australia.*

Fabio Remondino, Swiss Federal Institute of Technology, Institute of Geodesy and Photogrammetry, Zurich, Switzerland.

Dr. Evangelos Roussos, *Princeton University, Dept. of Mathematics, Program in Applied and Computational Mathematics, USA.*

Tobias Heimann, *University of Heidelberg, German Cancer Research Center, Dept. of Medical and Biological Informatics, Germany.*

Marco Nolden, *University of Heidelberg, German Cancer Research Center, Dept. of Medical and Biological Informatics, Germany.*

Dr. Ivo Wolf, *University of Heidelberg, German Cancer Research Center, Dept. of Medical and Biological Informatics, Germany.*

Summer school Program

Monday, 24 April	
19:00–21:30	**Icebreaker party**

Tuesday, 25 April	
8:30–10:30	Welcome – Introduction (recent technological and methodological developments, motivation for the SS, overview of contents) – 0.5h *Lecturers: P. Patias, N. D'Apuzzo* The change of paradigms in radiology – 1.5h *Lecturer: H-P. Meinzer*
10:30–11:00	**Coffee break**
11:00–13:00	Medical Image Analysis tools (processing, segmentation, registration) *Lecturer: G. Székely*
13:00 -15:30	**Lunch break**
15:30–17:00	Multi-resolution analysis via wavelets *Lecturer: E. Roussos*
17:00–17:30	**Coffee break**
17:30–19:00	Introduction to Photogrammetric tools for medical image analysis *Lecturer: P. Patias*

Wednesday, 26 April	
8:30–10:30	Linking three-dimensional imaging to medical science – Accuracy, precision, calibration, difference detection, getting started with hardware/ software. *Lecturer: H. Mitchell*
10:30–11:00	**Coffee break**
11:00–13:00	Statistical Shape Models for Medical Image Analysis *Lecturer: T. Heimann*
13:00-15:30	**Lunch break**
15:30–17:00	Data digitizing and data registration for anatomically correct modelling of the musculo-skeletal system (medical imaging, dissection and motion analysis): The EuroPhysiome context. *Lecturer: S. Van Sint Jan*
17:00–17:30	**Coffee break**
17:30–19:00	Probabilistic graphical models for medical imaging: Bayesian networks, Markov random fields *Lecturer: E. Roussos*

Thursday, 27 April
Full Day Excursion

Friday, 28 April	
9:00–10:30	Advanced visualization issues *Lecturer: G. Székely*
10:30–11:00	**Coffee break**
11:00–13:00	Medical applications of 3D surface scanning technologies *Lecturer: N. D'Apuzzo – F. Remondino*
13:00-15:30	**Lunch break**
15:30–17:00	Photogrammetric analysis of static and moving character for middle accuracy applications *Lecturer: F. Remondino*
17:00–17:30	**Coffee break**
17:30–18:30	Human Perception in Segmentation and Visualization *Lecturer: H-P. Meinzer*

Saturday, 29 April	
8:30–10:00	Open Source for Medical Imaging - Visualization techniques and tools *Lecturer: M. Nolden*
10:00–10:30	**Coffee break**
10:30–11:30	Open Source for Medical Imaging - Segmentation, Registration and Interactive Applications using ITK and MITK *Lecturer: I. Wolf*
11:30–12:30	Clinical importance and interpretation issues *Lecturer: P. Koidis*
12:30-13:00	**Closing session**
13:00-15:30	**Lunch**