

Heart Modeling: Image Acquisition. Segmentation, Modeling and Analysis

Monday February 6, 2006

- 8:00–8:50 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:50–9:00 *Welcome and Opening Remarks*
- 9:00–10:00 *Session: Big Picture Overviews: Clinical/Technical Context*
- 9:00–10:00 **Nathaniel Reich** (St. Francis Hospital Stony Brook University)
Clinical Issues and Perspective
- 10:00–10:30 *Break*
- 10:30–11:30 **Leon Axel** (New York University)
Imaging Techniques and Analysis Issues from a Clinical Perspective
- 11:30–1:30 *Lunch (on your own)*
- 1:30 *Session: Image Modalities*
- 1:30–2:30 **Sandor Kovacs** (Washington University in St. Louis)
Discovering (predicting) new cardiac physiology/function from cardiac imaging, mathematical modeling and first principles
- 2:30–3:30 **Albert Sinusas** (Yale University)
Multi-Modality Non-Invasive Evaluation of Post-MI LV Remodeling
- 3:30–4:00 *Break*
- 4:00–5:00 **Benjamin Tsui** (Johns Hopkins University)
Quantitative SPECT and PET Imaging Techniques and Use of Computer Models of Human Anatomy and Physiological Functions
- 5:00–6:30 *Wine/Cheese Reception (Hosted by IPAM)*

Tuesday February 7, 2006

- 8:30–9:00 *Continental Breakfast*
- 9:00–10:00 *Session: Modeling and Image Analysis*
- 9:00–10:00 **Frits Prinzen** (Maastricht University)
Electrical Activation and Mechanics: Measurements and Modeling of Electrical and Mechanical Dyssynchrony
- 10:00–10:30 *Break*

(Tuesday schedule continued on next page)



(Tuesday schedule continued from previous page)

- 10:30–11:30 **Dimitris Metaxas** (Rutgers University)
Overview of Image Analysis Issues
- 11:30–1:30 *Lunch (on your own)*
- 1:30 *Session: Modeling and Segmentation*
- 1:30–2:30 **Patrick Helm** (University of Virginia)
Diffusion imaging and computational anatomy studies
- 2:30–3:30 **Boudewijn Lelieveldt** (Leiden University Medical Center)
Knowledge driven segmentation of cardiovascular images
- 3:30–4:00 *Break*
- 4:00–5:00 **Daniel Rueckert** (Imperial College)
Registration-based segmentation and motion modelling in cardiac imaging

Wednesday February 8, 2006

- 8:30–9:00 *Continental Breakfast*
- 9:00–10:00 *Session: Computational Methods for Estimating Cardiac Deformation, Motion and Shape*
- 9:00–10:00 **James Duncan** (Yale University)
Computational Platforms for Recovery of LV Deformation from Medical Images
- 10:00–10:30 *Break*
- 10:30–11:30 **Alistair Young** (University of Auckland)
Finite Element Modeling of Heart Structure and Function
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:30 *Session: Modeling and Image Analysis*
- 1:30–2:30 **Jerry Prince** (Johns Hopkins University)
Imaging three-dimensional motion in the heart using zHARP
- 2:30–3:30 **Van Wedeen** (Harvard University)
Deformation and diffusion
- 3:30–4:00 *Break*
- 4:00–5:00 **Michael Liebling** (California Institute of Technology)
Imaging the Developing Embryonic Heart: Combining Fast Confocal Microscopes with Four-Dimensional Reconstruction Techniques
- 5:30–7:00 *Dinner (Hosted by IPAM)*

Thursday February 9, 2006

- 8:30–9:00 *Continental Breakfast*
- 9:00–10:00 *Session: Imaging and Analysis*
- 9:00–10:00 **Elliot McVeigh** (National Institutes of Health (NIH))
Real-time Cardiac MRI
- 10:00–10:30 *Break*
- 10:30–11:30 **Julius Guccione** (University of California, San Francisco)
MRI-based finite-element analysis of left ventricular aneurysm
- 11:30–1:30 *Lunch (on your own)*
- 1:30 *Session: Cardiac Modeling and Tissue Properties*
- 1:30–2:30 **Theo Arts** (Maastricht University)
Modeling of heart mechanics with adaptation of tissue to load
- 2:30–3:30 **Andrew McCulloch** (University of California, San Diego)
Multiscale Computational Modeling of Ventricular Electromechanics
- 3:30–4:00 *Break*
- 4:00–5:00 **Kevin Costa** (Columbia University)
Tissue-level Issues

Friday February 10, 2006

- 8:30–9:00 *Continental Breakfast*
- 9:00–10:00 *Session: Modeling*
- 9:00–10:00 **Yoram Bresler** (University of Illinois at Urbana-Champaign)
Adaptive Acquisition for Cardiac MRI
- 10:00–10:30 *Break*
- 10:30–11:30 **Ed Dibella** (University of Utah)
Modeling approaches to cardiac perfusion determination
- 11:30–1:30 *Lunch (on your own)*
- 1:00 *Session: Hemodynamics and Modeling*
- 1:30–2:00 **Aichi Chien** (UCLA)
Non-Invasive Determination of Human Myocardial Wall Stress with in vivo Physiological Parameters
- 2:00–3:00 **Alan Garfinkel** (UCLA)
Partial Differential Equations Underlying Sudden Cardiac Death



