

Mathematical Problems, Models and Methods in Biomedical Imaging

Monday February 8, 2010

- 8:00–8:50 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:50–9:00 *Welcome and Opening Remarks*
- 9:00–9:45 **James Marron** (University of North Carolina)
Object Oriented Data Analysis
- 9:55–10:10 *Break*
- 10:10–10:55 **Ying Xiao** (Jefferson Medical College)
Evidence Theory Based Analysis for Radiotherapy Uncertainties
- 11:05–11:20 *Break*
- 11:20–12:05 **Yair Censor** (University of Haifa)
Perturbation Resilience of Projection Methods and the Superior Feasible Solution with Application to TV Superiorization in Image Reconstruction
- 12:15–2:15 *Lunch (on your own)*
- 2:15–3:00 **John Schotland** (University of Pennsylvania)
Inverse Transport with Large Data Sets
- 3:10–3:25 *Break*
- 3:25–4:10 **Hongkai Zhao** (University of California, Irvine (UCI))
Recent Development in Multi-level Optical Imaging Algorithm Based on Radiative Transport Equation
- 4:20–4:35 *Break*
- 4:35–5:20 **Belinda Seto** (National Institutes of Health (NIH))
Discussion: NIH Funding Opportunity
- 5:30–7:00 *Reception and Poster Session (Hosted by IPAM)*

Tuesday February 9, 2010

- 8:15–9:00 *Continental Breakfast*
- 9:00–9:45 **Mark Phillips** (University of Washington School of Medicine)
Dynamic Programming Applications of Imaging in Radiation Therapy
- 9:55–10:10 *Break*

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- 10:10–10:55 **Xiaochuan Pan** (University of Chicago)
Why Do Reconstruction Algorithms in Practical CT Remain Virtually Unchanged?
- 11:05–11:20 *Break*
- 11:20–12:05 **Regina Burachik** (University of South Australia - Mawson Lakes Campus)
A Primal Dual Modified Subgradient Algorithm with Sharp Lagrangian
- 12:15–2:15 *Lunch (on your own)*
- 2:15–3:00 **Ge Wang** (Virginia Polytechnic Institute and State University)
Interior Tomography
- 3:10–3:25 *Break*
- 3:25–4:10 **Andreas Hielscher** (Columbia University)
Towards Clinically Relevant Optical Tomographic Imaging
- 4:20–4:35 *Break*
- 4:35–5:20 **Eva Lee** (Georgia Institute of Technology)
Handling Multiple Clinical Objectives in Intensity-Modulated Radiation Therapy Treatment Planning

Wednesday February 10, 2010

- 8:15–9:00 *Continental Breakfast*
- 9:00–9:45 **Stanley Osher** (University of California, Los Angeles (UCLA))
The Unreasonable Effectiveness of Bregman Iteration for L1 Type Optimization
- 9:55–10:10 *Break*
- 10:10–10:55 **Sarah Patch** (University of Wisconsin-Milwaukee)
Thermoacoustic Tomography - Contrast Mechanism over Large Fields of View
- 11:05–11:20 *Break*
- 11:20–12:05 **Lei Zhu** (Georgia Institute of Technology)
Improving Conebeam CT in Radiation Therapy
- 12:15–2:15 *Lunch (on your own)*
- 2:15–3:00 **Simon Arridge** (University College London)
Information Theoretic Regularisation in Multimodal Medical Imaging
- 3:10–3:25 *Break*
- 3:25–4:10 **Gabor Herman** (City University of New York (CUNY))
Image Reconstruction in Biological 3D Electron and Soft X-Ray Microscopy
- 4:20–4:35 *Break*

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4:35–5:20 **Zuowei Shen** (National University of Singapore)
Frame Based Image Restorations

Thursday February 11, 2010

8:15–9:00 *Continental Breakfast*

9:00–9:45 **Lei Xing** (Stanford University)
Compressed Sensing for Image Reconstruction and Treatment Plan Optimization

9:55–10:10 *Break*

10:10–10:55 **Guillaume Bal** (Columbia University)
Parameter Reconstructions in Photo-Acoustics

11:05–11:20 *Break*

11:20–12:05 **Luminita Vese** (University of California, Los Angeles (UCLA))
Variational Methods for HARDI Data Denoising and Registration in Medical Imaging

12:15–2:15 *Lunch (on your own)*

2:15–3:00 **Carolyn Salafia** (Placental Analytics)
Image Analysis Applications in Perinatal Diagnostics: What has Worked and What we've Learned

3:10–3:25 *Break*

3:25–4:10 **Lihong Wang** (Washington University in St. Louis)
Photoacoustic Tomography: High-resolution Imaging of Optical Contrast in Vivo at New Depths

4:20–4:35 *Break*

4:35–5:20 *Panel Discussion*

Friday February 12, 2010

8:15–9:00 *Continental Breakfast*

9:00–9:45 **Steve Jiang** (University of California, San Diego (UCSD))
GPU-based Undersampled 4D Cone Beam CT Reconstruction

9:55–10:10 *Break*

10:10–10:55 **Reinhard Schulte** (Loma Linda University)
An Update on the Development of Fast and Efficient Reconstruction Algorithms for Proton Computed Tomography

11:05–11:20 *Break*

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11:20–12:05

TBA

12:15–2:15

Lunch (on your own)

2:15–3:00

Thomas Goldstein (University of California, Los Angeles (UCLA))

Computational Methods for Compressed Sensing

3:10–3:25

Break

3:25–4:10

H. Edwin Romeijn (Erasmus Universiteit Rotterdam)

Image-Guidance in Radiation Therapy Treatment Planning

