



Banff International Research Station

for Mathematical Innovation and Discovery

07w5115 Mathematical Methods for Medical Image Analysis

Arriving Sunday, November 4 and departing Friday, November 9, 2007

MEALS

- Breakfast (Buffet): As per daily schedule, Vistas, 4th floor, Sally Borden Building, Monday – Friday
- Lunch (Buffet): As per daily schedule, Vistas, 4th floor, Sally Borden Building, Monday – Friday
- Dinner (Buffet): As per daily schedule, Vistas, 4th floor, Sally Borden Building, Sunday – Thursday
- Coffee Breaks: As per daily schedule, 2nd floor lounge, Corbett Hall

Note: Please scan your meal card at the host/hostess station in the dining room for each meal.

MEETING ROOMS

Sessions will be held in Max Bell 159 (the Max Bell Building is accessible by the bridge on the 2nd floor of Corbett Hall). Hours: 6 am–12 midnight. An LCD projector, overhead projectors and blackboards are available for presentations.

Four rooms are available for free-style break-out sessions: Max Bell 159 (Capacity 42), Max Bell 156 (Capacity 22), Max Bell 158 (Capacity 18), Max Bell 155 (Capacity 6)

Please note that the meeting space designated for BIRS is the lower level of Max Bell, Rooms 155-159. Please respect that all other space has been contracted to other Banff Centre guests, including any food and beverages in those areas.

CONTACT INFORMATION

Organizers:

Rafeef Abugharbieh (University of British Columbia), rafeef@ece.ubc.ca

Ghassan Hamarneh (Simon Fraser University), hamarneh@cs.sfu.ca

SCHEDULE

Sunday

16:00- Check-in begins (Front Desk – Professional Development Centre - open 24 hours)

17:30-19:30 Dinner

20:00- Informal gathering in the 2nd floor lounge, Corbett Hall

Beverages and a small assortment of snacks are available on a cash honour-system.

Monday

- 07:00-08:40 Breakfast
08:40-08:45 Welcome
08:45-09:00 Introduction by BIRS Station Manager
09:00-11:15 **Session M1: Mathematical Methods**
 09:00-09:30 **Worsley:** *Detecting Sparse Connectivity: MS Lesions, Cortical Thickness, and the 'Bubbles' Task in an fMRI Experiment*
 09:30-10:00 **Miller:** *Computational Functional Anatomy*
 10:00-10:30 **Boykov:** *Global Optimization of Geometric Surface Functionals*
 10:30-10:45 *Coffee Break*
 10:45-11:15 **Staub:** *Models for Biomedical Image Analysis*
11:15-12:15 Session M1 (Panel Discussion - Panelists: 4 speakers of Session M1)
12:15-13:30 Lunch
13:30-14:30 Guided Tour of The Banff Centre; meet in the 2nd floor lounge, Corbett Hall
14:30-16:15 **Session M3: Image Registration**
 14:30-15:00 **Christensen:** *Non-rigid Image Registration Evaluation Project (NIREP)*
 15:00-15:30 **Rueckert:** *Quantification of Brain Development during Early Childhood Using Medical Image Computing*
 15:30-15:45 *Coffee Break*
 15:45-16:15 **Celler:** *Analysis of Nuclear Medicine Data: Questions and Challenges*
16:15-17:00 Session M4 (Panel Discussion - Panelists: 3 speakers of Session M3)
17:00-17:30 Break-out Sessions
17:30-19:30 Dinner

Tuesday

- 7:00-9:00 Breakfast
9:00-11:15 **Session T1: Visualization and Clinical Applications**
 9:00-9:30 **Sonka:** *Multi-Surface Segmentation of 3D Retinal OCT*
 9:30-10:00 **Archip:** *Medical Image Analysis for Image Guided Therapy*
 10:00-10:30 **Lee:** *Analysing Pigmented Skin Lesion Images*
 10:30-10:45 *Coffee Break*
 10:45-11:15 **Möller:** *Graphics and Visualization Approaches to Medical Imaging*
11:15-12:15 Session T2 (Panel Discussion – Panelists: 4 speakers of Session T1)
12:15-13:30 Lunch
13:30-14:00 Group Photo; meet on the front steps of Corbett Hall
14:00-15:45 **Session T3: Image-Guided Intervention**
 14:00-14:30 **Ellis:** *From Scans to Sutures: Computer-Assisted Orthopedic Surgery in the Twenty-First Century*
 14:30-15:00 **Rohling:** *Automated Interpretation of Ultrasound Images*
 15:00-15:30 **Abolmaesumi:** *Ultrasound-Guided Computer-Assisted Orthopaedic Surgery*
 15:30-15:45 *Coffee Break*
15:45-16:30 Session T4 (Panel Discussion – Panelists: 3 speakers of Session T3)
16:30-17:30 Break-out sessions
17:30-19:30 Dinner

Wednesday

7:00-8:30	Breakfast
8:30-10:15	Session W1a: Diffusion Tensor Imaging
8:30-9:00	Siddiqi: <i>On the Differential Geometry of White Matter Fibre Tracts: Generalized Helicoids and Diffusion MRI</i>
9:00-9:30	Westin: <i>Geodesic-Loxodromes for Diffusion Tensor Interpolation</i>
9:30-10:00	Styner: <i>Automated Fiber-Based DTI in the Developing Brain of Human and Non-Human Primates</i>
10:00-10:15	Coffee Break
10:15-10:45	Whitaker: <i>Volumetric Connectivity: Formulation and Computational Solutions</i>
10:45-11:15	Lenglet: <i>DTI Tractography - Applications & Shortcomings</i>
11:15-12:30	Session W2 (Panel Discussion – Panelists: 5 speakers of Session W1)
12:30-13:30	Lunch
13:30-17:30	Free Afternoon
17:30-19:30	Dinner

Thursday

7:00-9:00	Breakfast
9:00-10:45	Session H1: Knowledge-Based Image Analysis
9:00-9:30	Lorenz: <i>Using Domain Knowledge in Medical Imaging</i>
9:30-10:00	Warfield: <i>Algorithms for Quantitative Assessment of Pediatric Brain MRI</i>
10:00-10:30	Atkins: <i>Role of Eye Gaze Tracking in Medical Applications: A Window into the Mind</i>
10:30-10:45	Coffee Break
10:45-12:00	Session H2 (Panel Discussion – Panelists: 3 speakers of Session H1)
12:00-13:30	Lunch
13:30-15:25	Session H3: Statistical Shape Analysis
13:30-14:10	Pizer: <i>Robust Estimation of Probability Distributions on One or More Anatomic Objects</i>
14:10-14:40	Cootes: <i>Automatic Construction of Statistical Shape Models Using Group-wise Non-Rigid Registration</i>
14:40-15:10	Larsen: <i>Sparse Statistical Models for Relating Anatomical Differences to Clinical Outcome</i>
15:10-15:25	Coffee Break
15:25-16:10	Session H4 (Panel Discussion – Panelists: 3 speakers of Session H3)
16:10-17:30	Break-out sessions
17:30-19:30	Dinner

Friday

7:00-9:00	Breakfast
9:00-10:45	Session F1: Functional Imaging and Energy Minimization Methods
9:00-9:30	Sossi: <i>PET Data Analysis</i>
9:30-10:00	Salcudean: <i>Imaging Issues in Prostate Brachytherapy</i>
10:00-10:10	Ng (Ph.D. student of Rafeef Abugharbieh): <i>Spatial Encoding of Brain Activation in fMRI</i>
10:30-10:45	Coffee Break
10:10-10:20	McIntosh (Ph.D. student of Ghassan Hamarneh): <i>Learning Optimal Parameters for Medical Image Segmentation</i>
10:10-10:20	Ward (Ph.D. student of Ghassan Hamarneh): <i>Learning Optimal Landmark Shape and Appearance Features for Point Correspondence Establishment</i>
10:45-11:30	Session F2: Closing and concluding remarks
11:30-12:00	Checkout
12:00-13:30	Lunch

Checkout is by 12 noon. Participants are welcome to use the BIRS facilities (2nd floor lounge, Max Bell meeting rooms, reading room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon.