

Workshop IV: Image Processing for Random Shapes: Applications to Brain Mapping, Geophysics and Astrophysics

Monday May 21, 2007

- 8:00–8:55 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:55–9:00 *Welcome and Opening Remarks*
- 9:00–9:40 **Stanley Osher** (Institute for Pure and Applied Mathematics)
Nonlocal image regularization, fast methods and Bregman iteration
- 9:50–10:05 *Break*
- 10:05–10:45 **Larry Mayer** (University of New Hampshire)
New Views of Seafloors and Tsunamis: Interactive Visualization of Geospatial Data
- 10:55–11:10 *Break*
- 11:10–11:50 **Felix Herrmann** (University of British Columbia)
Imaging shapes from seismic data: what wavefronts tell us about percolation-induced singularities in the Earth subsurface
- 12:00–2:30 *Lunch (on your own)*
- 2:30–3:10 **Sergei Shandarin** (University of Kansas)
Quantitative Morphology of the Cosmic Web
- 3:20–3:50 *Coffee Break*
- 3:50–4:30 **Namrata Vaswani** (Iowa State University)
Deformable Contour Tracking and System Identification
- 4:40–6:00 *Poster Session & Reception (Hosted by IPAM)*

Tuesday May 22, 2007

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:40 **Jean-Luc Starck** (Commissariat à l'Énergie Atomique (CEA))
Morphological Component Analysis and the Cosmic Microwave Background
- 9:50–10:05 *Break*
- 10:05–10:45 **Gloria Haro** (Universitat Politècnica de Catalunya)
Stratification Learning: Detecting mixed dimensionality and density in point clouds.
- 10:55–11:10 *Break*

(Tuesday schedule continued on next page)



(Tuesday schedule continued from previous page)

- 11:10–11:50 **Rien van de Weygaert** (Rijksuniversiteit te Groningen)
Analyzing the Cosmic Web: Multiscale Morphology and Watershed Voids
- 12:00–2:30 *Lunch (on your own)*
- 2:30–3:10 **Kevin Vixie** (Los Alamos National Laboratory)
L1TV computes the Flat Norm
- 3:20–3:50 *Coffee Break*

Wednesday May 23, 2007

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:40 **Shing-Tung Yau** (Harvard University)
Brain Surface Conformal Parameterization using Riemann Surface Structure
- 9:50–10:05 *Break*
- 10:05–10:45 **Luminita Vese** (University of California, Los Angeles (UCLA))
Functional minimization models for MRI boundary detection and image decompositions into cartoon and texture
- 10:55–11:10 *Break*
- 11:10–11:50 **Frederic Dias** (École Normale Supérieure de Cachan)
Random shapes in water waves
- 12:00–2:30 *Lunch (on your own)*
- 2:30–3:10 **Naoki Saito** (UC Davis)
Use of Laplacian eigenfunctions and eigenvalues for analyzing data on a domain of complicated shape
- 3:20–3:50 *Coffee Break*
- 3:50–4:30 **Francois Meyer** (University of Colorado, Boulder)
Learning and predicting cognitive states from neuroimaging data collected in a natural environment

Thursday May 24, 2007

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:40 **Keith Worsley** (McGill University)
Random shapes in astrophysics and brain mapping, using an idea from geostatistics
- 9:50–10:05 *Break*

(Thursday schedule continued on next page)

(Thursday schedule continued from previous page)

- 10:05–10:45 **Michael Miller** (Johns Hopkins University)
Computational Functional Anatomy
- 10:55–11:10 *Break*
- 11:10–11:50 **Monica Hurdal** (Florida State University)
Geometric Shape Descriptors for Shape Analysis and Sulcal Classification of MRI Data
- 12:00–1:30 *Lunch (on your own)*
- 1:30–2:10 **Guillermo Sapiro** (University of Minnesota, Twin Cities)
Discovering the network of sulci in the brain
- 2:20–3:00 **Jason Lerch** (University of Toronto)
Measuring subtle changes in brain shape in mice and humans
- 3:30–5:30 *Reception/Poster Session at LONI (Laboratory of Neuro Imaging, UCLA)*

Friday May 25, 2007

- 8:00–9:00 *Continental Breakfast*
- 9:00–9:40 **Jean-Francois Mangin** (Commissariat à l'Énergie Atomique (CEA))
Inference of structural models of the cortical morphology
- 9:50–10:05 *Break*
- 10:05–10:45 **Sarang Joshi** (University of Utah)
Simple statistics on Interesting Spaces: Regression Analysis on Manifolds for Computational Anatomy
- 10:55–11:10 *Break*
- 11:10–11:50 **Moo Chung** (University of Wisconsin-Madison)
Encoding surface shape asymmetry: weighted-SPHARM representation
- 12:00–1:30 *Lunch (on your own)*
- 1:30–2:10 **Jonathan Taylor** (University of Montreal)
The integral geometry of random sets
- 2:20–3:00 **Paul Thompson** (University of California, Los Angeles (UCLA))
Brain mapping using deformation morphometry, information theory and diffusion tensor imaging
- 3:10–3:40 *Coffee Break*

