



Graph Cuts and Related Discrete or Continuous Optimization Problems

● February 25 - 29, 2008

ORGANIZING COMMITTEE: YURI BOYKOV (UNIVERSITY OF WESTERN ONTARIO), DANIEL CREMERS (UNIVERSITY OF BONN), JEROME DARBON (UCLA), HIROSHI ISHIKAWA (NAGOYA CITY UNIVERSITY), VLADIMIR KOLMOGOROV (UNIVERSITY OF COLLEGE LONDON), STANLEY OSHER (UCLA)

Scientific Overview

Many computer vision and image processing problems can be formulated as a discrete optimization problem. Among several available optimization schemes, combinatorial min-cut algorithms on graphs emerged as an increasingly useful tool for performing these optimizations. This success is mainly twofold. First, in some cases graph cuts produce globally optimal solutions. More generally, there are iterative graph-cut based techniques that produce provably good local optimizer that are also high-quality solutions in practice. Second, graph-cuts allow for a geometric interpretation. Provided some assumptions, a cut on a graph can be seen as a hypersurface in N-D space embedding the corresponding graph. This point of view has been very fruitful in computer vision for computing hypersurfaces. Besides, graph-cut approaches have been shown to be very fast in practice. Finally some links between graph-cuts, message passing and belief propagation have been recently shown.

The aim of the workshop is to put together mathematicians and computer scientists interested in graph cuts (or network flows) as a framework bridging the gap between important classes of discrete and continuous optimization problems. The workshop will cover both theoretical/mathematical aspects, as well as algorithms and applications in computer vision and image processing.

Confirmed Speakers

Ronen Basri (Weizmann Institute of Science), **Andrew Blake** (Microsoft Research), **Endre Boros** (Rutgers University), **Yuri Boykov** (University of Western Ontario), **Achi Brandt** (Weizmann Institute of Science), **Daniel Cremers** (University of Bonn), **Jerome Darbon** (UCLA), **Jose Dias** (IT - Instituto de Telecomunicacoes), **Pedro Felzenszwalb** (University of Chicago), **Andrew Goldberg** (Microsoft Research), **Leo Grady** (Siemens AG), **Dorit Hochbaum** (UC Berkeley), **Hiroshi Ishikawa** (Nagoya City University), **Jens Keuchel** (BrainLAB), **Vladimir Kolmogorov** (University College London), **Nikos Komodakis** (University of Crete), **Stanley Osher** (UCLA), **Pradeep Ravikumar** (Carnegie-Mellon University), **M.I. Schlesinger** (Institute of Cybernetics), **Christoph Schnörr** (Universität Mannheim), **Gilbert Strang** (Massachusetts Institute of Technology), **Hugues Talbot** (Université Paris - Est), **Philip Torr** (Oxford Brookes University), **Olga Veksler** (University of Western Ontario), **Wotao Yin** (Rice University), **Boris Zalesky** (Belarus Academy of Sciences)

Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

● www.ipam.ucla.edu/programs/gc2008



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