

Ramin Administration Center



Ramin Zabih *Professor of Computer Science and Radiology*

rdz@cs.cornell.edu

607 255 8413

607 255 4428 (fax)

Please note that during Fall 2009 I am on leave.

Research

My research interests lie in computer vision and in medical imaging. I have worked on a variety of problems in early vision, including motion and stereo; many of these problems can be solved very accurately using algorithms based on graph cuts (see the [graph cuts home page](#) for details, and the [MRF comparison project](#) for experimental results). Recently I have spent much of my time developing a new freshman course ([CS100R](#)) that uses robot vision to teach basic CS; the course was recently profiled in a [Cornell Chronicle article](#). I served as a Program Chair for [CVPR 2007](#) (the primary North American vision conference), and for the [International Workshop on Computer Vision](#) (a small workshop for senior vision researchers). Since January 2009 I have served as Editor-in-Chief of the [IEEE Transactions on Pattern Analysis and Machine Intelligence](#), generally viewed as the top journal in computer vision (see this recent [press release](#) by IEEE).

My work with the Radiology department has focused on the problem of MR image reconstruction. More technical information is available from the CS Medical Imaging [group page](#).

I have also investigated a number of applications of computer vision, including new [methods](#) for content-based access to databases of images, and have developed some simple computer vision techniques to automate program debugging at [Microsoft](#).

Students

[Ashish Raj](#) has now taken a faculty position at Cornell Radiology, after spending several years at UCSF. My most recent PhD students include Gurmeet Singh and Jie Zhu. Alumni include [Yuri Boykov](#) (postdoc), [Jing Huang](#), [Olga Veksler](#), Vera Kettner, [Junhwan Kim](#) and [Vladimir Kolmogorov](#) (PhD students) and Chris Danis, Brian Rogan, Brian Cody, Justin Miller, Greg Pass and Justin Voskuhl (undergraduates).

Selected Publications

The [complete list](#) of my publications contains electronic versions of almost all

[\(complete list\)](#)

papers. The list below includes a few papers in computer vision, plus some unpublished drafts. Most of my papers on medical imaging are also available on the [group page](#).

[A Comparative Study of Energy Minimization Methods for Markov Random Fields](#). Rick Szeliski, Ramin Zabih, Daniel Scharstein, Olga Veksler, Vladimir Kolmogorov, Aseem Agarwala, Marshall Tappen, Carsten Rother. Originally in European Conference on Computer Vision, May 2006. Revised version in IEEE Transactions on Pattern Analysis and Machine Intelligence. See the [MRF project web page](#).

[MRF's for MRI's: Bayesian Reconstruction of MR Images via Graph Cuts](#). Ashish Raj, Gurmeet Singh and Ramin Zabih. In: IEEE Conference on Computer Vision and Pattern Recognition (CVPR'06). *Note: this is an updated version; the paper as originally published unintentionally failed to properly acknowledge Vladimir Kolmogorov.*

[Graph Cut Algorithms for Binocular Stereo with Occlusions](#). Vladimir Kolmogorov and Ramin Zabih. In: [Mathematical Models in Computer Vision: The Handbook](#). Springer-Verlag, 2005.

[Automatic Segmentation of Contrast-Enhanced Image Sequences](#). Junhwan Kim and Ramin Zabih. In: International Conference on Computer Vision, 2003.

[Visual Correspondence using Energy Minimization and Mutual Information](#). Junhwan Kim, Vladimir Kolmogorov and Ramin Zabih. In: International Conference on Computer Vision, 2003.

[What Energy Functions can be Minimized via Graph Cuts?](#) Vladimir Kolmogorov and Ramin Zabih. In: IEEE Transactions on Pattern Analysis and Machine Intelligence, February 2004. [Earlier version](#) appears in European Conference on Computer Vision, May 2002 (**best paper award**).

[Multi-Camera Scene Reconstruction via Graph Cuts](#). Vladimir Kolmogorov and Ramin Zabih. In: European Conference on Computer Vision, May 2002 (**best paper award**).

[Fast Approximate Energy Minimization via Graph Cuts](#), Yuri Boykov, Olga Veksler and Ramin Zabih. IEEE Transactions on Pattern Analysis and Machine Intelligence 23(11), November 2001. [Preliminary version](#) appears in: International Conference on Computer Vision, September 1999.

[Computing Visual Correspondence with Occlusions using Graph Cuts](#), Vladimir Kolmogorov and Ramin Zabih. In: [International Conference on Computer Vision](#), July 2001. [Expanded version](#) also available.

[Frame-rate Robust Stereo on a PCI Board](#), [John Woodfill](#), Brian von Herzen and Ramin Zabih. Unpublished.

[Non-parametric Local Transforms for Computing Visual Correspondence](#), Ramin Zabih and [John Woodfill](#). Third European Conference on Computer Vision, Stockholm, Sweden, May 1994. [Revised version](#) also available.

Please note that these papers are copyrighted by the respective organizations, including IEEE and ACM.

Teaching

I developed a new [course](#) that uses camera-controlled robots to introduce basic concepts in computer science. I also teach [CS664](#), graduate computer vision, or [CS312](#), advanced undergraduate programming. In the past I have taught CS212, an honors-level freshman introduction to CS.

Professional Activities

Editor-in-Chief, [IEEE Transactions on Pattern Analysis and Machine Intelligence](#),

2009 -

Program co-chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007

Program co-chair, International Workshop on Computer Vision, 2008

Area chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2005, 2006, 2008

Area chair, European Conference on Computer Vision (ECCV), 2008

Area chair, IEEE International Conference on Computer Vision (ICCV), 2005, 2009

Program committee, IEEE International Conference on Computer Vision (ICCV), 2001, 2003.

Program committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 1997, 2000, 2001, 2003, 2004.

Program committee, [International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition](#), 2001, 2003, 2005.

Organizer, [IEEE Workshop on Graph Algorithms and Computer Vision](#), 1999.

External

I've consulted for several companies, primarily Microsoft. Over the past decade I've also served as an expert witness in a number of litigation matters involving software patents, object-oriented programming, multimedia systems and medical imaging. I've been an external committee member for some talented students, including David Tolliver at CMU, Hao Jiang at Simon Fraser, both Pushmeet Kohli and Pawan Kumar at Oxford Brookes, and Gabriel Tavares at Rutgers..

Personal

I live in Manhattan and Ithaca with my wife [Melanie](#), and our cat [Grover](#) who now has his own home page.

Acknowledgements

This web page design is courtesy of [Dan Huttenlocher](#)