

# Xiaoxing(Ginger) Li

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## EDUCATION

- Ph.D., 11/2010, Computer Engineering, Virginia Tech, Blacksburg, VA. GPA: 3.9/4.0;
- M.Sc., 11/2006, Computing Science, Simon Fraser University (SFU), Canada. GPA: 4.0/4.0;
- B.Eng., 07/2002, Electrical Engineering, Huazhong U. of Sci. and Tech., China. GPA: 90.3/100.

## WORKING EXPERIENCE

**Global Research, General Electric Co.,** Niskayuna, NY  
*2D/3D Image Analysis Scientist (current)* 12/2010- now

- Medical image registration, segmentation, reconstruction and application oriented analysis.
- Algorithm design and mathematical modeling for computer vision related problems.
- C/C++/Java programming for interactive image processing interface and image visualization.

**Global Research, General Electric Co.,** Niskayuna, NY  
*Research internship* 05/2010-08/2010

- Colon polyp detection using morphological features on abdominal CT images. Implemented the fast computation of Minkowski Functional for 3D image volumes based on elementary geometrical objects using integral images.

**Global Research, General Electric Co.,** Niskayuna, NY  
*Research internship* 05/2008-08/2008

- Worked on NA-MIC project, creating and modifying plug-in image processing modules for Slicer3.
- Participated in the development of a multivariate tissue classification algorithm for GE Dual Energy CT Data.

**Dolby Canada,** Vancouver, Canada  
*Research internship* 01/2007-05/2007

- Worked on high dynamic range (HDR) display. Conducted LED backlight color calibration and designed an algorithm for LCD panel software color correction through optimizing the filter responses. Winner of **Award of Excellence (Technology)** at 2007 Accelerate BC Internship Showcase.

**Shenzhen Kindom Co. Ltd.,** Shenzhen, P.R.China  
*Software Engineer* 09/2002 - 06/2003

- Involved in designing user interface for security trading platform. Worked on user information protection system, in particular, user identity encryption. Intensive C++ programming for GUI design, system testing and evaluation.

## RESEARCH EXPERIENCE

**Bioimaging Systems Lab, Virginia Tech,** Blacksburg, VA  
*Graduate Research Assistant* 01/2008 - 11/2010

- Developed a diffusion-based deformable registration algorithm for brain MR images. The key feature of our registration algorithm is that, by capturing and correcting the appearance of topological changes through an intensity deformation, it eliminates the well-known issue of false deformation that can be caused by topological changes, e.g., those from brain diseases and tumors.

- Evaluated and compared the performances of various medical image segmentation algorithms on T1-weighted images versus T1-maps.
- External collaborator for NA-MIC project: measuring alcohol and stress interaction with structural and perfusion MRI. Brain atlas is constructed for vervet monkey. Proposed an automatic segmentation tool, including the segmentation of subcortical brain structures, for vervet brain MRI. (Aug 2009 - May 2010).

**Graphics, Usability and Visualization (GrUVi) Lab, SFU,**  
*Graduate Research Assistant*

Burnaby, Canada  
 09/2004 - 12/2006

- Developed a robust 3D face recognition based on pure geometric features. Face scans are remeshed into uniform connectivity using subdivision meshes. Multiple low-level geometric features are computed on the remeshings. Reliable features, i.e., invariant to facial expressions, are selected and used under the framework of sparse representation. Achieved highly accurate identification of 3D faces under severe facial expressions.

**Medical Image Analysis Lab, SFU,**  
*Graduate Research Project*

Burnaby, Canada  
 09/2004 - 05/2005

- Medical image segmentation: modified watershed segmentation algorithm by modeling prior shape and appearance knowledge and applied on brain MRI. The algorithm overcomes the well-known over-segmentation problem of watershed segmentation, as well as reduces its sensitivity to noise.

**Digital Signal Processing Lab, The University of Hong Kong,**  
*Graduate Research Assistant*

HongKong, China  
 09/2003 - 06/2004

- Image-based rendering (IBR): proposed a system to render 3D scene using video sequences captured by camera array. Mainly involved in depth map generation.

## PUBLICATIONS

### Journal papers

- Xiaoxing Li, Karen Joyce, Merideth Addicott, Robert Kraft, Paul Laurienti and Christopher Wyatt, "Performance evaluation on T1-weighted Images versus T1 Maps in brain MRI segmentation," under revision for *Elsevier Journal of Neuroscience Methods (JNM)*, Feb. 2011.
- Xiaoxing Li, Xiaojing Long, Paul Laurienti, Christopher Wyatt and the Alzheimer's Disease Neuroimaging Initiative, "Registration of Images with Varying Topology using Embedded Maps," under revision for *IEEE Transactions on Medical Imaging (TMI)*, Feb. 2011.
- Andriy Fedorov, Xiaoxing Li, Kilian M. Pohl, Sylvain Bouix, Martin Styner, Merideth Addicott, Chris Wyatt, James B. Daunais, William M. Wells and Ron Kikinis, "Atlas-guided Segmentation of Vervet Monkey Brain MRI", accepted by *Open Neuroimaging Journal (ONIJ)*, *Bentham Open, special Issue on Neuroimaging of non-human Primates*, Jan. 2011.
- Ghassan Hamarneh and Xiaoxing Li, "Watershed segmentation using prior shape and appearance knowledge," *Elsevier Journal of Image and Vision Computing (JIVC)*, 27(1), pp.59-68, Jan. 2009.

### Peer reviewed conference papers

- Xiaoxing Li, Xiaojing Long and Chris Wyatt, "Registration of Images with Topological Change via Riemannian Embedding," in proceedings of *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 1247-1252, Chicago, April, 2011.
- Xiaoxing Li and Chris Wyatt, "Modeling Topological Changes in Deformable Registration," in proceedings of *IEEE International Symposium on Biomedical Imaging (ISBI)*, pp. 360-363, Rotterdam, the Netherlands, April, 2010.

- Xiaoxing Li and Chris Wyatt, “Brain Segmentation Performance using T1-weighted Images versus T1 Maps,” in proceedings of *SPIE Medical Imaging*, San Diego, Feb. 2010.
- Xiaoxing Li, Tao Jia and Hao Zhang, “Expression-insensitive 3D face recognition using sparse representation,” in proceedings of *IEEE Computer Vision and Pattern Recognition (CVPR)*, pp. 2575-2582, Miami, June 2009.
- Xiaoxing Li and Hao Zhang, “Adapting geometric attributes for expression-invariant 3D face recognition,” in proceedings of *IEEE Shape Modeling International (SMI)*, pp. 21-32, Lyon, France, Jun. 2007.
- Xiaoxing Li, Greg Mori and Hao Zhang, “Expression-invariant face recognition with expression classification,” in proceedings of *IEEE Canadian Conference on Computer and Robot Vision (CRV)*, pp. 77-84, Quebec City, Canada, Jun. 2006.
- Xiaoxing Li and Ghassan Hamarneh, “Modeling prior shape and appearance knowledge in watershed segmentation,” in proceedings of *IEEE Canadian conference on Computer and Robot Vision (CRV)*, pp. 21-32, Victoria, Canada, May 2005, (**Best Medical Imaging Paper**).

### Technical report

- Chris Wyatt, Xiaoxing Li, Xiaojin Gong, “A Framework for Registration of Images with Varying Topology using Embedded Maps: Riemannian Embedding Spaces,” *BSL Report BSL2009-0001, Bioimaging Systems Laboratory, Department of Electrical and Computer Engineering Virginia Polytechnic Institute and State University*, 2009.

### MEMBERSHIPS

- Sigma Xi
- IEEE student member (2009)

### REVIEWER SERVICES

- Elsevier Medical Image Analysis Journal
- Elsevier Signal Processing Journal
- Springer Pattern Analysis and Applications Journal (PAA)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- IEEE Transactions on Biomedical Engineering (TBME)
- IEEE Transactions on Image Processing (TIP)

### HONORS and AWARDS

- Award of Excellence(Technology), BC Accelerate Internship Showcase, 2007
- Robar Industries Limited Graduate Scholarship, SFU, Fall 2006
- Eppich Family Graduate Scholarship in Expert Systems, SFU, Spring 2006
- Best Medical Imaging Paper Award, CRV 2005.
  - Out of 72 accepted papers, one best paper is selected for each of the three sub-areas.
- Outstanding Graduate, HUST, 2002

## **SKILLS**

- Programming: C++/C (6-year), OpenGL (3-year), HTML, Java, Unix shell , Python;
- Experience with vision and graphic related libraries: OpenCV, ITK, VTK, Glui, Glut;
- Softwares: Slicer3, Matlab, LaTeX, Paraview, FSL;
- Knowledge: color theory and perception, physiology and anatomy, human computer interaction;
- Languages: Chinese (native), English (fluent).