Contact Information

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Education

University of North Carolina, Chapel Hill, North Carolina
Ph.D. in Computer Science *August 2008*
Refinement of Object-Based Segmentation
Advisor: Stephen M. Pizer

University of North Carolina, Chapel Hill, North Carolina
M.S. in Computer Science *May 2005*
Location Sensing in a Sensor Network with Multidimensional Scaling

Virginia Polytechnic Institute and State University, Blacksburg, Virginia
B.S. in Computer Science; minor in Mathematics *May 1999*
Cum Laude

Experience

Morphormics, Inc., Chapel Hill, North Carolina
Senior Software Development Engineer *July 2008 - February 2010*
Development of products for m-rep based segmentation of medical images.

- Enhanced method for initialization of m-rep based segmentation that I previously developed during my dissertation research.
- Led the integration of Morphormics' core auto-segmentation technologies into customer's radiation treatment planning system. Designed, documented, implemented and tested integration layer. Interacted with customer's technical team to triage and debug issues in the integrated product.
- Implemented automated build system using *CruiseControl.Net* and *subversion*. Delivered 2 major releases and frequent development releases to customer.
- Collaborated with researchers at UNC to transfer technologies between the two organizations.
- Mentored 3 junior members of the development team.

J. H. Levy, Durham, North Carolina
Consultant *December 2007 - July 2008*
Consulted with Morphormics, Inc. on transfer of technologies developed at UNC, including methods for training, using, and evaluating m-rep models for segmentation of organs of the male pelvis from CT.

University of North Carolina, Chapel Hill, North Carolina
Research Assistant, Department of Computer Science *August 2002 - June 2008*
Conducted research, in collaboration with Department of Radiation Oncology, on m-rep based segmentation of male pelvis organs in CT images.

- Developed methods for identifying non-credible regions in automatic segmentation results based on statistical outliers of a local geometry-to-image-match function.

- Developed method for interactive initialization of automatic segmentation method that enabled clinically realistic m-rep based segmentation of the bladder and prostate from CT.
- Developed tools for understanding the high-dimensional objective function that drives m-rep segmentation. These tools allow the visualization of the objective function itself, as well as the visualization of m-rep models in interesting subregions (i.e. near suspected local minima) of the parameter space.
- Developed tools to manage and visualize the workflow for m-rep training and segmentation. These tools include the ability to schedule jobs for parallel execution on a cluster.

Conducted research on location sensing in wireless networks.

Conducted research on computer supported collaborative work.

University of North Carolina, Chapel Hill, North Carolina
Instructor, Introduction to Scientific Programming *Spring 2006*
Taught an undergraduate introductory programming course using MATLAB. Fully responsible for text selection, lectures, assignments, examinations, and grading. Lecture notes and assignments I developed have been used in subsequent offerings of this course.

IBM, Research Triangle Park, North Carolina
Extreme Blue Technical Intern *June 2003 - August 2003*
Led design of platform for peer discovery and interaction. Developed features of this platform using Java and OSGi. Deployed the finished project onto Thinkpad, iPAQ, and Zaurus. This work was the basis for U.S. Patents 7,389,285 and 7,472,185.

AGEA, Austin, Texas
Software Engineer *February 2001 - June 2002*
Developed Outtask Mobile WAP portal to business applications. Developed AGEA Desk WAP and J2ME PIM with connectors to Lotus Notes and Microsoft Exchange.

Trilogy/pcOrder.com, Austin, Texas
Senior Software Engineer *June 1999 - December 2000*
Developed webserver and appserver components to integrate pcOrder's product content offering with the eStation e-commerce platform, using Java. Built internal infrastructure for aggregation of product content data from heterogeneous sources using Java, XML, and SQL Server. Developed web based tool used by teams within pcOrder, and by a vendor in India, to classify product data using SQL Server and ASP.

PATENTS

P. A. Barry, H. J. Hartman, **J. H. Levy**, and S. Saxena U.S. Patent 7,472,185
Method and apparatus for scaling a user interface adaptively Issued 2008
to an object discovery/display system with policy driven filtering.

P. A. Barry, H. J. Hartman, **J. H. Levy**, and S. Saxena U.S. Patent 7,389,285
Process for distributed production and peer-to-peer Issued 2008
consolidation of subjective ratings across ad-hoc networks

Publications

Journal Articles

D. Merck, G. Tracton, R. Saboo, **J. Levy**, E. Chaney, S. Pizer, and S. Joshi. Training Models of Anatomic Shape Variability. *Medical Physics* 35(2008), pp. 3584-3596.

Peer Reviewed Conference Proceedings

R. R. Saboo, **J. H. Levy**, E. L. Chaney, and S. M. Pizer. Medial Models of Populations of Nearly Tubular Objects. *MICCAI Workshop on Probabilistic Models for Medical Image Analysis*, September 2009.

J. H. Levy, M. Foskey, and S. M. Pizer. Rotational Flows for Interpolation Between Sampled Surfaces. *IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA)*, June 2008.

X. Liu, J-Y Jeong, **J. H. Levy**, R. Saboo, E. Chaney, and S. Pizer. A Large-to-Fine-Scale Shape Prior for Probabilistic Segmentations Using a Deformable M-rep. *IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA)*, June 2008.

J. H. Levy, K. Gorczowski, X. Liu, S. M. Pizer, and M. Styner. Caudate Segmentation using Deformable M-reps. *MICCAI Workshop on 3D Segmentation in the Clinic: A Grand Challenge*, pages 47-55, October 2007. `http://mbi.dkfz-heidelberg.de/grand-challenge2007/web/p47.pdf`

Q. Han, D. Merck, **J. Levy**, C. Villarruel, J. Damon, E. Chaney and S. M. Pizer. Geometrically Proper Models in Statistical Training. *Information Processing in Medical Imaging*, LNCS 4574, pages 751-762, July 2007.

J. H. Levy, R. E. Broadhurst, S. Ray, E. L. Chaney, and S. M. Pizer. Signaling Local Non-credibility in an Automatic Segmentation Pipeline. *SPIE Medical Imaging*, 65123Q, February 2007.

J. H. Levy, R. Behler, M. A. Haider, J. S. Marron, and C. M. Gallippi. Discrimination of Mechanical Response to ARFI Excitation in a Raised Atherosclerotic Plaque. *MICCAI Workshop on Computer Vision for Intravascular and Intracardiac Imaging*, pages 58-65, October 2006. `http://www.scr.siemens.com/cvii/CVIIProceedings.pdf`

Abstracts and Short Papers

J. Levy, R. Broadhurst, J-Y Jeong, X. Liu, J. Stough, G. Tracton, S. Pizer, and E. Chaney. Prostate and Bladder Segmentation Using a Statistically Trainable Model. *American Society for Therapeutic Radiology and Oncology (ASTRO)*, October 2007.

J. H. Levy, X. Liu, J-Y Jeong, and S. M. Pizer. Multiscale Alignment of Bladder Models Towards Clinically Realistic Cross-Patient Segmentation. *SAMSI Program on Geometry and Statistics of Shape Spaces*, July 2007.