Jingdan Zhang
zhangjd@gmail.com
http://www.cs.unc.edu/~zhangjd

RESEARCH INTERESTS

Machine learning, statistical image processing, computer vision, computer graphics, and their application to biomedical image analysis and industrial image analysis.

EDUCATION

Ph.D. in Computer Science
Advisor: Prof. Leonard McMillan
University of North Carolina at Chapel Hill, Chapel Hill, NC 2009
Dissertation: Object Detection and Segmentation using Discriminative Learning

M.S. in Computer Science
Advisor: Prof. Leonard McMillan
University of North Carolina at Chapel Hill, Chapel Hill, NC 2007

M.S. in Computer Science and Application
Tsinghua University, Beijing, China 2003
Thesis: Realistic Modeling Techniques Based On Real-World Sampling Dataset

B.E. in Computer Science and Technology
Tsinghua University, Beijing, China 2000

PROFESSIONAL EXPERIENCE

- 2011.1 – present Project Manager, Whole Body and Oncology Program, Image Analysis and Informatics Global Technology Field, Siemens Corporate Research
  Worked with Dr. Shaohua Kevin Zhou and Dr. Dorin Comaniciu
  - Lead efforts to develop a software package for automatically detecting and segmenting organs, including lungs, liver, spleen, kidney et al, from 3D CT and MR volumes.
  - Lead efforts to develop industrial image analysis solutions for non-destructive evaluations.

- 2007.10 – 2010.12 Research Scientist, Whole Body and Oncology Program, Image Analysis and Informatics Global Technology Field, Siemens Corporate Research
  Worked with Dr. Shaohua Kevin Zhou and Dr. Dorin Comaniciu
  - Developed software modules for automatically detecting and segmenting breast tumors in ultrasound images.
  - Developed a software module for automatically segmenting heart chambers in 2D echocardiogram.
  - Participated in developing a software package for detecting multiple anatomic structures in 3D medical volumes.
  - Developed an industrial image analysis solution, AutoNDE-RB, for generator rotor non-destructive evaluation. The solution includes functionalities for volume reconstruction, 3D visualization, and crack detection.

- 2007.7 – 2007.8 Lecturer at Department of Computer Science, University of North Carolina at Chapel Hill
  Taught a Java programming course in summer session: Comp 110: Introduction to Programming.

- 2006.5 – 2006.12 Internship at Integrated Data System Department, Siemens Corporate Research
  Worked with Dr. Shaohua Kevin Zhou and Dr. Dorin Comaniciu
  - Developed a learning based algorithm named probabilistic boosting network (PBN) for fast object detection and accurate pose estimation.
  - Applied PBN to estimate the configuration of heart chambers in 2D/3D ultrasound heart images.

- 2003.9 – 2006.5 Research Assistant at UNC at Chapel Hill,
  With Prof. Leonard McMillan and Prof. Wei Wang
  - Modeled the illumination changes with Markov Random Field to enable robust tracking and stereo matching under variable illumination.
  - Designed and developed machine learning approaches to enhance night vision images based on example daytime appearance models.
  - Developed a system to model and analyze human motion capture data.

- 2001.9 – 2003.7 Part time Internship at Microsoft Research Asia
  Worked with Dr Baining Guo, Dr Harry Shum
  - Designed an interactive system to synthesize progressively-variant texture to 3D meshes.
  - Developed algorithms to synthesize sampled bi-directional texture function (BTF) to 3D meshes and render the synthesized BTF with GPU acceleration.
  - Developed an algorithm to interpolate sparsely sampled medical images.

- 2000.9 – 2002.12 Research Assistant at State Key Laboratory of Intelligent Technology and Systems, Tsinghua University, Beijing, China
  Worked with Prof. Zhidong Deng on virtual reality project
  - Designed and developed a system to reconstruct 3D models of the objects using structured light.
  - Implement the motion planning sub-system.

- 1999.9 – 2000.7 Software Engineer and Project Manager at Chinaren Inc.(later acquired by Sohu.com) Beijing, China
  - Led a seven-member team to develop Internet-based board games and card games, including Chess, Go, Gomoku, and Poker.
  - Designed a communications protocol between game servers and clients.
  - Implemented a client game API for the communications protocol and the GUI framework.

PUBLICATIONS

Conferences:

- **Jingdan Zhang**, S. Kevin Zhou, Xiaoyan Xiang, John C. Rasmussen, and Eva M. Sevick-Muraca. An Image Analysis System for Near-infrared (NIR) fluorescence Lymph Imaging. Accepted by SPIE Medical Imaging, 2011.

- John C. Rasmussen, Merrick Bautista, I-Chih Tan, Kristen E. Adams, Melissa Aldrich, Milton V. Marshall, Caroline E. Fife, Eric A. Maus, Latisha A. Smith, **Jingdan Zhang**, Xiaoyan Xiang, S. Kevin Zhou, and Eva M. Sevick-Muraca, Validation of ALFIA: a platform for quantifying near-infrared fluorescent images of lymphatic propulsion in humans, SPIE Biomedical Optics, 2011.
- Michal Sofka, Kristof Ralovich, Neil Birkbeck, **Jigndan Zhang**, S.Kevin Zhou. Integrated Detection Network (IDN) for Pose and Boundary Estimation in Medical Images. Accepted by IEEE International Symposium on Biomedical Imaging (ISBI), 2011.
- **Jingdan Zhang**, S. Kevin Zhou, Shelby Brunke, Carol Lowery, and Dorin Comaniciu. Detection and Retrieval of Cysts in Joint Ultrasound B-Mode and Elasticity Breast Images. IEEE International Symposium on Biomedical Imaging (ISBI), 2010.
- **Jingdan Zhang**, S. Kevin Zhou, Shelby Brunke, Carol Lowery, and Dorin Comaniciu. Database-Guided Breast Tumor Detection and Segmentation in 2D Ultrasound Images. SPIE Medical Imaging, 2010.
- Michal Sofka, **Jingdan Zhang**, S. Kevin Zhou, and Dorin Comaniciu. Multiple Object Detection by Sequential Monte Carlo and Hierarchical Detection Network. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2010.
- Michal Sofka, Kristof Ralovich, **Jingdan Zhang**, and S. Kevin Zhou, and Dorin Comaniciu. Progressive Data Transmission for Hierarchical Detection in a Cloud. The 2nd International Workshop on Medical Image Computing for Image-Assisted Clinical Intervention and Decision-Making (HP-MICCAI), 2010, Best Paper Award.
- **Jingdan Zhang**, S. Kevin Zhou, Dorin Comaniciu, and Leonard McMillan. Discriminative Learning for Deformable Shape Segmentation: A Comparative Study. European Conference on Computer Vision(ECCV), 2008.
- **Jingdan Zhang**, S. Kevin Zhou, Dorin Comaniciu, and Leonard McMillan. Conditional Density Learning via Regression with Application to Deformable Shape Segmentation. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008.
- **Jingdan Zhang**, S. Kevin Zhou, Leonard McMillan, and Dorin Comaniciu. Joint Real-time Object Detection and Pose Estimation Using Probabilistic Boosting Network. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007.
- **Jingdan Zhang**, Leonard McMillan, and Jingyi Yu. Robust Tracking and Stereo Matching under Variable Illumination. IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2006.
- Zhidong Deng, Jianjun Niu, and **Jingdan Zhang**. A Realistic 3-D Reverse Modeling System Based on Real-World Sampling Dataset. 2006 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- Guodong Liu, **Jingdan Zhang**, Wei Wang, and Leonard McMillan. Human Motion Estimation from a Reduced Marker Set. ACM SIGGRAPH Symposium on Interactive 3D Graphics (I3D), 2006.
- Guodong Liu, **Jingdan Zhang**, Wei Wang, and Leonard McMillan. A system for analyzing and indexing human motion databases (demo). ACM SIGMOD International Conference on Management of Data (SIGMOD), 924-926, 2005.
- **Jingdan Zhang**, Yongmei Wang, and Baining Guo. Pyramidal Search of Maximum Coherence Direction for Biomedical Image Interpolation. IEEE International Symposium on Biomedical Imaging (ISBI), 887-890, 2002.
- **Jingdan Zhang**, Zhidong Deng, and Baining Guo. Two Stage Unsupervised Segmentation of Color Images. Proc. Chinagraph, 144-148, Beijing, Sept 2002.
- Ke Deng, **Jingdan Zhang**, Lifeng Wang, and Baining Guo. Texture Mapping with a Jacobian-Based Spatially-Variant Filter. Proc. IEEE Pacific Graphics, 2002.

Journals

- **Jingdan Zhang**, Kun Zhou, Luiz Velho, Baining Guo, and Heung-Yeung Shum. Synthesis of Progressively-Variant Textures on Arbitrary Surfaces. ACM Transactions on Graphics (Proc. ACM SIGGRAPH), 295-302, 2003.
- Xin Tong, **Jingdan Zhang**, Ligang Liu, Xi Wang, Baining Guo, and Heung-Yeung Shum. Synthesis of Bidirectional Texture Functions on Arbitrary Surfaces. ACM Transactions on Graphics (Proc. ACM SIGGRAPH), 665-672, 2002.
- Yongmei Michelle Wang, **Jingdan Zhang**, Zhunping Zhang, and Baining Guo. Directional Coherence Interpolation for Three-Dimensional Gray-Level Images. International Journal of Image and Graphics, 4(4), 535-561, 2004.
- Xinguo Liu, Yaohua Hu, **Jingdan Zhang**, Xin Tong, Baining Guo, and Heung-Yeung Shum. Synthesis and Rendering of Bidirectional Texture Functions on Arbitrary Surfaces. IEEE Transactions on Visualization and Computer Graphics, 10(3): 278-289, 2004.
- Bocheng Chen, Yingjie Li, **Jingdan Zhang**, Chaojun Xu, and Xun Wang. Discrete Event System Simulation Software Prototype Using JAVA. Journal of Tsinghua University 40(7), 2000.

HONORS

- Best Summer Student Award, Integrated Data System Department, Siemens Corporate Research, 2006.
- University Merit Assistantship, University of North Carolina at Chapel Hill, 2003-2004.
- Excellent Researcher Scholarship, State Key Laboratory of Intelligent Technology and Systems, Tsinghua University, 2002 - 2003.
- Excellent Student Scholarship, Tsinghua University, 1997 - 1999.
- National Olympiad in Informatics Contest, Second Prize, ranking 13th, 1995.8.