Tian Cao

Contact Information

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Research Interests

Medical Image Analysis, Computer Vision, Machine Learning

Education

University *of* North Carolina *at* Chapel Hill, Chapel Hill, NC, USA — since 08/2010
Ph.D. candidate in Computer Science

Sichuan University, Chengdu, Sichuan, China — 09/2007-05/2010
Master of Science in Computer Science

Sichuan University, Chengdu, Sichuan, China — 09/2003-05/2007
Bachelor of Engineering in Computer Science

Research Experience

Registration for Correlative Microscopy using Sparse Representation 2011-present
Research Assistant at UNC Chapel Hill — Advisor: Marc Niethammer
Developed a multi-modal registration algorithm. Learning a multi-modal dictionary under a sparse representation model, and applied the learned dictionary to simplify the multi-modal registration problem to a mono-modal one. Applied the algorithm to Correlative Microscope images.

Energy based Crowd Motion Analysis 2009-2010
Research Assistant at SIAT-Chinese Academy of Sciences — Advisor: Yangsheng Xu
Developed an energy based crowd motion analysis algorithm based on mutual information, and applied this algorithm to detect the crowd abnormal behaviors.

Super Resolution and Anisotropic Diffusion for Ultrasound Speckle Reduction 2009
Research Assistant at Sichuan University — Advisor: Dong C. Liu
Developed a fast and robust super-resolution method for intima reconstruction in medical ultrasound imaging, and applied anisotropic diffusion to reduce speckle with edge enhancement during the image reconstruction.

Industry Experience

Research Intern, Siemens Corporate Research 05/2012-08/2012
Princeton, NJ, USA — Supervisor: Peng Wang
Developed and implemented a needle detection method for ultrasound images. Incorporated with different features and hough transform to vote the needle segment.

Conference Talk

Workshop on Biomedical Image Registration 07/2012
Vanderbilt University, Nashville, TN, USA
Topic: Registration for Correlative Microscopy using Image Analogies

Publications

[1].**Tian Cao**, Christopher Zach, Marc Niethammer et al., "Registration for Correlative Microscopy using Image Analogies", *Fifth Workshop on Biomedical Image Registration (WBIR 2012), 2012*. **Oral Presentation**.

[2].Bo Wang, **Tian Cao**, Yuguo Dai, Dong C. Liu, "Ultrasound Speckle Reduction via Super Resolution and Nonlinear Diffusion", *the 9th Asian Conference on Computer Vision (ACCV 2009), 2009*.

[3].**Tian Cao**, Bo Wang, Dong C. Liu, "Optimized GPU Framework of Semi-implicit AOS Scheme

Based Speckle Reducing Nonlinear Diusion", *proceedings of SPIE Medical Imaging, 2009, Vol. 7259, 2009.*

[4].**Tian Cao**, Chaowei Tan, Dong C. Liu, "Adaptive Curve Region based Motion Estimation and Motion Visualization of Cardiac Ultrasound Imaging", *the 3rd International Conference on Bioinformatics and Biomedical Engineering (ICBBE 2009), Vol. 3, pp. 453-457, 2009.*

[5].**Tian Cao**, Xinyu Wu, Jinnian Guo, Shiqi Yu, Yangsheng Xu, "Abnormal Crowd Motion Analysis", *IEEE International Conference on Robotics and Biomimetics (ROBIO 2009), 2009.*

Awards

Guanghua Scholarship.	2010
Graduate Student Fellowship, Sichuan University.	2009
Student Innovation Award (top 3%), Sichuan University.	2006
1st prize of China Undergraduate Mathematical Contest in Modeling (CUMCM).	2006

Professional Skills

C/C++, Java, Python, Matlab, Windows, Linux, MaxOS X