

# TIAN CAO

---

## CONTACT INFORMATION

Department of Computer Science  
Sitterson Hall, UNC-Chapel Hill  
Chapel Hill, NC 27599-3175 USA

Phone: (919)-699-9542  
E-mail: [tiancao@cs.unc.edu](mailto:tiancao@cs.unc.edu)  
<http://cs.unc.edu/~tiancao/>

## RESEARCH INTERESTS

Image Analysis, Computer Vision, Machine Learning

## EDUCATION

UNIVERSITY of NORTH CAROLINA at CHAPEL HILL, Chapel Hill, NC, USA

P.D. candidate in Computer Science since 08/2010

SICHUAN UNIVERSITY, Chengdu, Sichuan, China

Master of Science in Computer Science 09/2007-05/2010

SICHUAN UNIVERSITY, Chengdu, Sichuan, China

Bachelor of Engineering in Computer Science 09/2003-05/2007

## RESEARCH EXPERIENCE

**Deformable registration with built-in invariant to ane transformations** 2010-2011

*Research Assistant*

Developed a deformable registration algorithm with built-in ane transformations, and applied this algorithm to the registration between uorescence microscopy and TEM images.

**Energy based Crowd Motion Analysis** 2009-2010

*Research Assistant*

Developed a energy based crowd motion analysis algorithm based on mutual information, and applied this algorithm to detect the crowd abnormal behaviors.

**Super Resolution and Anisotropic Diusion for Ultrasound Speckle Reduction** 2009

*Research Assistant*

Developed a fast and robust super-resolution method for intima reconstruction in medical ultrasound imaging, and applied anisotropic diusion to reduce speckle with edge enhance- ment during the image reconstruction.

**GPU Framework for Anisotropic Diffusion** 2008-2009

*Research Assistant*

Developed a novel method for motion estimation and visualization of cardiac ultrasound images. The motion vector elds are derived from an adaptive curve region based matching algorithm.

## PUBLICATIONS

[1].**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*.

[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**, 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*.

[4].**Tian Cao**, Xinyu Wu, Jinnian Guo, Shiqi Yu, Yangsheng Xu, “Abnormal Crowd Motion Anal-

ysis”, *IEEE International Conference on Robotics and Biomimetics (ROBIO 2009)*, 2009.

HONORS & AWARDS	Guanghua Scholarship, Sichuan University.	2009
	Graduate Student Fellowship 2009, Sichuan University.	2009
	Excellent undergraduate Student, Sichuan University.	2007
	Student Innovation Award (1st prize), Sichuan University.	2006
	1st prize of China Undergraduate Mathematical Contest in Modeling (CUMCM).	2006
PROFESSIONAL SKILLS	C/C++, Java, Python, Matlab, Windows, Linux, MacOS X	