

Kang Li

Carnegie Mellon University

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Objective

To find a full-time position in research-oriented IT companies or universities. Areas of interest include computer vision, machine learning, image/video processing, biomedical image analysis, information retrieval and data mining.

Education

- Ph.D., Electrical and Computer Engineering*, Carnegie Mellon University, Pittsburgh, PA 09/2004–05/2009 (expected)
Thesis: *Large-Scale Tracking of Cell Populations in Time-Lapse Microscopy Imagery*
Recipient of the MICCAI Young Scientist Award
Adviser: Prof. Takeo Kanade
GPA: 4.0/4.0
- M.S., Electrical and Computer Engineering*, University of Iowa, Iowa City, IA 08/2002–08/2004
Thesis: *Efficient Optimal Net Surface Detection for Image Segmentation – From Theory to Practice*
Adviser: Prof. Milan Sonka
GPA: 4.2/4.0
- B.S., Electrical Engineering*, Nanjing University, Nanjing, China 09/1998–07/2002
GPA: 3.6/4.0 (Top 3%)

Experience

- Intel/CMU Summer Fellow*, Intel Research Pittsburgh, Pittsburgh, PA 06/2008–08/2008
- Developed algorithms for stem cell behavior recognition and motion tracking
 - Design and parallel implementation of numerical optimization algorithms for microscopy image “preconditioning”
- Research Intern*, Siemens Corporate Research, Princeton, NJ 05/2007–08/2007
- Developed methods to detect and segment liver tumors in 3-D CT images
 - Contributed algorithms to OncoCare – a software product for general lesion segmentation and measurement
 - Supervised by Dr. Marie-Pierre Jolly
- Research Assistant*, Carnegie Mellon University 2004–Present
- Developed the world’s first large-scale tracking system that can simultaneously track behaviors (motion, division and death) of *thousands* of stem cells in expanding cell populations (C++, Java, C#)
 - Lead multidisciplinary research group for the *Cell Image Analysis Consortium*
 - Coauthored three funded grant proposals (PITA, NIH, and Intel)
- Research Assistant*, College of Engineering Imaging Group, University of Iowa 2002–2004
- Developed patent-pending algorithms for multi-dimensional image segmentation; licensed to multiple companies, including Carl Zeiss, Inc, VIDA Diagnostics, Inc., etc.
 - Developed software for bone/cartilage segmentation in 3-D CT images; commercialized by Medical Imaging Applications LLC. (C++, Python, OpenGL)
 - Developed multidimensional image analysis software libraries/tools used by the entire group (C++, Python)
- Research Assistant*, State Key Lab of Modern Acoustics, Nanjing University 2000–2002
- Implemented software for a real-time ultrasound cardiac imaging system (C++, DirectX, Assembly)
 - Developed digital image processing courseware with plug-in support (C++, MFC)
- Part-Time Programmer*, Nanjing Fujitsu Nanda Software Technology Co., Ltd., China 2000–2001
- Developed and documented the video testing module of a client-server hardware diagnosis application

Professional Skills

Programming/Scripting: C/C++ (10 yrs.), MATLAB (8 yrs.), Java (5 yrs.), Python (5 yrs.), C# (4 yrs.), some Perl
Cross-Platform Software Development: Qt, wxWidgets, .NET Framework, STL, Boost, OpenGL, Coin, OpenCV, VTK, ITK
Parallel/Distributed/GPGPU Computing: Hadoop, Map/Reduce, Maui/Torque, OpenMP, Intel TBB, CUDA
Language: English (fluent), Mandarin Chinese (native), Cantonese

Selected Honors/Awards

Biography Listed in <i>Marquis Who's Who in America</i> (2009 ed.)	2009
Intel/CMU Summer Fellowship	2008
MICCAI Young Scientist Award (AU \$500)	2007
Doctorate Research Fellowship, Carnegie Mellon University	2004–Present
Student Travel Grant (US \$500), IEEE Conf. Computer Vision and Pattern Recognition	2004
Guanghua, Huawai, and People's Scholarships, Nanjing University	1998–2002
Excellent Student, Nanjing University	1998–2002

Selected Publications

Journal Papers

Kang Li, Mei Chen, and Takeo Kanade. Cell population tracking and lineage construction with spatiotemporal context. *Medical Image Analysis*, 12(5):546–566, 2008.

Kang Li, Xiaodong Wu, Danny Z. Chen, and Milan Sonka. Optimal surface segmentation in volumetric images – a graph-theoretic approach. *IEEE Trans. Pattern Anal. Machine Intell.*, 28(1):119–134, 2006.

Refereed Conference Papers

Kang Li, Eric D. Miller, Mei Chen, Takeo Kanade, Lee E. Weiss, and Phil G. Campbell. Computer vision tracking of stemness. In *Proc. IEEE Int. Symposium on Biomedical Imaging (ISBI)*, 2008. **Oral Presentation.**

Kang Li and Marie-Pierre Jolly. Simultaneous detection of multiple elastic surfaces with application to tumor segmentation in CT images. In *Proceedings of SPIE*, 2008.

Kang Li, Mei Chen, and Takeo Kanade. Cell population tracking and lineage construction with spatiotemporal context. In *Proc. Medical Image Computing and Comp.-Assisted Intervention*, 2007. **MICCAI Young Scientist Award.**

Kang Li and Takeo Kanade. Tracking and lineage construction using multiple-model dynamics filters and spatiotemporal optimization. In *Proc. Int. Workshop Microscopic Image Analysis with Applications in Biology (MIAAB)*, 2007. **Oral Presentation.**

Kang Li, Eric D. Miller, Lee E. Weiss, Phil G. Campbell, and Takeo Kanade. Online tracking of migrating and proliferating cells imaged with phase-contrast microscopy. In *Proc. IEEE Conf. Comp. Vision and Patt. Recog. Workshop (CVPRW)*, 2006. **Oral Presentation.**

Kang Li, Steven Millington, Xiaodong Wu, Danny Z. Chen, and Milan Sonka. Simultaneous segmentation of multiple closed surfaces using optimal graph searching. In *Proc. Int. Conf. Information Processing in Medical Imaging (IPMI)*, 2005. **Oral Presentation.**

Kang Li, Xiaodong Wu, Danny Z. Chen, and Milan Sonka. Globally optimal segmentation of interacting surfaces with geometric constraints. In *Proc. IEEE Conf. Comp. Vision and Patt. Recog. (CVPR)*, 2004. **Student Travel Grant Award.**

Patents/Invention Disclosures

U.S. Patent 20070058865: *System and Methods for Image Segmentation in N-Dimensional Space*

Provisional Patent: *Real-Time Computer-Vision-Based Tracking of Stemness*

Teaching Experience

Teaching Assistant: 18-798 Image and Video Processing, Carnegie Mellon University

Teaching Assistant: 18-396 Signals and Systems, Carnegie Mellon University

Professional Activities

Reviewer: *Medical Image Analysis*, *IEEE Transactions on Medical Imaging*, *IEEE Transactions on Biomedical Engineering*, *Pattern Recognition Letters*, *Image and Vision Computing*, ICME, MICCAI, MIAAB

Student Member, IEEE, MICCAI, and SPIE