

Kai Ni

Microsoft Corporation
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Nationality: China
Immigration: Green card

INTERESTS Computer Vision, Robotics

EDUCATION **Georgia Institute of Technology, Atlanta, GA** 2004 - 2010

Ph.D., Computer Science
Advisor: Professor Frank Dellaert

Tsinghua University, Beijing, China 2001 - 2004

M.S., Computer Science
Advisor: Professor Kezhong He

Tsinghua University, Beijing, China 1997 - 2001

B.S., Automation
Advisor: Professor Chunwen Li

RESEARCH,
WORKING
EXPERIENCE **Microsoft Corporation** 12/2010 - Present
Researcher, IEB & OSD Redmond, WA

Supervisor: Drew Steedly

- Worked on a secret project in IEB
- Augmented reality and surface reconstruction.
- Large-scale 3D map creation and sensor data fusion.

Georgia Institute of Technology 09/2005 - 12/2010
Research Assistant, Computational Perception Lab Atlanta, GA

Advisor: Professor Frank Dellaert

- Designed Tectonic SAM for the large-scale 3D reconstruction and SLAM problems.
- Implemented visual odometry in Learning Applied to Ground Robotics (LAGR) project.
- Localization for visual impaired persons in System for Wearable Audio Navigation (SWAN).

Microsoft Research Redmond 05/2009 - 08/2009
Research Intern, Microsoft Robotics team Redmond, WA

Worked with George Chrysanthakopoulos and Kazuhito Koishida

- Place recognition in the home environment.

Advanced Technology Lab, Adobe Systems Inc. 06/2008 - 08/2008
Research Intern, worked with Hailin Jin San Jose, CA

- Worked on structure from motion using unsorted wide-baseline image sequences.
- Achieved image based modelings for urban scenes based on the recovered camera motions.

Microsoft Research Cambridge 06/2007 - 08/2007
Research Intern, Worked with Antonio Criminisi and John Winn Cambridge, UK

- Trained a compact and generative model (epitome) for the appearance of environments.
- Integrated a spectrum of features and achieved real-time localization using the epitomes.

IBM China Software Development Lab 12/2003 - 07/2004
Regular Employee, Supervisor: Jianhai Wen Beijing, China

- Worked on solution development in the System House project.

Tsinghua University 02/2002 - 12/2003
Research Assistant, State Key Lab (LITS) Beijing, China

Advisor: Professor Kezhong He

- Developed vision-based autonomous navigation and the controller module for THMR-V.
- Achieved the speed of 150km/h (max), 110km/h (avg.) in the Badaling Highway.

IBM China Research Center

11/1999 - 02/2000, 06/2000 - 09/2000

Research Intern, worked with Qianyin Wang

Beijing, China

- Developed a multi-channel HCI system for business customers.

SELECTED
PUBLICATIONS

1. **Kai Ni** and Frank Dellaert, "HyperSfM," in *Proceedings of IEEE International Conference on 3D Imaging, Modeling, Processing, Visualization and Transmission (3DIMPVT)*, Zurich, Switzerland, 2012.
2. Giorgio Grisetti, Rainer Kuemmerle, and **Kai Ni**, "Robust Optimization of Factor Graphs by Using Condensed Measurements," in *Proceedings of IEEE International Conference on Intelligent Robots and Systems (IROS)*, Vilamoura, Algarve, Portugal, 2012.
3. Pablo F. Alcantarilla, **Kai Ni**, Luis M. Bergasa, and Frank Dellaert, "Visibility Learning in Large-Scale Urban Environment," in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Shanghai, China, 2011.
4. **Kai Ni** and Frank Dellaert, "Multi-Level Submap Based SLAM using Nested Dissection," in *Proceedings of IEEE International Conference on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, 2010.
5. Frank Dellaert, Justin Carlson, Viorela Ila, **Kai Ni**, and Charles Thorpe, "Subgraph-preconditioned Conjugate Gradients for Large Scale SLAM," in *Proceedings of IEEE International Conference on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, 2010.
6. **Kai Ni**, Hailin Jin, and Frank Dellaert, "GroupSAC: Efficient Consensus in the Presence of Groupings," in *Proceedings of IEEE International Conference on Computer Vision (ICCV)*, Kyoto, Japan, September 2009.
7. **Kai Ni**, Anitha Kannan, Antonio Criminisi, and John Winn, "Epitomic Location Recognition," in *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 2009.
8. Michael Kaess, **Kai Ni**, and Frank Dellaert, "Flow Separation for Fast and Robust Stereo Odometry," in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Kobe, Japan, May 2009.
9. **Kai Ni**, Anitha Kannan, Antonio Criminisi, and John Winn, "Epitomic Location Recognition," in *Proceedings of IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, Anchorage, Alaska, June 2008 (**The Award of Best Student Paper Runner-Up**)
10. **Kai Ni**, Drew Steedly, and Frank Dellaert, "Out-of-Core Bundle Adjustment for Large-Scale 3D Reconstruction," in *Proceedings of IEEE International Conference on Computer Vision (ICCV)*, Rio de Janeiro, Brazil, October, 2007.
11. **Kai Ni**, Drew Steedly, and Frank Dellaert, "Tectonic SAM, Exact, Out-of-Core, Submap-Based SLAM," in *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, Roma, Italy, April 2007
12. **Kai Ni** and Frank Dellaert, "Stereo Tracking and 3-Point/1-Point Algorithms - A Robust Approach in Visual Odometry," in *Proceedings of IEEE International Conference on Image Processing (ICIP)*, Atlanta, Georgia, October 2006.
13. **Kai Ni** and Kezhong He, "THMR-V: An Effective and Robust High-Speed System in Structured Road," in *Proceedings of IEEE International conference on Systems, Man and Cybernetics*, Washington, D.C., 2003
14. **Kai Ni** and Kezhong He, "High-Speed System and Robust Control in Highway," in *Proceedings of IEEE International Conference on Intelligent Transportation Systems (ICITS)*, Shanghai, 2003

HONORS AND AWARDS	NSF Travel Grant for SU-VLPR in Xi'an	2010
	IEEE Travel Grant for ICCV in Kyoto	2009
	Best Student Paper Runner-Up in CVPR 2008, Anchorage, Alaska	2008
	IEEE Travel Grant for CVPR, Anchorage, Alaska	2008
	Prize of High and New Technology by Ministry of Education of China	2003
	Scholarship for Outstanding Contribution to the Laboratory, Tsinghua University	2002
	Tsinghua Excellent Student Fellowship, Tsinghua University	2000
	2nd Prize in the Challenge Cup, Tsinghua University	1999
	Tsinghua Excellent Student Fellowship, Tsinghua University	1998

PATENTS	Frank Dellaert, Michael Kaess, Kai Ni , "Flow Separation for Stereo Visual Odometry". Patent NO. US20110169923 A1. Assignee: GTRC.
	Hailin Jin, Kai Ni , "Region-Based Dense Feature Correspondence". Patent NO. US8270770 B1. Assignee: Adobe Systems Inc.
	Hailin Jin, Kai Ni , "Random Sample Consensus for Groups of Data". Patent NO. US20130124147 A1. Assignee: Adobe Systems Inc.
	Hailin Jin, Kai Ni , "Point Selection in Bundle Adjustment". Patent No. US20130121558 A1. Assignee: Adobe Systems Inc.

COMPUTER SKILLS	Languages: C/C++, Matlab, C#, OCaml, OpenGL, and DirectX; Tools and OS: Visual Studio, Eclipse, Emacs, and GNU Make; Mac OS, Windows, and Linux.
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