Chelhwon Kim

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RESEARCH INTERESTS

My research interests are in the area of Computer Vision. Specifically, I am interested in 3D reconstruction and scene understanding.

EDUCATION

Ph. D., Electrical Engineering — Sept 2010 - Dec 2016
Computer Vision Lab, University of California, Santa Cruz
- o Thesis: Indoor Manhattan Spatial Layout Recovery from Monocular Videos
- o Advisor: Professor Roberto Manduchi

Multi-Dimensional Signal Processing Lab, University of California, Santa Cruz
- o Project: Visual Saliency in Noisy Images
- o Advisor: Professor Peyman Milanfar

M. S., School of Computer Engineering — Mar 2003 - Feb 2005
Computer Vision Lab, Sungkyunkwan University, Korea (GPA 4.5/4.5)
- o Thesis: Structured light based depth edge detection for object shape recovery
- o Advisor: Professor Juneho Yi

B. S., School of Information and Communication Engineering — Mar 1999 - Feb 2003
Sungkyunkwan University, Korea (GPA 4.12/4.5, Rank 5/367)

EXPERIENCE

Research engineer — April 2016 - Current
FXPAL, Palo Alto CA

Research intern — Summer 2014
FXPAL, Palo Alto CA
- High-quality capture of documents on a cluttered tabletop with a 4k video camera

Research intern — Summer 2013
Nokia Research Center, Berkeley CA
- Implemented SLIC (Simple Linear Iterative Clustering) image segmentation algorithm on highly energy efficient embedded processor platform (Movidius Myriad)

Research intern — Summer 2012
FXPAL, Palo Alto CA
- Developed system and methods for dewarping books with a mobile phone camera

Research staff — Jan 2009 - May 2010
Intelligent Systems Research Center, Sungkyunkwan University, Korea
- Recognition and pose estimation of objects for service robots

Research engineer — Mar 2005 - May 2008
Nexteye machine vision Co., Ltd., Korea
- Image processing for bullet defect detection system

- Vision based profile monitoring of plastic tube
- Detection of plastic tube defect using computer vision
- Automatic guide system for installation of memory card on board
- OCR system for wafer's lot number/ID
- View-based object detection for security service robot

COMPUTER SKILLS

Languages & Software: Torch, CNTK, C/C++, Matlab, OpenCV

TEACHING EXPERIENCE

Teaching assistant
CMPE16: Applied Discrete Mathematics (Winter 2016)
CMPE107: Probability and Statistics for Engineers (Winter, Spring 2015)
CMPE80A: Universal Access: Disability, Technology, and Society (Fall 2014)
CMPE12L: Computer Systems and Assembly Language Lab (Spring 2014)

PATENTS

1 pending, 2 granted

PUBLICATION

- **C. Kim**, P. Chiu and H. Oda, "Capturing Handwritten Ink Strokes with a Fast Video Camera," International Conference on Document Analysis and Recognition (ICDAR), 2017.
- S. Ma, Q. Liu, **C. Kim** and P. Sheu, "Lift: Using Projected Coded Light for Finger Tracking and Device Augmentation," Pervasive Computing and Communications (PerCom), 2017.
- **C. Kim**, R. Manduchi, "Indoor Manhattan Spatial Layout Recovery from Monocular Videos via Line Matching," Computer Vision and Image Understanding, 2016.
- T. Dunnigan, J. Doherty, D. Avrahami, J. Biehl, P. Chiu, **C. Kim**, Q. Liu, H. Tang and L. Wilcox, "Evolution of a Tabletop Telepresence System through Art and Technology", ACM Multimedia 2015.
- **C. Kim**, P. Chiu and H. Tang, "High-Quality Capture of Documents on a Cluttered Tabletop with a 4K Video Camera", Proceedings of ACM DocEng 2015.
- **C. Kim**, R. Manduchi, "Planar Structures from Line Correspondences in a Manhattan World", in 12th Asian Conference on Computer Vision (ACCV), 2014.
- **C. Kim**, P. Chiu and S. Chandra, "Dewarping Book Page Spreads Captured with a Mobile Phone Camera," *CBDAR*, August 23, 2013.
- **C. Kim** and P. Milanfar, "Visual Saliency in Noisy Images," *Journal of Vision* 13(4):5, March 11, 2013.
- **C. Kim** and P. Milanfar, "Finding Saliency in Noisy Images," *SPIE Conference on Computational Imaging (8269)*, January 2012, Burlingame, CA
- J. Y. Park, **C. H. Kim**, J. K. Na, J. H. Yi, and M. Turk, "Using structured light for efficient depth edge detection," *Image and Vision Computing*, Vol. 26, Issue 11, pp 1449 1550, 2008.
- J. Y. Park, **C. H. Kim**, J. H. Yi, and M. Turk, "Efficient depth edge detection using structured light," *Lecture Notes in Computer Science*, Vol. 2869, pp. 413-420, 2005.

- **C. H. Kim**, J. Y. Park, J. H. Yi, and M. Turk, "Structured light based depth edge detection for object shape recovery," *IEEE CVPR Workshop on Projector-Camera Systems*, 2005.
- J. H. Yi, D. Y. Lee, **C. H. Kim**, "A 2D plane of RGB color space for color histogram based skin color segmentation," *6th Asian Conference on Computer Vision*, pp 926 930, 2003.