Jangwon Lee

Research Scientist
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Education

Jul 2018 **Ph.D.**, *Indiana University*, Bloomington, IN, USA.
Intelligent and Interactive Systems track of Informatics
School of Informatics, Computing, and Engineering
- Advisor: David Crandall
- Co-advisor: Selma Šabanović
- Minor: Computer Science
- Thesis: *Learning Activities From Human Demonstration Videos*

Feb 2008 **M.S.**, *Sungkyunkwan University*, Suwon, Korea.
Masters in Electrical and Computer Engineering
- Advisor: Sukhan Lee
- Thesis: *Automatic Evidence Selection and Collection for Robust Robotic Perception*

Feb 2006 **B.S.**, *Sungkyunkwan University*, Suwon, Korea.
Bachelor in Electronic and Electrical Engineering

Academic and Industrial Appointments

Sep 2018 – present **Research Scientist**, *ObjectVideo Labs at Alarm.com*, Tysons, VA, USA.
- Working with Office of Naval Research (ONR) for Maritime Sensing

Sep 2013 – Jul 2018 **Research/Teaching Assistant**, *Indiana University*, Bloomington, IN, USA.
- School of Informatics, Computing, and Engineering

Jul 2016 – Aug 2016 **Research Intern**, *NASA Jet Propulsion Laboratory*, Pasadena, CA, USA.
- Mentor: Brandon Rothrock

Feb 2008 – Jul 2013 **Software Engineer**, *Samsung*, Suwon, Korea.
- Samsung Electronics, Apr 2010 - Jul 2013
- Samsung Digital Imaging, Feb 2009 - Apr 2010
- Samsung Techwin, Feb 2008 - Feb 2009

Mar 2006 – Feb 2008 **Research Assistant**, *Sungkyunkwan University*, Suwon, Korea.
- Intelligent System Research Center

Teaching Experience

Aug 2013 – Dec 2016 **Associate Instructor**, *Indiana University*, Bloomington, IN, USA.
- Fall 2016:
  - INFO I590/CS B659: *Vision for Intelligent Robotics* with Prof. Michael S. Ryoo
- Fall 2015:
  - INFO I427: *Search Informatics* with Prof. David Crandall, **Lead Associate Instructor**
- Fall 2014:
  - INFO I427: *Search Informatics* with Prof. David Crandall
- Spring 2014:
  - INFO I201: *Mathematical Foundations of Informatics* with John Duncan and Saúl Blanco
- Fall 2013:
  - INFO I427: *Search Informatics* with Prof. David Crandall

Publications

Peer-reviewed conference papers:

2019 **Jangwon Lee**, Bardia Doosti, Yupeng Gu, David Cartledge, David J. Crandall, and Christopher Raphael. Observing pianist accuracy and form with computer vision. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Jan 2019. (39.0 % acceptance rate).

2017 **Jangwon Lee** and Michael S. Ryoo. Learning robot activities from first-person human videos using convolutional future regression. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Sep 2017.

Chenyou Fan, **Jangwon Lee**, Mingze Xu, Krishna Kumar Singh, Yong Jae Lee, David J. Crandall, and Michael S. Ryoo. Identifying first-person camera wearers in third-person videos. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Jul 2017. (Poster, 29.0 % acceptance rate).

Jangwon Lee, Jingya Wang, David Crandall, Selma Šabanović, and Geoffrey Fox. Real-time, cloud-based object detection for unmanned aerial vehicles. In *IEEE International Conference on Robotic Computing (IRC)*, Apr 2017.

2009 Hyunjun Kim, **Jangwon Lee**, and Sukhan Lee. Environment adaptive 3d object recognition and pose estimation by cognitive perception engine. In *IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA)*, Dec 2009.

2007 **Jangwon Lee**, Dongwook Shin, HunSue Lee, and Sukhan Lee. Study on behavioral personality of a service robot to make more convenient to customer. In *IEEE International Symposium on Robot and Human interactive Communication (RO-MAN)*, Aug 2007.

Seung-Min Baek, **Jangwon Lee**, Hunsue Lee, Dongwook Shin, and Sukhan Lee. Information integration and mission selection to accomplish dependable perception for service robot. In *IEEE International Conference on Advanced Robotics (ICAR)*, Aug 2007.

Hunsue Lee, **Jangwon Lee**, Jaewoong Lim, and Sukhan Lee. Security service robot in ubiquitous environment based on cognitive robotic engine. In *International Conference of Ubiquitous Information Technology and Applications (ICUT)*, Feb 2007.

2006 Dongwook Shin, **Jangwon Lee**, Hun-Sue Lee, Sukhan Lee, Young-Jo Cho, and Su-Young Chi. Robot personality from perceptual behavior engine: An experimental study. In *International Conference on Ubiquitous Robots and AmbientIntelligence (URAI)*, Oct 2006.

Peer-reviewed workshop papers:

2018 Chenyou Fan, **Jangwon Lee**, and Michael S Ryoo. Forecasting hand and object locations in future frames. In *European Conference on Computer Vision (ECCV) Workshop on Anticipating Human Behavior*, Sep 2018.

Extended abstracts in conferences and workshops:

2018 Haodan Tan, **Jangwon Lee**, and Gege Gao. Human-drone interaction: Drone delivery & services for social events. In *ACM SIGCHI Conference on Designing Interactive Systems (DIS), Works-in-Progress*, Jun 2018. (Poster, 47.0 % acceptance rate).

Jangwon Lee, Haodan Tan, David Crandall, and Selma Šabanović. Forecasting hand gestures for human-drone interaction. In *ACM/IEEE International Conference on Human-Robot Interaction (HRI), Late-Breaking Reports*, Mar 2018.

2017 **Jangwon Lee** and Michael S. Ryoo. Learning robot activities from first-person human videos using convolutional future regression. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops on Deep Learning for Robotic Vision (DLRV)*, Jul 2017. (Spotlight Presentation). **Best paper award!**

Jangwon Lee and Michael S. Ryoo. Learning robot activities from first-person human videos using convolutional future regression. In *IEEE International Conference on Robotics and Automation (ICRA), Late-Breaking Results*, May 2017.

Books chapters:

2007 Sukhan Lee, Seung-Min Baek, and **Jangwon Lee**. Cognitive robotic engine: Behavioral perception architecture for human-robot interaction. In *Human Robot Interaction, Chapter 13. Nilanjan Sarkar (Ed.), ISBN: 978-3-902613-13-4, InTech*, 2007.

Others:

2017 **Jangwon Lee**. A survey of robot learning from demonstrations for human-robot collaboration. In *arXiv preprint:1710.08789*, Oct 2017.

Patents

2013 Sungwook Lee and **Jangwon Lee**. Method and apparatus for photographing an image in a user device, 2013. US Patent 9,596,412.

2012 **Jangwon Lee**. Digital photographing apparatus, method of controlling the same, and recording medium having recorded thereon program for executing the method, 2012. US Patent 8,872,959.

Eunyoung Kim and **Jangwon Lee**. Method and apparatus for capturing moving picture, 2012. US Patent App. 20120176505A1.

2011 **Jangwon Lee**. Apparatus and method for image processing using security function, 2011. US Patent 8,482,633.

Eunyoung Kim and **Jangwon Lee**. Apparatus for processing digital image and thereof method, 2011. Korea Patent Publication Number: 10-2011-0087595.

2010 **Jangwon Lee**. Photographing control method and apparatus using stroboscope, 2010. Korea Patent Publication Number: 10-2010-0077715.

Jangwon Lee. Digital image signal processing method, medium for recording the method, and digital image signal processing apparatus, 2010. US Patent 9,426,359.

Jangwon Lee. Digital camera supporting intelligent self-timer mode and method of controlling the same, 2010. US Patent 8,711,232.

2009 Sukhan Lee, Seung-Min Baek, Jeihun Lee, and **Jangwon Lee**. System and method for real-time object recognition and pose estimation using in-situ monitoring, 2009. US Patent 8,503,760.

Awards and Scholarships

2017 Best Paper Award, CVPR Workshop on Deep Learning for Robotic Vision, 2017

2017 Travel Grant, CVPR Workshop Deep Learning for Robotic Vision, 2017

2013 Fellowship, four years of tuition and stipend, Indiana University, USA

2006 Brain Korea 21 Scholarship, Sungkyunkwan University, Korea

Languages

Korean Native

English Professional working proficiency

Computer skills

Languages C/C++, Python, MATLAB, Perl and Ruby

Operating Systems Linux, Windows, Real-Time OS (VxWorks, uC/OS) and ROS (Robot Operating System)

Software Tools	Unix GNU suit, Trace32, MS Visual Studio, OpenCV, ClearCase, Git and others
Deep Learning Tools	TensorFlow and Caffe
Type Setting	LaTeX, Open Office and Microsoft Office