

Jangwon Lee

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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

- Mar 2020 – Present **Assistant Professor**, *Korea Aerospace University*, Goyang, Korea.
◦ School of Electronics and Information Engineering, College of Engineering
- Sep 2018 – Feb 2020 **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
- Jun 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

- Mar 2020 – Present **Instructor**, *Korea Aerospace University*, Goyang, Korea.
◦ Spring 2020:
- EI3302: *Electronic Circuits Laboratory*
- EI4324: *Microprocessor*
- EI4444: *Introduction to Deep Learning*, New Course at KAU, **Developer**

- 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

Work-in-progress and under review papers:

- 2020 or 2021 **Jangwon Lee**, Gang Qian, and Allison Beach. A sample weighting and score aggregation method for multi-query object matching. In *Not Yet Decided*, 2020 or 2021. (*work-in-progress*).

Jangwon Lee, Bardia Doosti, Yupeng Gu, David Cartledge, David J. Crandall, and Christopher Raphael. Observing pianist accuracy and form with multi-task, multi-stream, and multi-frame ensemble network. In *IEEE Transactions on Multimedia (T-MM)*, 2020 or 2021. (*work-in-progress, impact factor = 5.452*).

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. (*Poster+Oral, 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. (*Oral*).
- 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 Kim, 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 Ambient Intelligence (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.

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 and Patent Filings

- 2019 **Jangwon Lee**, Aaron Lee Roberts, Bret Jutras, Allison Beach, and Donald Madden. Investigation system for finding lost objects, 2019. US Patent App. 62/830,962.
- Jangwon Lee**, Gang Qian, and Allison Beach. Multi-query object matching based on inverse model frequency, 2019. US Patent App. 62/839,031.
- Jangwon Lee**. Activity classification based on multi-sensor input, 2019. US Patent App. 62/837,950.
- 2018 **Jangwon Lee**. Method and apparatus for auto-focusing of an photographing device, 2018. US Patent 9,900,500.
- 2017 Sungwook Lee and **Jangwon Lee**. Method and apparatus for photographing an image in a user device, 2017. US Patent 9,596,412.
- 2016 **Jangwon Lee**. Digital image signal processing method, medium for recording the method, and digital image signal processing apparatus, 2016. US Patent 9,426,359.
- 2014 **Jangwon Lee**. Digital photographing apparatus, method of controlling the same, and recording medium having recorded thereon program for executing the method, 2014. US Patent 8,872,959.

- Jangwon Lee.** Digital camera supporting intelligent self-timer mode and method of controlling the same, 2014. US Patent 8,711,232.
- 2013 **Jangwon Lee.** Apparatus and method for image processing using security function, 2013. US Patent 8,482,633.
- Sukhan Lee, Seung-Min Baek, Jaihun Lee, and **Jangwon Lee.** System and method for real-time object recognition and pose estimation using in-situ monitoring, 2013. US Patent 8,503,760.
- 2012 Eunyoung Kim and **Jangwon Lee.** Method and apparatus for capturing moving picture, 2012. US Patent App. 20120176505A1.
- 2011 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.

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

Service

Journal manuscript review

IEEE Robotics and Automation Letters (RA-L)

IEEE Transactions on Multimedia (T-MM)

ACM Transactions on Human-Robot Interaction (T-HRI)

IEEE Access

Conference and workshop paper review

IEEE Winter Conference on Applications of Computer Vision (WACV 2020)

IEEE International Conference on Intelligent Robots and Systems (IROS 2017, 2019)

ACM/IEEE International Conference on Human-Robot Interaction (HRI 2018)

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	L ^A T _E X, Open Office and Microsoft Office