

Michael S. Ryoo

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Education

The University of Texas at Austin 2004~2008
Ph.D. in Electrical and Computer Engineering, August 2008
M.S. in Electrical and Computer Engineering, August 2006
Korea Advanced Institute of Science and Technology (KAIST) 2000~2004
B.S. in Computer Science, *magna cum laude*, August 2004

Professional Appointments

Visiting Faculty, Google Brain - Robotics, Mountain View, CA (2018.09 ~)
Assistant Professor, Department of Intelligent Systems Engineering (ISE) and
Department of Computer Science (CS), Indiana University, Bloomington, IN (2015.08 ~)
Founder and CTO, EgoVid Inc., Ulsan, South Korea. (2016.08 ~)
Research Affiliate (adjunct), NASA's Jet Propulsion Laboratory (NASA-JPL), Pasadena, CA (2015.08 ~)
Research Technologist, NASA's Jet Propulsion Laboratory (NASA-JPL), Pasadena, CA (2011.10 ~ 2015.07)
Research Scientist (military duty for South Korea), ETRI - a national lab, South Korea (2008.09 ~ 2011.09)

Selected Awards and Honors

- **Best Paper Award**
CVPR Workshop on Deep Learning for Robot Vision (DLRV), 2017 (sponsored by Google/Facebook/ACRV).
Lee & Ryoo, "Learning Robot Activities from First-Person Human Videos Using Convolutional Future Regression"
- **Best Paper Award in Robot Vision**
IEEE International Conference on Robotics and Automation (ICRA), 2016.
Gori, Aggarwal, Matthies & Ryoo, "Multi-Type Activity Recognition in Robot-Centric Scenarios"
- **Best Paper Award Nominee (2nd place in Best Enabling Technology)**
ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2015.
Ryoo *et al.*, "Robot-Centric Activity Prediction from First-Person Videos: What Will They Do to Me?"

Research Funding

- [Ongoing] **(PI)** NSF Information and Intelligent Systems (IIS): Core Programs, "RI: Small: Collaborative: Understanding Human-Object Interactions from First-person and Third-person Videos," 2018.08~2021.08, \$250,000 for 36 months, with Y. J. Lee (UC Davis).
- [Ongoing] **(PI)** NSF Computer and Network Systems (CNS): Core Programs, "CSR: Small: Collaborative: Decentralized Real-Time Machine Learning Systems on Near-User Edge Devices," 2018.08~2021.08, \$250,000 for 36 months, with H. Kim (Gatech).
- [Ongoing] **(PI)** IITP grant by South Korean Ministry of Science and ICT, "Semantic Action Policy Learning and State Inference for Mobile Robot Intelligence," 2018.01~2022.12, ~\$450,000 for 60 months, with Electronics and Telecommunications Research Institute (ETRI).
- [Ongoing] **(PI)** ARL's Robotics Collaborative Technology Alliance (RCTA), Task P5-5 "Human Activity Recognition with Context Learning" (2016) and T2C1S2D "Predicting Human Intent and Activity Possibilities" (2017-2018), 2016.01~ 2018.12, \$220,000 for 36 months.

- [Past] **(PI)** ICT R&D program of South Korean Ministry of Science, “Recognizing Objects and Events from Videos for XD-Media Special Effects,” 2016.01~2017.12, ~\$260,000 for 24 months, with Electronics and Telecommunications Research Institute (ETRI).
- [Past] **(co-PI)** DARPA’s Simplifying Complexity in Scientific Discovery (SIMPLEX), Task “Action Recognition and Learning from a First-Person View,” 2015.03~2016.03, \$90,000 for 12 months, with S.-C. Zhu (UCLA).
- [Past] **(PI)** NVIDIA hardware donation program, 2015, 2016.
- [Past] **(co-PI, subtask-PI)** ARL’s Robotics Collaborative Technology Alliance (RCTA), Task P5-2 “Understanding of Human Interactions and Reactions,” Phase1: 2012.04~2014.12, “Semantic Understanding of Human Activities,” Phase2: 2015.01~ 2015.12, ~\$500,000, with L. Matthies (JPL).
- [Past] **(PI)** NASA-JPL B&P Funding, “Group Activity Recognition from Aerial Videos,” etc., 2013~2014, \$17,000.
- [Past] **(PI)** Otis Elevator Korea, “Detection of Abnormal Activities in Elevators Using Cameras,” 2011, \$60,000.

Talks

Tutorials

- *Human Activity Recognition*
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Salt Lake City, UT, June 2018.
(Speakers: M. S. Ryoo, Greg Mori, K. Kitani)
- *Emerging Topics in Human Activity Recognition*
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Columbus, OH, June 2014.
(Speakers: M. S. Ryoo, Ivan Laptev, Greg Mori, Sangmin Oh)
- *Activity Recognition for Visual Surveillance*
IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS), Beijing, China, Sep. 2012.
(Speakers: M. S. Ryoo, Anthony Hoogs, Arslan Basharat, Sangmin Oh)
- *Frontiers of Human Activity Analysis*
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Colorado Springs, CO, June 2011.
(Speakers: J. K. Aggarwal, M. S. Ryoo, K. Kitani)
- *Understanding Videos – Human Activity Analysis*
11th Pacific Rim International Conference on Artificial Intelligent (PRICAI), Daegu, Korea, August 2010.
(Speakers: M. S. Ryoo, K. Kitani)

Selected keynote talks

- *Robots Anticipating Future Scene*, ECCV Workshop on Anticipating Human Behavior, Munich, Germany, September 2018.
- *Human Activity Recognition from Anonymized Videos*, Joint BMTT-PETS Workshop on Tracking and Surveillance (PETS), in conjunction with CVPR, Honolulu, HI, July 2017.
- *Activity Recognition from Persons’ Viewpoint and Robots’ Viewpoint*, International Workshop on Human Activity Analysis with Highly Diverse Cameras, in conjunction with WACV, Santa Rosa, CA, March 2017.
- *First-Person Activity Recognition: What Are They Doing and What Will They Do to Me?* The 4th International Workshop on Pervasive Eye Tracking and Mobile Eye-Based Interaction (PETMEI), in conjunction with UbiComp, Seattle, WA, September 2014.
- *First-Person Activity Recognition: Understanding Human Interactions from Egocentric Videos*, ICCV Workshop on Understanding Human Activities: Context and Interaction, Sydney, Australia, December 2013.

Selected invited talks and department seminars

- *Deep Learning with Human/Robot Activity Videos*
AI and Machine Learning Seminar (ECE), Purdue University, West Lafayette, IN, September 2018.
- *Robot Perception and Action Using Convolutional Human Activity Models*
Department Seminar (CS), University of North Carolina, Chapel Hill, NC, February 2018.

- *Human Activity Recognition from a Robot's Viewpoint*
Invited Talk, ARO Workshop on Multimodal Data Analysis for Human Activity Detection and Understanding, Marina del Rey, CA, August 2016.
- *Human Activity Recognition from a Robot's Viewpoint*
VASC Seminar (RI), Carnegie Mellon University, Pittsburgh, PA, February 2016.
- *First-Person Activity Prediction*
Department Seminar (CS), University of Central Florida, Orlando, FL, February 2014.
- *First-Person Computer Vision – Understanding Egocentric Video Observation*
Department Seminar (CSE), Seoul National University, Seoul, Korea, May 2013.
- *Human Activity Recognition for Real-World Scenarios: Prediction and Cross-Domain Composition*
Institute Seminar (IRIS), University of Southern California, Los Angeles, CA, March 2012.
- *Computer Vision for Videos – From Objects to Events and Activities*
Department Seminar (CS), KAIST, Daejeon, Korea, May 2011.
- *Stochastic Representation and Recognition of High-level Group Activities*
Invited Talk, Intl. Workshop on Stochastic Image Grammars (SIG) with CVPR, Miami, FL, June 2009.

Media coverage

- *Decoding the Language of Human Movements*
Interview, Communications of the ACM, Vol. 57, Issue 12, pages 12-14, December 2014.

Publications

Refereed conference publications

- [1] Z. Ren, Y. J. Lee, and M. S. Ryoo, “Learning to Anonymize Faces for Privacy Preserving Action Detection,” *European Conference on Computer Vision (ECCV)*, Munich, Germany, September 2018. [\[acceptance rate: 31.8%\]](#)
- [2] M. Xu, C. Fan, Y. Wang, M. S. Ryoo, and D. J. Crandall, “Joint Person Segmentation and Identification in Synchronized First- and Third-person Videos,” *European Conference on Computer Vision (ECCV)*, Munich, Germany, September 2018. [\[acceptance rate: 31.8%\]](#)
- [3] C. Fan, J. Lee, and M. S. Ryoo, “Forecasting Hands and Objects in Future Frames”, *European Conference on Computer Vision Workshops (ECCVW)*, Munich, Germany, September 2018.
- [4] A. Piergiovanni and M. S. Ryoo, “Learning Latent Super-Events to Detect Multiple Activities in Videos,” *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, UT, June 2018. [\[acceptance rate: 29.6%\]](#)
- [5] A. Piergiovanni and M. S. Ryoo, “Fine-grained Activity Recognition in Baseball Videos,” *IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, Salt Lake City, UT, June 2018.
- [6] M. S. Ryoo, K. Kim, and H. J. Yang, “Extreme Low Resolution Activity Recognition with Multi-Siamese Embedding Learning,” *AAAI Conference on Artificial Intelligence (AAAI)*, New Orleans, LA, February 2018. [\[acceptance rate: 24.6%\]](#)
- [7] J. Lee and M. S. Ryoo, “Learning Robot Activities from First-Person Human Videos Using Convolutional Future Regression,” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada, September 2017.
- [8] I. Gori, J. K. Aggarwal, L. Matthies, and M. S. Ryoo, “Multi-Type Activity Recognition from a Robot's Viewpoint,” *the 26th International Joint Conference on Artificial Intelligence (IJCAI)*, Melbourne, Australia, August 2017 (invited). [\[acceptance rate: 26%\]](#)
- [9] C. Fan, J. Lee, M. Xu, K. K. Singh, Y. J. Lee, D. J. Crandall, and M. S. Ryoo, “Identifying First-person Camera Wearers in Third-person Videos,” *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Honolulu, HI, July 2017. [\[acceptance rate: 29.2%\]](#)

- [10] T. Shu, X. Gao, M. S. Ryoo, and S.-C. Zhu, “Learning Social Affordance Grammar from Videos: Transferring Human Interactions to Human-Robot Interactions,” *IEEE International Conference on Robotics and Automation (ICRA)*, Singapore, May 2017.
- [11] M. S. Ryoo, B. Rothrock, C. Fleming, and H. J. Yang, “Privacy-Preserving Human Activity Recognition from Extreme Low Resolution,” *AAAI Conference on Artificial Intelligence (AAAI)*, San Francisco, CA, February 2017. [*acceptance rate: 24.6%*]
- [12] A. Piergiovanni¹, C. Fan¹, and M. S. Ryoo, “Learning Latent Sub-events in Activity Videos Using Temporal Attention Filters,” *AAAI Conference on Artificial Intelligence (AAAI)*, San Francisco, CA, February 2017 (¹equal contribution). [*acceptance rate: 24.6%*]
- [13] T. Shu, M. S. Ryoo, and S.-C. Zhu, “Learning Social Affordance for Human-Robot Interaction,” *the 25th International Joint Conference on Artificial Intelligence (IJCAI)*, New York City, NY, July 2016. [*acceptance rate: 24%*]
- [14] M. S. Ryoo, B. Rothrock, and L. Matthies, “Pooled Motion Features for First-Person Videos,” *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Boston, MA, June 2015. [*acceptance rate: 28%*]
- [15] M. S. Ryoo, T. Fuchs, L. Xia, J. K. Aggarwal, and L. Matthies, “Robot-Centric Activity Prediction from First-Person Videos: What Will They Do to Me?,” *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Portland, OR, March 2015. [*acceptance rate: 25.4%*]
Best Paper Award Nominee
- [16] L. Xia, I. Gori, J. K. Aggarwal, and M. S. Ryoo, “Robot-Centric Activity Recognition from First-Person RGB-D Videos,” *IEEE Winter Conference on Applications of Computer Vision (WACV)*, HI, January 2015. [*1st-round acceptance rate: 30.0%*]
- [17] Y. Iwashita, A. Takamine, R. Kurazume, and M. S. Ryoo, “First-Person Animal Activity Recognition from Egocentric Videos,” *International Conference on Pattern Recognition (ICPR)*, Stockholm, Sweden, August 2014.
- [18] Y. Iwashita¹, M. S. Ryoo¹, T. J. Fuchs, and C. Padgett, “Recognizing Humans in Motion: Trajectory-based Aerial Video Analysis,” *British Machine Vision Conference (BMVC)*, Bristol, U.K., September 2013 (¹equal contribution). [*acceptance rate: 29.8%*]
- [19] M. S. Ryoo and L. Matthies, “First-Person Activity Recognition: What Are They Doing to Me?,” *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Portland, OR, June 2013. [*acceptance rate: 26.2%*]
- [20] J. H. Joung, M. S. Ryoo, S. Choi, and S. R. Kim, “Reliable Object Detection and Segmentation Using Inpainting,” *IEEE/RSJ International Intelligent Robots and Systems (IROS)*, Algarve, Portugal, October 2012.
- [21] M. S. Ryoo, “Human Activity Prediction: Early Recognition of Ongoing Activities from Streaming Videos,” *International Conference on Computer Vision (ICCV)*, Barcelona, Spain, November 2011. [*acceptance rate: 23.7%*]
- [22] M. S. Ryoo, “Interactive Learning of Human Activities Using Active Video Composition,” *International Workshop on Stochastic Image Grammars (SIG)*, in *Proceedings of International Conference on Computer Vision Workshops (ICCVW)*, Barcelona, Spain, November 2011.
- [23] J. H. Joung, M. S. Ryoo, S. Choi, W. Yu, and H. Chae, “Background-aware Pedestrian/Vehicle Detection System for Driving Environments,” *IEEE Conference on Intelligent Transportation Systems (ITSC)*, Washington, D.C., October 2011.
- [24] M. S. Ryoo and W. Yu, “One Video is Sufficient? Human Activity Recognition Using Active Video Composition,” *IEEE Workshop on Applications of Computer Vision (WACV)*, Kona, Hawaii, January 2011.
- [25] M. S. Ryoo, J. Lee, J. H. Joung, S. Choi, and W. Yu, “Personal Driving Diary: Constructing a Video Archive of Everyday Driving Events,” *IEEE Workshop on Applications of Computer Vision (WACV)*, Kona, Hawaii, January 2011.

- [26] M. S. Ryoo, J. H. Joung, S. Choi, and W. Yu, "Incremental Learning of Novel Activity Categories from Videos," *the 16th International Conference on Virtual Systems and Multimedia (VSMM)*, Seoul, Korea, October 2010 (invited).
- [27] M. S. Ryoo, C.-C. Chen, J. K. Aggarwal, and A. Roy-Chowdhury, "An Overview of Contest on Semantic Description of Human Activities (SDHA) 2010," *International Conference on Pattern Recognition (ICPR) Contests*, Istanbul, Turkey, August 2010. [*acceptance rate: 38%*]
- [28] M. S. Ryoo¹, J. T. Lee¹, and J. K. Aggarwal, "Video Scene Analysis of Interactions between Humans and Vehicles Using Event Context," *ACM International Conference on Image and Video Retrieval (CIVR)*, Xian, China, July 2010 (invited, ¹equal contribution). [*oral acceptance rate: 10.5%*]
- [29] J. T. Lee, M. S. Ryoo, and J. K. Aggarwal, "View Independent Recognition of Human-Vehicle Interactions Using 3-D Models," *IEEE Workshop on Motion and Video Computing (WACV/WMVC)*, Snowbird, UT, December 2009.
- [30] M. S. Ryoo and J. K. Aggarwal, "Spatio-Temporal Relationship Match: Video Structure Comparison for Recognition of Complex Human Activities," *International Conference on Computer Vision (ICCV)*, Kyoto, Japan, October 2009. [*acceptance rate: 23.2%*]
- [31] M. S. Ryoo and J. K. Aggarwal, "Human Activities: Handling Uncertainties Using Fuzzy Time Intervals," *International Conference on Pattern Recognition (ICPR)*, Tampa, FL, December 2008.
- [32] M. S. Ryoo and J. K. Aggarwal, "Observe-and-Explain: A New Approach for Multiple Hypotheses Tracking of Humans and Objects," *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Anchorage, AK, June 2008. [*acceptance rate: 31.6%*]
- [33] M. S. Ryoo and J. K. Aggarwal, "Recognition of High-level Group Activities Based on Activities of Individual Members," *IEEE Workshop on Motion and Video Computing (WACV/WMVC)*, Copper Mountain, CO, January 2008. [*oral acceptance rate: 33.3%*]
- [34] J. T. Lee, M. S. Ryoo, M. Riley, and J. K. Aggarwal, "Real-time Detection of Illegally Parked Vehicles using 1-D Transformation," *IEEE International Conference on Advanced Video and Signal based Surveillance (AVSS)*, London, UK, September 2007.
- [35] M. Bhargava, C.-C. Chen, M. S. Ryoo, and J. K. Aggarwal, "Detection of Abandoned Objects in Crowded Environments," *IEEE International Conference on Advanced Video and Signal based Surveillance (AVSS)*, London, UK, September 2007.
- [36] M. S. Ryoo and J. K. Aggarwal, "Hierarchical Recognition of Human Activities Interacting with Objects," *International Workshop on Semantic Learning Applications in Multimedia (SLAM)*, in *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Minneapolis, MN, June 2007.
- [37] M. S. Ryoo and J. K. Aggarwal, "Robust Human-Computer Interaction System Guiding a User by Providing Feedback," *the 20th International Joint Conference on Artificial Intelligence (IJCAI)*, Hyderabad, India, January 2007. [*acceptance rate: 34.7%*]
- [38] M. S. Ryoo and J. K. Aggarwal, "Semantic Understanding of Continued and Recursive Human Activities," *International Conference on Pattern Recognition (ICPR)*, Vol. 1, pp. 379~382, Hong Kong, August 2006.
- [39] M. S. Ryoo and J. K. Aggarwal, "Recognition of Composite Human Activities through Context-Free Grammar based Representation," *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Vol. 2, pp. 1709-1719, New York City, NY, June 2006. [*acceptance rate: 28.1%*]
- [40] H. S. Yang, Y. Seo, M. S. Ryoo, and H. Jung, "Affective Communication System with Emotional Memories for Multimodal Interaction with Humanoids," *the 11th International Conference on Virtual Systems and Multimedia (VSMM)*, October 2005.
- [41] D. Pardoe, M. Ryoo, and R. Miiikkulainen, "Evolving Neural Network Ensembles for Control Problems," *Genetic and Evolutionary Computation Conference (GECCO)*, Washington, D.C., June 2005.

- [42] M. S. Ryoo, Y. Seo, H. Jung, and H. S. Yang, “Affective Dialogue Communication System with Emotional Memories for Humanoid Robots,” *International Conference on Affective Computing and Intelligent Interaction* (ACII), LNCS 3784, pp. 819-827, October 2005.
- [43] H. Jung, Y. Seo, M. S. Ryoo, and H. S. Yang, “Affective Communication System with Multimodality for Humanoid Robot AMI,” *IEEE-RAS/RSJ International Conference on Humanoid Robots* (Humanoids), Los Angeles, CA, November 2004.

Journal publications

- [44] R. Hadidi*, J. Cao, M. Woodward, M. S. Ryoo, and H. Kim, “Distributed Perception by Collaborative Robots,” *IEEE Robotics and Automation Letters* (RA-L), 2018. [*IROS 2018 presentation*]
- [45] M. S. Ryoo* and L. Matthies, “First-Person Activity Recognition: Feature, Temporal Structure, and Prediction,” *International Journal of Computer Vision* (IJCV), 119(3):307–328, 2016. [*impact factor: 11.541*]
- [46] I. Gori, J. K. Aggarwal, L. Matthies, and M. S. Ryoo*, “Multi-Type Activity Recognition in Robot-Centric Scenarios,” *IEEE Robotics and Automation Letters* (RA-L), 1(1):593-600, 2016. [*ICRA 2016 presentation*]
ICRA 2016 Best Paper Award in Robot Vision
- [47] M. S. Ryoo*, S. Choi¹, J. H. Joung¹, J.-Y. Lee¹, and W. Yu, “Personal Driving Diary: Automated Recognition of Driving Events from First-Person Videos,” *Computer Vision and Image Understanding* (CVIU), 117(10): 1299-1312, October 2013 (¹equal contribution). [*impact factor: 2.391*]
- [48] J. K. Aggarwal* and M. S. Ryoo, “Toward a Unified Framework of Motion Understanding,” *Image and Vision Computing* (ImaVis), 30(8):465-466, August 2012. [*impact factor: 2.159*]
- [49] M. S. Ryoo* and J. K. Aggarwal, “Stochastic Representation and Recognition of High-level Group Activities,” *International Journal of Computer Vision* (IJCV), 93(2):183-200, June 2011. [*impact factor: 11.541*]
- [50] J. K. Aggarwal and M. S. Ryoo*, “Human Activity Analysis: A Review,” *ACM Computing Surveys* (CSUR), 43(3), April 2011. [*impact factor: 5.550*]
- [51] M. S. Ryoo*, K. Grauman, and J. K. Aggarwal, “A Task-Driven Intelligent Workspace System to Provide Guidance Feedback,” *Computer Vision and Image Understanding* (CVIU), 114(5):520-534, May 2010. [*impact factor: 2.391*]
- [52] J. T. Lee*, M. S. Ryoo, M. Riley, and J. K. Aggarwal, “Real-time Illegal Parking Detection in Outdoor Environments Using 1-D Transformation,” *IEEE Transactions on Circuits and Systems for Video Technology* (T-CSVT), 19(7):1014-1024, July 2009. [*impact factor: 3.558*]
- [53] M. Bhargava, C.-C. Chen*, M. S. Ryoo, and J. K. Aggarwal, “Detection of Object Abandonment Using Temporal Logic,” *Machine Vision and Applications* (MVA), 20(5):271-281, June 2009. [*impact factor: 1.306*]
- [54] M. S. Ryoo* and J. K. Aggarwal, “Semantic Representation and Recognition of Continued and Recursive Human Activities,” *International Journal of Computer Vision* (IJCV), 82(1), 1-24, April 2009. [*impact factor: 11.541*]

Theses

- “Semantic Representation and Recognition of Human Activities,” Ph.D. Dissertation, the University of Texas at Austin, August 2008.
Outstanding Dissertation Award Nominee
- “Semantic Understanding of Continued and Recursive Activities using Context-Free Grammar,” M.S. Thesis, the University of Texas at Austin, August 2006.
Outstanding Thesis Award Nominee

* Corresponding author

- “Affective Dialogue Communication System with Emotional Memories for Humanoid Robots,” B.S. Thesis, Korea Advanced Institute of Science and Technology (KAIST), August 2004.

Other Awards and Honors

- **Best Poster Award**,
The 10th Joint Workshop on Machine Perception and Robotics (MPR), Beijing, Oct. 2014.
Iwashita, Takamine, Kurazume & Ryoo, “First-Person Animal Activity Recognition from Egocentric Videos”
- **Best Video Award** (sponsored by IEEE RO-MAN),
The 6th Korea Robotics Society Annual Conference (KRoC), 2011.
Ryoo *et al.*, “Personal Driving Diary: Constructing a Video Archive of Everyday Driving Events”
- **Outstanding Dissertation/Thesis Award Nominee**, 2007 and 2009
The only candidate nominated by the Department of ECE, the University of Texas at Austin.
- **UT Engineering Doctoral Fellowship**, 2006.9 ~ 2008.8
Full tuition and \$10,000 annual supplemental stipend to support research (3 years granted).
Supported by the College of Engineering, the University of Texas at Austin.
- **David Bruton Jr. Graduate School Fellowship**, 2006
- **Korea Foundation for Advanced Studies Fellowship** (supported by SK), 2004.8 ~ 2008.8
Full scholarship awarded for tuition and living expenses, \$50,000 annually, for Ph.D. study (5 years granted).
One of the five recipients selected from nationwide (South Korea) in Computer Science.
- **Professional Development Award, the University of Texas at Austin**, 2006 and 2007
- **KAIST Undergraduate Scholarship**, 2000.3 ~ 2004.1
Full scholarship awarded for tuition and living expenses.

Professional Activities

Organizer/Chair

- Local organizing chair, ACM/IEEE International Conference on Human-Robot Interaction (HRI) 2018
- Lead organizer, the 4th Workshop on Egocentric (First-Person) Vision, with CVPR 2016
- Organizer, the 3rd Workshop on Egocentric (First-Person) Vision, with CVPR 2014
- Lead organizer, ICPR Contest on Semantic Description of Human Activities (SDHA), with ICPR 2010

Program committee member

- Area chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019
- Area chair, IAPR International Conference on Machine Vision Applications (MVA), 2017
- PC member, AAAI Conference on Artificial Intelligence (AAAI), 2017
- PC member, International Joint Conference on Artificial Intelligence (IJCAI) 2016
- Area chair, IEEE Winter Conference on Applications of Computer Vision (WACV), 2016
- PC member, AAAI Conference on Artificial Intelligence (AAAI), 2016
- PC member, Workshop on Computational Models of Social Interactions and Behavior, with CVPR 2014
- PC member, Vision Meets Cognition Workshop, with CVPR 2014
- PC member, Workshop on Action Recognition with Large Number of Classes, with ICCV 2013
- PC member, Workshop on Wearable Computer Vision Systems, with ICCV 2013
- PC member, International Joint Conference on Artificial Intelligence (IJCAI) 2011
- PC member, International Workshop on Stochastic Image Grammars (SIG), with ICCV 2011
- PC member, International Workshop on Human Behavior Understanding (HBU), 2010, 2011, 2014
- PC member, Workshop on Use of Context in Video Processing (UCVP), 2009, 2010, 2011

Journal reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), International Journal of Computer Vision (IJCV), Computer Vision and Image Understanding (CVIU), IEEE Transactions on Image Processing (T-IP), IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT), Image and Vision Computing Journal (ImaVis), IEEE Transactions on Systems, Man and Cybernetics (SMC), Pattern Recognition, etc.

Advising

Academic advisor

- AJ Piergiovanni, Department of CS, Indiana University (Ph.D. student)
- Alan Wu, Department of ISE, Indiana University (Ph.D. student)
- Ziwei Zhao, Department of CS, Indiana University (Ph.D. student)
- Maria Soledad Elli, Department of CS, Indiana University (M.S., 2017)

Ph.D. and M.S. defense/proposal committee member

- Lijiang Guo, Department of ISE, Indiana University (Ph.D. 2020 expected)
- Eman Hassan, Department of CS, Indiana University (Ph.D. 2019 expected)
- Chenyou Fan, Department of CS, Indiana University (Ph.D. 2018 expected)
- Sven Bambach, Department of CS, Indiana University (Ph.D. 2016)
- Stefan Lee, Department of CS, Indiana University (Ph.D. 2016)
- Josh Harguess, Department of ECE, the University of Texas at Austin (Ph.D. 2011)
- Birgi Tamersoy, Department of ECE, the University of Texas at Austin (M.S. 2009)

Teaching Experience

- **CS/INFO B490/I400 Intro to Computer Vision, Indiana University Bloomington:** Spring 2016/2017/2018, Instructor: M. S. Ryoo
Scope: an introductory Computer Vision course for undergraduate students.
- **CS/INFO B659/I590 Vision for Intelligent Robotics, Indiana University Bloomington:** Fall 2015/2016/2017, Instructor: M. S. Ryoo
Scope: a graduate seminar course on state-of-the-art Computer Vision algorithms and their applications to Robotics.
- **ME/CS 132a Introduction to Vision-based Robot Navigation, California Institute of Technology:** Winter 2015, Instructors: L. Matthies, R. Brockers, B. Rothrock, T. Fuchs, S. Weiss, and M. S. Ryoo
Scope: current topics in robotics research in the area of autonomous navigation and vision, including perception.
- **EE380L-7 Pattern Recognition, the University of Texas at Austin:** Spring 2008, Instructor: J. K. Aggarwal (M. S. Ryoo provided four guest lectures on statistical computer vision methods)
Scope: statistical approaches including Bayesian classifiers, Bayesian networks, and hidden Markov models.
- **EE380L-8 Computer Vision Systems, the University of Texas at Austin:** Spring 2007, Instructor: J. K. Aggarwal (M. S. Ryoo provided five guest lectures on statistical computer vision methods)
Scope: computer vision applications of Bayesian classifiers, Bayesian networks, and hidden Markov models.