

Gunhee Kim, Ph.D.

Associate professor, Seoul National University and CEO/Founder at rippleAI

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Research Interests

Computer Vision, Natural Language Processing and Machine Learning

Education

- Ph.D. in Computer Science, **Carnegie Mellon University** Sept 2009 – Sept 2013
Thesis: Reconstruction and Applications of Collective Storylines from Web Photo Collections
Advisor: Prof. Eric P. Xing
Committee: Prof. Takeo Kanade, Prof. Christos Faloutsos, Prof. Antonio Torralba (MIT)
- M.S. in Robotics, **Carnegie Mellon University** Aug 2006 – May 2008
Thesis: Link Analysis Techniques for Object Modeling and Recognition
Advisor: Prof. Martial Hebert *Committee:* Prof. Christos Faloutsos
- B.S. and M.S. in Mechanical Engineering, **KAIST** (Korea Advanced Institute of Science and Technology)

Research Appointments

- Associate Professor** Mar 2019 – Current
Seoul National University, Department of Computer Science and Engineering, Seoul, Korea
- CEO and Founder** Mar 2018 – Current
rippleAI, Seoul, Korea
- Assistant Professor** Feb 2015 – Mar 2019
Seoul National University, Department of Computer Science and Engineering, Seoul, Korea
- Postdoctoral Researcher** Sept 2013 – Jan 2015
Disney Research Pittsburgh, PA, USA
- Graduate Research Assistant** Aug 2009 – Sept 2013
Computer Science Department, Carnegie Mellon University, Pittsburgh, PA, USA
- Visiting Student** Jan 2011 – Apr 2011
Computer Science Department, Stanford University, Stanford, CA, USA (with Prof. Fei-Fei Li).
- Visiting Student** Feb 2009 – June 2009
Computer Science and Artificial Intelligence Laboratory, MIT, Cambridge, MA, USA
(with Prof. Antonio Torralba)
- Research Intern** Sept 2008 – Jan 2009
Honda Research Institute, Cambridge, MA, USA (with Dr. Bernd Heisele)
- Intel/CMU Summer Fellow** May 2008 – Aug 2008
Intel Research, Pittsburgh, PA, USA (with Dr. Rahul Sukthankar and Dr. Shimin Chen)

- Part-time Programmer** June 2008 – August 2008
BimagicLab, Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA
(with Prof. Jelena Kovacevic)
- Graduate Research Assistant** Aug 2006 – May 2008
The Robotics Institute, Carnegie Mellon University, Pittsburgh, PA, USA (with Prof. Martial Hebert)
- Visiting Researcher** Apr 2005 – July 2006
The Robotics Institute, Carnegie Mellon University, Pittsburgh, PA, USA (with Prof. Martial Hebert)
- Research Scientist** Aug 2001 – July 2006
Intelligent Robotics Research Center, Korea Institute of Science and Technology (KIST) , Seoul, Korea
- Graduate Research Assistant** Mar 1999 – July 2001
Robotics and Simulation Lab, KAIST, Taejon, Korea

Awards and Fellowships

Awards

- Shinyang Engineering Academy Award 2020
- MSRA Collaborative Research Grant Awards 2019/2018.
- 2015 Naver New faculty award
- 2014 SIGKDD Doctoral Dissertation Award

Paper Awards

- Best Full Paper Award Runner-up at 25th ACM Symposium on Virtual Reality Software and Technology (VRST 2019) (11/14/2019).
- Best paper award at IEEE Workshop on Large Scale Visual Commerce (LSVisCom) in conjunction with ICCV 2013 (12/7/2013).
- Travel awards from KDD 2012 and WSDM 2013
- Outstanding paper award at International Conference on Control, Automation and System (ICCAS2003) (4 out of 540) (10/24/2003).

Challenge Winners

- Winner of 2nd DramaQA Challenge 2020@ECCV2020.
- Winner of Sarcasm Detection challenge of FigLang2020@ACL2020.
- Winner of WSOL track and runner-up of WSSS track of LID 2020 challenge@CVPR2020.
- Winner of LSMDC 2019@ICCV2019, two tacks of LSMDC 2017@ICCV2017 and two tacks of LSMDC 2016@ECCV2016 Challenge.
- Winner of Fashion IQ 2020@CVPR2020 and runner-up of Fashion IQ 2019@ICCV2019 Challenge.
- Runner-up of MovieQA 2017 Challenge.

Publication

Google Scholar profile: <https://scholar.google.co.kr/citations?user=CiSd0V0AAAAJ>

Peer-Reviewed Conferences (Selected)

1. Yookoon Park, Sangho Lee, **Gunhee Kim** and David Blei. *Unsupervised Representation Learning via Neural Activation Coding*. International Conference on Machine Learning (**ICML 2021**). (**Long**) Online 2021. (Acceptance = 166/5513 ~ 3.0%)
2. Jaekyeom Kim, Seohong Park and **Gunhee Kim**. *Unsupervised Skill Discovery with Bottleneck Option Learning*. International Conference on Machine Learning (**ICML 2021**). Online 2021. (Acceptance = 1184/5513 ~ 21.5%)
3. Wonhee Lee, Sungeun Kim and **Gunhee Kim**, *Contextual Label Transformation for Scene Graph Generation*, IEEE Conference on Computer Vision and Pattern Recognition (**ICIP 2021**), Anchorage, Alaska, 2021. (Acceptance = 791/1722 ~ 45.9%)
4. Byeongchang Kim*, Hyunwoo Kim*, Seokhee Hong and **Gunhee Kim**, *How Robust are Fact Checking Systems on Colloquial Claims?*, IEEE Conference on Computer Vision and Pattern Recognition (**NAACL-HLT 2021**), Online 2021.
5. Youngjae Yu*, Jiwan Chung*, Jongseok Kim, Heeseung Yun and **Gunhee Kim**, *Transitional Adaptation of Pretrained Models for Visual Storytelling*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2021**), Online 2021. (Acceptance = 1663/7120 ~ 23.4%)
6. Minui Hong*, Jinwoo Choi* and **Gunhee Kim**, *StyleMix: Separating Content and Style for Enhanced Data Augmentation*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2021**), Online 2021. (Acceptance = 1663/7120 ~ 23.4%)
7. Myeongjang Pyeon, Jihwan Moon, Taeyoung Hahn and **Gunhee Kim**, *SEDONA: Search for Decoupled Neural Networks toward Greedy Block-wise Learning*, International Conference on Learning Representations (**ICLR 2021**), Online 2021. (Acceptance = 860/2997 ~ 28.7%)
8. Jaekyeom Kim, Minjung Kim, Dongyeon Woo and **Gunhee Kim**, *Drop-Bottleneck: Learning Discrete Compressed Representation for Noise-Robust Exploration*, International Conference on Learning Representations (**ICLR 2021**), Online 2021. (Acceptance = 860/2997 ~ 28.7%)
9. Sangho Lee, Youngjae Yu, **Gunhee Kim**, Thomas Breuel, Jan Kautz and Yale Song, *Parameter Efficient Multimodal Transformers for Video Representation Learning*, International Conference on Learning Representations (**ICLR 2021**), Online 2021. (Acceptance = 860/2997 ~ 28.7%)
10. Youngjae Yu*, Sangho Lee*, **Gunhee Kim**, and Yale Song, *Self-Supervised Learning of Compressed Video Representations*, International Conference on Learning Representations (**ICLR 2021**), Online 2021. (Acceptance = 860/2997 ~ 28.7%)
11. Jongseok Kim, Hoeseong Kim, Youngjae Yu and **Gunhee Kim**, *Dual Compositional Learning in Interactive Image Retrieval*, Thirty-Fifth AAAI Conference on Artificial Intelligence (**AAAI 2021**), Online, 2021. (Acceptance = 1692/7911 ~ 21.4%)
12. Insu Jeon, Wonkwang Lee, Myeongjang Pyeon and **Gunhee Kim**, *IB-GAN: Disentangled Representation Learning with Information Bottleneck GAN*, Thirty-Fifth AAAI Conference on Artificial Intelligence (**AAAI 2021**), Online, 2021. (Acceptance = 1692/7911 ~ 21.4%)
13. Hyunwoo Kim, Byeongchang Kim and **Gunhee Kim**, *Will I Sound Like Me? Improving Persona Consistency in Dialogues through Pragmatic Self-Consciousness*, The 2020 Conference on Empirical Methods in Natural Language Processing (**EMNLP 2020**), Online, 2020. (Acceptance = 754/3677 ~ 24.6%)
14. Jaekyeom Kim, Hyungseok Harry Kim and **Gunhee Kim**, *Model-Agnostic Boundary-Adversarial Sampling for Test-Time Generalization in Few-Shot learning*, European Conference on Computer Vision (**ECCV 2020**), Online, 2020. (**Oral**) (Acceptance = 104/5025 ~ 2.06%)
15. Youngjae Yu, Jongseok Kim, Heeseung Yun, Jiwan Chung and **Gunhee Kim**, *Character Grounding and Re-Identification in Story of Videos and Text Descriptions*, European Conference on Computer Vision (**ECCV 2020**), Online, 2020. (**Spotlight**) (Acceptance = 265/5025 ~ 5.27%)
16. Junhyug Noh*, Wonho Bae* and **Gunhee Kim**, *Rethinking Class Activation Mapping for Weakly*

- Supervised Object Localization*, European Conference on Computer Vision (**ECCV 2020**), Online, 2020. (Acceptance = 1361/5025 ~ 27.08%)
17. Chris Dongjoo Kim, Jinseo Jeong and **Gunhee Kim**, *Imbalanced Continual Learning with Partitioning Reservoir Sampling*, European Conference on Computer Vision (**ECCV 2020**), Online, 2020. (Acceptance = 1361/5025 ~ 27.08%)
 18. Byeongchang Kim, Jaewoo Ahn and **Gunhee Kim**, *Sequential Latent Knowledge Selection for Knowledge-Grounded Dialogue*, International Conference on Learning Representations (**ICLR 2020**), Addis Ababa, Ethiopia, 2020. (**Spotlight**) (Acceptance = 156/2594 ~ 6.0%)
 19. Soochan Lee, Junsoo Ha, Dongsu Zhang and **Gunhee Kim**, *A Neural Dirichlet Process Mixture Model for Task-Free Continual Learning*, International Conference on Learning Representations (**ICLR 2020**), Addis Ababa, Ethiopia, 2020. (Acceptance = 687/2594 ~ 26.5%)
 20. Taeyoung Hahn, Myeongjang Pyeon and **Gunhee Kim**, *Self-Routing Capsule Networks*, Conference on Neural Information Processing Systems (**NeurIPS 2019**), Vancouver, Canada, 2019. (Acceptance = 1428/6743 ~ 21.2%)
 21. Hyouk Jang, Juheon Choi and **Gunhee Kim**, *POL360 : A Universal Mobile VR Motion Controller using Polarized Light*, ACM Symposium on Virtual Reality Software and Technology (**VRST 2019**), Sydney, Australia, 2019. (Acceptance = 40/187 ~ 21.4%)
 22. Junhyug Noh, Wonho Bae, Wonhee Lee, Jinhwan Seo and **Gunhee Kim**, *Better to Follow, Follow to be Better: Towards Precise Supervision of Feature Super-Resolution for Small Object Detection*, International Conference on Computer Vision (**ICCV 2019**), Seoul, Korea, 2019. (Acceptance = 1077/4303 ~ 25.0%)
 23. Yookoon Park, Chris Dongjoo Kim and **Gunhee Kim**, *Variational Laplace Autoencoders*, International Conference on Machine Learning (**ICML 2019**), Long Beach, California, 2019. (Acceptance = 773/3424 ~ 22.6%)
 24. Youngjin Kim, Hyunwoo Kim*, Wontae Nam*, Ji-Hoon Kim and **Gunhee Kim**, *Curiosity-Bottleneck: Exploration By Distilling Task-Specific Novelty*, International Conference on Machine Learning (**ICML 2019**), Long Beach, California, 2019. (Acceptance = 773/3424 ~ 22.6%)
 25. Wonhee Lee, Joonil Na and **Gunhee Kim**, *Multi-task Self-Supervised Object Detection via Recycling of Bounding Box Annotations*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2019**), Long Beach, California, 2019. (Acceptance = 1299/5165 ~ 25.2%)
 26. Chris Dongjoo Kim, Byeongchang Kim, Hyunmin Lee and **Gunhee Kim**, *AudioCaps: Generating Captions for Audio in the Wild*, Annual Conference of the North American Chapter of the Association for Computational Linguistics (**NAACL-HLT 2019**), Minneapolis, USA, 2019. (**Oral**) (Acceptance = 138/1198 ~ 11.5%)
 27. Byeongchang Kim, Hyunwoo Kim and **Gunhee Kim**, *Abstractive Summarization of Reddit Posts with Multi-level Memory Networks*, Annual Conference of the North American Chapter of the Association for Computational Linguistics (**NAACL-HLT 2019**), Minneapolis, USA, 2019. (**Oral**) (Acceptance = 138/1198 ~ 11.5%)
 28. Soochan Lee, Junsoo Ha and **Gunhee Kim**, *Harmonizing Maximum Likelihood with GANs for Multimodal Conditional Generation*, International Conference on Learning Representations (**ICLR 2019**), New Orleans, Louisiana, 2019. (Acceptance = 524/1591 ~ 32.9%)
 29. Seil Na, Yo Joong Choe, Dong-Hyun Lee and **Gunhee Kim**, *Discovery of Natural Language Concepts in Individual Units*, International Conference on Learning Representations (**ICLR 2019**), New Orleans, Louisiana, 2019. (Acceptance = 524/1591 ~ 32.9%)
 30. Youngjae Yu, Jongseok Kim and **Gunhee Kim**, *A Joint Sequence Fusion Model for Video Question Answering and Retrieval*, European Conference on Computer Vision (**ECCV 2018**), Munich, Germany, 2018. (Acceptance = 776/2439 ~ 31.8%)
 31. Yunseok Jang, **Gunhee Kim** and Yale Song, *Video Prediction with Appearance and Motion Conditions*, International Conference on Machine Learning (**ICML 2018**), Stockholm, Sweden, 2018.

- (Acceptance = 621/2473 ~ 25.1%)
32. Sangho Lee, Jinyoung Sung, Youngjae Yu and **Gunhee Kim**, *A Memory Network Approach for Story-based Temporal Summarization of 360° Videos*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2018**), Salt Lake City, Utah, 2018. (Acceptance = 979/3309 ~ 29.6%)
 33. Junhyug Noh, Soochan Lee, Beomsu Kim and **Gunhee Kim**, *Improving Occlusion and Hard Negative Handling for Single-Stage Pedestrian Detectors*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2018**), Salt Lake City, Utah, 2018. (Acceptance = 979/3309 ~ 29.6%)
 34. Yookoon Park, Jaemin Cho and **Gunhee Kim**, *A Hierarchical Latent Structure for Variational Conversation Modeling*, Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (**NAACH-HLT 2018**), New Orleans, Louisiana, 2018. (**Oral**) (Acceptance = 107/665 ~ 16.1%)
 35. Youngjin Kim, Minjung Kim and **Gunhee Kim**, *Memorization Precedes Generation: Learning Unsupervised GANs with Memory Networks*, International Conference on Learning Representations (**ICLR 2018**), Vancouver, BC, Canada, 2018. (Acceptance = 337/935 ~ 36.0%)
 36. Youngjae Yu, Sangho Lee, Joonil Na, Jaeyun Kang and **Gunhee Kim**, *A Deep Ranking Model for Spatio-Temporal Highlight Detection from a 360° Video*, AAAI Conference on Artificial Intelligence (**AAAI 2018**), New Orleans, Louisiana, 2018. (Acceptance = 993/3800 ~ 25%)
 37. Seil Na, Sangho Lee, Jisung Kim and **Gunhee Kim**, *A Read-Write Memory Network for Movie Story Understanding*, International Conference on Computer Vision (**ICCV 2017**), Venice, Italy, 2017. (Acceptance = 621/2143 ~ 28.9%)
 38. Juyong Kim, Yookoon Park, **Gunhee Kim** and Sung Ju Hwang, *SplitNet: Learning to Semantically Split Deep Networks for Parameter Reduction and Model Parallelization*, International Conference on Machine Learning (**ICML 2017**), Sydney, Australia, 2017. (Acceptance = 433/1676 ~ 25.8%)
 39. Cesc Chunseong Park, Byeongchang Kim and **Gunhee Kim**, *Attend to You: Personalized Image Captioning with Context Sequence Memory Networks*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2017**), Honolulu, Hawaii, 2017. (**Spotlight**) (Acceptance = 215/2680 ~ 8.0%)
 40. Youngjae Yu, Hyungjin Ko, Jongwook Choi and **Gunhee Kim**, *Supervising Neural Attention Models for Video Captioning by Human Gaze Data*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2017**), Honolulu, Hawaii, 2017. (**Spotlight**) (Acceptance = 215/2680 ~ 8.0%) **Winners of two tracks of LSMDC 2016** (Annotation and Retrieval and Fill-in-the-Blank)
 41. Yunseok Jang, Yale Song, Youngjae Yu, Youngjin Kim and **Gunhee Kim**, *TGIF-QA: Toward Spatio-Temporal Reasoning in Visual Question Answering*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2017**), Honolulu, Hawaii, 2017. (**Spotlight**) (Acceptance = 215/2680 ~ 8.0%)
 42. Youngjae Yu, Jongwook Choi and **Gunhee Kim**, *Supervising Neural Attention Models for Video Captioning by Human Gaze Data*, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2017**), Honolulu, Hawaii, 2017. (Acceptance = 783/2680 ~ 29.2%)
 43. Chulmoo Kang, **Gunhee Kim** and Suk I. Yoo, *Detection and Recognition of Text Embedded in Online Images via Neural Context Models*, AAAI Conference on Artificial Intelligence (**AAAI 2017**), San Francisco, California, 2017. (**Oral**) (Acceptance = 638/2590 ~ 24.6%)
 44. Wonjoon Goo, Juyong Kim, **Gunhee Kim** and Sung Ju Hwang. *Taxonomy-Regularized Semantic Deep Convolutional Neural Networks*. European Conference on Computer Vision (**ECCV 2016**). Amsterdam, Netherlands, 2016. (Acceptance = 415/1561 ~ 26.6%)
 45. Hanseul Jun and **Gunhee Kim**. *A Calibration Method for Optical See-through Head Mounted Displays with a Depth Camera*. IEEE Virtual Reality (**VR 2016**). Greenville, South Carolina, 2016. (Acceptance = 25.9%)
 46. Cesc Chunseong Park and **Gunhee Kim**. *Expressing an Image Stream with a Sequence of Natural Sentences*. Annual Conference on Neural Information Processing Systems (**NIPS 2015**). Montreal, Canada, 2015. (Acceptance = 403/1838 ~ 21.9%)
 47. Bo Xiong, **Gunhee Kim** and Leonid Sigal. *Storyline Representation of Egocentric Videos and Its*

- Applications to Story-based Search*. International Conference on Computer Vision (**ICCV 2015**). Santiago, Chile, 2015. (Acceptance = 525/1698 \sim 30.9%)
48. Hao Zhang, **Gunhee Kim** and Eric P. Xing. *Dynamic Topic Modeling for Monitoring Market Competition from Online Text and Image Data*. 21th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2015**). Sydney, Australia, 2015. (Research) (Acceptance = 159/819 \sim 19.4%)
 49. **Gunhee Kim** and Leonid Sigal. *Discovering Collective Narratives of Theme Parks from Large Collections of Visitors' Photo Streams*. 21th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2015**). Sydney, Australia, 2015. (Practice) (Acceptance = 64/187 \sim 34.2%)
 50. Eunhyeok Park, Dongyoung Kim, Soobeom Kim, Sungroh Yoon, **Gunhee Kim** and Sungjoo Yoo. *Big/Little Deep Neural Network for Ultra Low-Power Inference*. International Conference on Hardware/Software Codesign and System Synthesis (**CODES 2015**). Amsterdam, Netherlands, 2015.
 51. **Gunhee Kim**, Seungwhan Moon and Leonid Sigal. *Ranking and Retrieval of Image Sequences from Multiple Paragraph Queries*. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2015**). Boston, Massachusetts, 2015. (Acceptance = 602/2123 \sim 28.4%)
 52. **Gunhee Kim**, Seungwhan Moon and Leonid Sigal. *Joint Photo Stream and Blog Post Summarization and Exploration*. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2015**). Boston, Massachusetts, 2015. (Acceptance = 602/2123 \sim 28.4%)
 53. **Gunhee Kim** and Eric P. Xing. *Reconstructing Storyline Graphs for Image Recommendation from Web Community Photos*. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2014**). Columbus, Ohio, 2014. (**Oral**) (Acceptance = 104/1807 \sim 5.75%).
 54. **Gunhee Kim**, Leonid Sigal and Eric P. Xing. *Joint Summarization of Large-scale Collections of Web Images and Videos for Storyline Reconstruction*. IEEE Conference on Computer Vision and Pattern Recognition (**CVPR 2014**). Columbus, Ohio, 2014. (Acceptance = 540/1807 \sim 29.88%)
 55. **Gunhee Kim** and Eric P. Xing. *Visualizing Brand Associations from Web Community Photos*. ACM International Conference on Web Search and Data Mining (**WSDM 2014**). New York City, USA, 2014. (Acceptance = 64/356 \sim 18.0%)
 56. **Gunhee Kim** and Eric P. Xing. *Discovering Pictorial Brand Associations from Large-Scale Online Image Data*. Workshop on Large Scale Visual Commerce (**LSVisCom**) in conjunction with (**ICCV 2013**). Sydney, Australia, 2013 (**Best Paper Award**).
 57. **Gunhee Kim** and Eric P. Xing. *Jointly Aligning and Segmenting Multiple Web Photo Streams for the Inference of Collective Photo Storylines*. Conference on Computer Vision and Pattern Recognition (**CVPR 2013**). Portland, Oregon, 2013. (**Oral**) (Acceptance = 60/1870 \sim 3.2%)
 58. **Gunhee Kim** and Eric P. Xing. *Time-Sensitive Web Image Ranking and Retrieval via Dynamic Multi-Task Regression*. International Conference on Web Search and Data Mining (**WSDM 2013**). Rome, Italy, 2013. (Acceptance = 73/387 \sim 18.9%)
 59. **Gunhee Kim**, Li Fei-Fei and Eric P. Xing. *Web Image Prediction Using Multivariate Point Processes*. SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2012**). Beijing, China, 2012. (Acceptance = 133/755 \sim 17.6%)
 60. **Gunhee Kim** and Eric P. Xing. *On Multiple Foreground Cosegmentation*. Conference on Computer Vision and Pattern Recognition (**CVPR 2012**). Providence, Rhode Island, 2012. (**Oral**) (Acceptance = 48/1933 \sim 2.48%)
 61. **Gunhee Kim**, Eric P. Xing, Li Fei-Fei and Takeo Kanade. *Distributed Cosegmentation via Submodular Optimization on Anisotropic Diffusion*. International Conference on Computer Vision (**ICCV 2011**). Barcelona, Spain, 2011. (**Oral**) (Acceptance = 45/1285 \sim 3.50%)
 62. Robson L. F. Cordeiro, Fan Guo, Donna S. Haverkamp, James H. Horne, Ellen K. Hughes, **Gunhee Kim**, Agma J. M. Traina, Caetano Traina Jr. and Christos Faloutsos. *QMAS: Querying, Mining And Summarization of Multi-modal Databases*. International Conference on Data Mining (**ICDM 2010**). Sydney, Australia, 2010. (Acceptance = 148/786 \sim 18.83%)
 63. **Gunhee Kim**, Eric P. Xing and Antonio Torralba. *Modeling and Analysis of Dynamic Behaviors of*

- Web Image Collections*. European Conference on Computer Vision (**ECCV 2010**). Crete, Greece, 2010. (Acceptance = 322/1174 ~ 27.4%)
64. **Gunhee Kim** and Antonio Torralba. *Unsupervised Detection of Regions of Interest using Iterative Link Analysis*. Annual Conference on Neural Information Processing Systems (**NIPS 2009**). Vancouver, Canada, 2009. (Acceptance = 263/1105 ~ 23.8%)
 65. Bernd Heisele, **Gunhee Kim** and Andrew Meyer. *Object Recognition with 3D Models*. British Machine Vision Conference 2009 (**BMVC 2009**). London, United Kingdom, 2009. (Acceptance = 95/325 ~ 38%)
 66. **Gunhee Kim**, Christos Faloutsos and Martial Hebert. *Unsupervised Modeling of Object Categories Using Link Analysis Techniques*. Conference on Computer Vision and Pattern Recognition (**CVPR 2008**). Anchorage, USA, 2008. (**Oral**) (Oral Acceptance = 62/1593 ~ 3.9%)
 67. **Gunhee Kim**, Christos Faloutsos and Martial Hebert. *Unsupervised Modeling and Recognition of Object Categories with Combination of Visual Contents and Geometric Similarity Links*. International Conference on Multimedia Information Retrieval (**ACM MIR 2008**). Vancouver, Canada, 2008. (**Oral**) (Acceptance = 20/264 ~ 7.6%)
 68. **Gunhee Kim**, Daniel Huber and Martial Hebert. *Segmentation of Salient Regions in Outdoor Scenes using Imagery and 3-D Data*. Workshop on Application of Computer Vision (**WACV 2008**). Colorado, USA, 2008. (**Oral**)

Peer-Reviewed Journals (Selected)

1. Junhyug Noh, Kyung Don Yoo, Wonho Bae, Jong Soo Lee, Kangil Kim, Jang-Hee Cho, Hajeong Lee, Dong Ki Kim, Chun Soo Lim, Shin-Wook Kang, Yong-Lim Kim, Yon Su Kim, **Gunhee Kim*** and Jung Pyo Lee*. *Prediction of the Mortality Risk in Peritoneal Dialysis Patients using Machine Learning Models: A Nation-wide Prospective Cohort in Korea*. Scientific Reports, May 04; 10:7470, 2020. (SCI, IF=4.525)
2. Yunseok Jang, Yale Song, Chris Dongjoo Kim, Youngjae Yu, Youngjin Kim and **Gunhee Kim**. *Video Question Answering with Spatio-Temporal Reasoning*. International Journal of Computer Vision, vol.127, no.10, pp.1385–1412, October 2019. (SCI, IF=6.071).
3. Cesc Chunseong Park, Byeongchang Kim and **Gunhee Kim**. *Towards Personalized Image Captioning via Multimodal Memory Networks*. IEEE Transactions on Pattern Analysis and Machine Intelligence, vol.41, no.4, pp.999–1012, April 2019. (SCI, IF=9.455)
4. Cesc Chunseong Park, Youngjin Kim and **Gunhee Kim**. *Retrieval of Sentence Sequences for an Image Stream via Coherence Recurrent Convolutional Networks*. IEEE Transactions on Pattern Analysis and Machine Intelligence, vol.40, no.4, pp.945–957, April 1 2018. (SCI, IF=9.455)
5. Kyung Don Yoo, Junhyug Noh, Hajeong Lee, Dong Ki Kim, Chun Soo Lim, Young-Hoon Kim, Jung Pyo Lee, **Gunhee Kim** and Yon Su Kim. *A Machine Learning Approach Using Survival Statistics to Predict Graft Survival in Kidney Transplant Recipients: A Multicenter Cohort Study*. Scientific Reports, Aug 21;7(1):8904, 2017. (SCI, IF=4.259)
6. Kyung Don Yoo, Clara Tammy Kim, Myoung-Hee Kim, Junhyug Noh, **Gunhee Kim**, Ho Kim, Jung Nam An, Jae Yoon Park, Hyunjeong Cho, Kyoung Hoon Kim, Hyunwook Kim, Dong-Ryeol Ryu, Dong Ki Kim, Chun Soo Lim, Yon Su Kim and Jung Pyo Lee. *Superior Outcomes of Kidney Transplantation Compared with Dialysis*. Medicine, vol.95, no.33, e4352, August 2016. (SCI, IF=2.133)
7. R.L.F. Cordeiroa, F. Guo, D.S. Haverkamp, J.H. Horne, E.K. Hughesc, **Gunhee Kim**, L.A.S. Romanid, P.P. Coltri, T.T. Souza, A.J.M. Traina, C. Traina Jr. and C. Faloutsos. *QuMinS: Fast and Scalable Querying, Mining and Summarizing Multi-Modal Databases*. Information Sciences, vol.264, pp. 211–229, April 2014. (SCI, IF=4.832)
8. **Gunhee Kim** and Woojin Chung. *Navigation Behavior Selection Using Generalized Stochastic Petri Nets (GSPN) for a Service Robot*. IEEE Transactions on Systems, Man and Cybernetics Part C (SCI), vol.37, no.4, July 2007.

9. Woojin Chung, **Gunhee Kim** and Munsang Kim. *Development of Multi-Functional Indoor Service Robot PSR Systems*. Autonomous Robots (SCI), vol.22, no.1, pp. 1-17, January 2007.
10. **Gunhee Kim** and Woojin Chung. *Tripodal Schematic Control Architecture for Integration of Multi-Functional Indoor Service Robots*. IEEE Transactions on Industrial Electronics (SCI), vol.53, no.5, pp. 1723- 1736, October 2006.

Non Peer-Reviewed Publication (Selected)

1. Seil Na, Youngjae Yu, Sangho Lee, Jisung Kim, **Gunhee Kim**. *Encoding Video and Label Priors for Multi-label Video Classification on YouTube-8M dataset*. CVPR2017 Youtube-8M workshop, 2017 (Oral), arXiv:1706.07960. (Ranked 8th in YouTube-8M Challenge)
2. Hao Zhang, Zhiting Hu, Jinliang Wei, Pengtao Xie, **Gunhee Kim**, Qirong Ho and Eric P. Xing. *Poseidon: Distributed Learning of Convolutional Neural Networks on GPU Clusters for Large-Scale Visual Recognition*. ATC 2016 (Poster), ICML 2016 ML Systems workshop, 2016, arXiv:1706.03292.

Peer-Reviewed Conference – Robotics (Selected)

1. **Gunhee Kim**, Woojin Chung, Sung-Kee Park and Munsang Kim. *Experimental Research of Navigation Primitive Selection Using Generalized Stochastic Petri Nets (GSPNs) for a Tour-Guide Robot*. IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS 2005**). Alberta, Canada, 2005.
2. **Gunhee Kim**, Woojin Chung and Munsang Kim. *A Selection Framework of Multiple Navigation Primitives Using Generalized Stochastic Petri Nets*. International Conference on Robotics and Automation (**ICRA 2005**). Barcelona, Spain, 2005.
3. **Gunhee Kim**, Woojin Chung, Sangmok Han, Kyung-Rock Kim, Munsang Kim and Richard H. Shinn. *The Autonomous Tour-Guide Robot Jinny*. IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS 2004**). Sendai, Japan, 2004.
4. **Gunhee Kim**, Woojin Chung, Munsang Kim and Chongwon Lee. *Implementation of Multi-Functional Service Robots Using Tripodal Schematic Control Architecture*. IEEE International Conference on Robotics and Automation (**ICRA 2004**). New Orleans, USA, 2004.
5. Woojin Chung, **Gunhee Kim**, Munsang Kim and Chongwon Lee. *Integrated Navigation System for Indoor Service Robots in Large-scale Environments*. International Conference on Robotics and Automation (**ICRA 2004**), New Orleans, USA, 2004.
6. **Gunhee Kim**, Woojin Chung, Munsang Kim and Chongwon Lee. *Tripodal Schematic Design of the Control Architecture for the Service Robot PSR*. International Conference on Robotics and Automation (**ICRA 2003**). Taipei, Taiwan, 2003.
7. **Gunhee Kim**, Woojin Chung, Munsang Kim and Chongwon Lee. *Design and Implementation of Tripodal Schematic Control Architecture for Multi-Functional Service Robots*. International Conference on Control, Automation and Systems (**ICCAS 2003**). Gyeongju, Korea, 2003. (**Outstanding Paper Award**)

Patents

1. Sungju Hwang, **Gunhee Kim**, Juyong Kim, Yookoon Park *Electronic Apparatus and Method for Optimizing Trained Model*. US20180357540A1, December 13 2018
2. Leonid Sigal, **Gunhee Kim** and Seungwhan Moon. *Joint Photo Stream and Blog Post Summarization and Exploration*. US 9928442B2, March 27, 2018
3. **Gunhee Kim** and Leonid Sigal. *Generating Story Graphs with Large Collections of Online Images*. US 9652685B2. May 16, 2017.

4. Bernd Heisele, **Gunhee Kim** andrew J Meyer. *Object recognition with 3D models*. US 8422797, WO 2011002938. 2013.

Current Grants

1. Inference and Learning Technologies for Reconfigurable Distributed Deep Neural Networks (Co-PI with Prof. Byung-Gon Chun (SNU)). *Samsung Research Funding for Future Technology*. September 1, 2016 – August 31, 2019, ₩200M/yr.
2. Integration of Deep Generative Models and their Applications to Computer Vision Tasks. *Samsung Advanced Institute of Technology*. November 1, 2017 – October 31, 2020, ₩153M/yr.
3. Human-Inspired Large Scale Visual Recognition System (Co-PI with Prof. Sung Ju Hwang (KAIST)). *Samsung Research Funding for Future Technology*. March 1, 2018 – February 29, 2020, ₩100M/yr.
4. Research on Joint Understanding between Images and Natural Language Sentences (PI). *Hancom*. August 1, 2015 – July 31, 2018, ₩100M/yr.
5. Deep Metric Learning for Universal Similarity Inference. *National Research Foundation of Korea*. November 1, 2017 – October 31, 2020, ₩130M/yr.
6. A Study and Networking with UK Researchers on 3D Scene Completion and Semantic Segmentation. *National Research Foundation of Korea*. September 1, 2017 – August 31, 2019, ₩60M/yr.
7. Automatic generation of captions, hashtags and comments for online image posts. *Kakao Brain*. April 1, 2017 – March 31, 2019, ₩200M/yr.
8. Development of AI Emotion Regulation Models based on Multidimensional Analysis of Multimodal Emotional Intelligence Database. *National Research Foundation of Korea*. June 1, 2017 – December 31, 2021, ₩100M/yr.
9. Video QA using Memory-Augmented Neural Networks. *SKT*. April 1, 2018 – January 31, 2019, ₩75M/yr.
10. Uncertainty Modeling for Real-time Object Detection in Video Surveillance Environment. *SKT*. June 18, 2018 – December 17, 2018, ₩79M/yr.
11. Development of QA Systems for Video Story Understanding to Pass the Video Turing Test. *Ministry of Science and ICT*. July 1, 2017 – December 31, 2021, ₩140M/yr.
12. Development of Physical Data Collection Platform for City Data Science *Seoul Metropolitan Government*. August 1, 2018 – December 31, 2019, ₩90M/yr.
13. Development of Multi-functional AI Agents on Social Networks *Seoul National University Alumni Association*. September 1, 2017 – August 31, 2025, ₩50M/yr.

Professional Activities

Chairs

Area Chairs: ICCV 2021/2019, NeurIPS 2021, ECCV 2020, IJCAI 2021, ACMMM 2018.

Senior PC: AAAI 2020/2019, IJCAI 2021/2020/2019.

PC: AAAI 2018/2017

Session Chairs: ICCV 2019.

Publication Chairs: ACMMM 2018.

Workshop Organization and Committee

Workshop on Storytelling with Images and Videos (VisStory) at ECCV 2016 (2nd) and ECCV 2014 (1st), with Leonid Sigal (Disney), Kristen Grauman (UT Austin) and Tamara Berg (UNC).

Workshop on Web-scale Vision and Social Media (VSM) at ICCV 2014 (3rd), CVPR 2014 (2nd), ECCV 2012 (1st), 4th Egocentric (First-Person) Vision workshop at CVPR 2016, 4th International Workshop on Large Scale Visual Recognition and Retrieval (BigVision 2016) at CVPR 2016.

Reviewer

IEEE Transactions on Pattern Analysis and Machine Intelligence, International Journal of Computer Vision, ACM Transactions on Graphics, Annals of Applied Statistics, IEEE Transactions on Image Processing, IEEE Transactions on Multimedia, IEEE/ACM Transactions on Audio Speech and Language Processing, IEEE Access, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Systems, Man and Cybernetics, ACM Transactions on Multimedia Computing, Communications and Applications, Neurocomputing, Image Communication, Image and Vision Computing

CVPR 2021/2020/2019/2018/2017/2016/2015, ICCV 2017/2015/2013, ECCV 2018/2016/2014, NeurIPS 2020/2019/2018/2015, ICML 2021/2020/2019, SIGGRAPH 2018/ 2017/2016, ICLR 2021/2020, SIGGRAPH Asia 2019, ACM MM 2017, AAAI 2021/2019/2018/2017, ACL 2020, EMNLP 2020, NAACL 2021/2019/2018, IJCAI 2019/2018, UAI 2020/2019, UIST 2020, IEEE VR 2018, 3DV 2017, BMVC 2020/2019/2017, ACCV 2020/2018/2016, WACV 2021, UbiComp 2016, PG 2019.

Student Supervision

Current PhD Students

Junhyug Noh (2015.03 –), Young Jae Yu (2015.03 –), Insu Jeon (2017.03 –), Minui Hong (2017.03 –), Wonhee Lee (2017.03 –), Byeongchang Kim (2015.09 –)

Current MS Students

Hyouk Jang (2016.09 –), Yookoon Park (2017.03 –), Youngjin Kim (2017.03 –), Sangho Lee (2017.03 –), Seil Na (2017.03 –), Soochan Lee (2017.09 –), Amelie Schmidt-Colberg (2017.09 –), Taeyoung Hahn (2017.09 –), Joonil Na (2018.03 –), Minjung Kim (2018.03 –), Dongjoo Kim (2018.09 –),

Alumni

Yunseok Jang (MS, 2015.09 – 2018.02, PhD Student at Michigan CSE), Juyong Kim (MS, 2015.09 – 2018.02, CMU MLD), Chunseong Park (MS, 2015.03 – 2017.02, Researcher at Lunit Inc.)
Beomsu Kim (SNU CSE Research Intern, 2016.12 – 2017.03, Scatter Lab), JongHo Park (MS student, 2015.03 – 2016.07), Jongwook Choi (SNU CSE Research Intern, 2015.02 – 2017.01, PhD Student at UMichigan), JongHo Park (MS student, 2015.03 – 2016.07), Wonjoon Goo (SNU CSE Research Intern, 2015.03 – 2016.04, PhD Student at UT Austin CSD), Hanseul Jun (SNU ECE Research Intern, 2015.04 – 2016.05, PhD Student at Stanford Communication)

Teaching Experience

Instructor at Seoul National University

M1522.001000 *Computer Vision*, Spring 2016/2017/2018/2019/2020

4190.773 *Probabilistic Graphical Models*, Fall 2015/2016/2017, Spring 2020

4541.569 *Advanced Artificial Intelligence*, Spring 2021

4190.101 *Discrete Mathematics*, Spring 2016/2017/2018/2019/2020

4190.680 *Knowledge Representation and Reasoning*, Fall 2018

4190.678 *Natural Language Processing*, Fall 2017

4190.429 *Image Processing*, Spring 2015

Graduate Teaching Assistant and Guest Lecturer at CMU

10-708 *Probabilistic Graphical Models*, Spring 2013 (Instructor: Eric P Xing)

15-385/685 *Computer Vision*, Spring 2012 (Instructor: Srinivasa Narasimhan)

15-384 *Robotic Manipulation*, Fall 2011 (Instructor: George Kantor)

Last updated: May 25, 2021