Jiyoung Lee

Ph.D. Candidate · Yonsei University

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Summary

Research Interest Computer vision, affective computing, machine learning

Current Focus Visual reasoning, meta-learning, audio-visual scene analysis, video understanding

Education

Yonsei University *Seoul, S.Korea*

Ph.D. Candidate in School of Electrical and Electronic Engineering *Mar. 2016 - Present*

- Working with Prof. Kwanghoon Sohn.

Yonsei University *Seoul, S.Korea*

B.S. in School of Electrical and Electronic Engineering *Mar. 2012 - Feb. 2016*

Experience

Microsoft Research *Redmond, USA*

Remote Co-worker *Apr. 2020 - Feb. 2021*

- HUE: Human Understanding and Empathy Group.
- Working with Dr. Daniel McDuff and Dr. Yale Song.
- Participation in causal reasoning project.

Publication

International Journal

"Multi-modal Recurrent Attention Networks for Facial Expression Recognition"

Jiyoung Lee, Sunok Kim, Seungryong Kim, and Kwanghoon Sohn *May. 2020*

- IEEE Transaction on Image Processing (**TIP**). vol. 29, pp. 6977–6991 (Impact Factor: **9.34**)

"Learning Discriminative Action Tubelets for Weakly-supervised Action Detection"

Jiyoung Lee, Seungryong Kim, Sunok Kim, and Kwanghoon Sohn *Jul. 2020*

- IEEE Transaction on Image Processing (**TIP**). (Under Review)

International Conference

"Self-balanced Learning for Domain Generalization"

Jin Kim, **Jiyoung Lee**, Jungin Park, Dongbo Min, and Kwanghoon Sohn *Jan. 2021*

- IEEE International Conference on Image Processing (**ICIP**). (Under Review)

"Looking into Your Speech: Learning Cross-modal Affinity for Audio-visual Speech Separation"

Jiyoung Lee*, Soo-Whan Chung*, Sunok Kim, Hong-Goo Gang, and Kwanghoon Sohn (* indicates equal contribution.) *Jun. 2021*

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**). (**27%** acceptance rate)

"Bridge to Answer: Structure-aware Graph Interaction Network for Video Question Answering"

Jungin Park, **Jiyoung Lee**, and Kwanghoon Sohn *Jun. 2021*

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**). (**27%** acceptance rate)

"SumGraph: Video Summarization via Recursive Graph Modeling"

Jungin Park*, **Jiyoung Lee***, Ig-jae Kim, and Kwanghoon Sohn (* indicates equal contribution.) *Aug. 2020*

- European Conference on Computer Vision (**ECCV**) (**26%** acceptance rate)

"Context-Aware Emotion Recognition Networks"

Jiyoung Lee, Seungryong Kim, Sunok Kim, Jungin Park, and Kwanghoon Sohn *Oct. 2019*

- IEEE International Conference on Computer Vision (**ICCV**) (**25%** acceptance rate)

"Video Summarization by Learning Relationships between Action and Scene"

Jungin Park, **Jiyoung Lee**, Sangryul Jeon, and Kwanghoon Sohn — *Oct. 2019*

- IEEE International Conference on Computer Vision Workshop (**ICCVW**)

"Graph Regularization Network with Semantic Affinity for Weakly-supervised Temporal Action Localization"

Jungin Park, **Jiyoung Lee**, Sangryul Jeon, Seungryong Kim, and Kwanghoon Sohn — *Sep. 2019*

- IEEE International Conference on Image Processing (**ICIP**)

"Audio-Visual Attention Networks for Emotion Recognition"

Jiyoung Lee, Sunok Kim, Seungryong Kim, and Kwanghoon Sohn — *Oct. 2018*

- ACM Multimedia Workshop- Workshop on Audio-Visual Scene Understanding for Immersive Multimedia (**MMW**)

"Learning to Detect, Associate, and Recognize Human Actions and Surrounding Scenes in Untrimmed Videos"

Jungin Park, Sangryul Jeon, Seungryong Kim, **Jiyoung Lee**, Sunok Kim, and Kwanghoon Sohn — *Oct. 2018*

- ACM Multimedia Workshop- The 1st Workshop and Challenge on Comprehensive Vidoe Understanding in the Wild (**MMW**)

"Spatiotemporal Attention Based Deep Neural Networks for Emotion Recognition"

Jiyoung Lee, Sunok Kim, Seungryong Kim, and Kwanghoon Sohn — *Apr. 2018*

- IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP**)

"Automatic 2D-to-3D Conversion using Multi-scale Deep Neural Network"

Jiyoung Lee, Hyungjoo Jung, Youngjung Kim, and Kwanghoon Sohn — *Sep. 2017*

- IEEE International Conference on Image Processing (**ICIP**)

Patent

"Audio-Video Matching Area Detection Apparatus and Method"

Jiyoung Lee, and Kwanghoon Sohn — *Jul. 2019*

- Korea patent, 10-2019-0090937

"Apparatus and Method for Recognizing Activity and Detecting Activity Area in Video"

Jiyoung Lee, and Kwanghoon Sohn — *Mar. 2019*

- Korea patent, 10-2019-0034501

"Emotion Recognition Apparatus and Method Based on Spatiotemporal Attention"

Jiyoung Lee, and Kwanghoon Sohn — *May. 2018*

- Korea patent, 10-2018-0053306

Research Experiences

To create AI systems that act appropriately and effectively in novel situations that occur in open worlds — *S.Korea*

Funded by Institute of Information & Communication Technology — *Mar. 2020 – Present*

- Developed an algorithm for domain generalization using meta-learning.

Deep Identification and Tracking of Missing Person in Heterogeneous CCTV — *S.Korea*

Funded by Ministry of Science, National Research Foundation — *Sep. 2018 – Present*

- Developed an algorithm for pedestrian detection.

Intelligent Virtual Reality: Deep Audio-Visual Representation Learning for Multimedia Perception and Reproduction — *S.Korea*

Funded by Institute of Information & Communication Technology. — *Sep. 2017 – Aug.2019*

- Developed an algorithm using audio-visual data.

Fundamental Study of Vision Algorithms for Comprehensive and Through Understanding of Videos — *S.Korea*

Funded by Ministry of Science, ICT and Future Planning. — *Sep. 2017 - Dec. 2020*

- Developed an algorithm for scene understanding untrimmed videos.

Development of the High-Precision AR & VR Contents Based on Smart-Car Sensors — *S.Korea*

Funded by Institute of Information & Communication Technology — *Jan. 2017 – Dec. 2017*

- Developed an algorithm for dense stereo matching in outdoor environments.

Emotional Intelligence Technology to Infer Human Emotion and Carry on Dialogue Accordingly *S.Korea*

Funded by Institute of Information & Communication Technology. *Sep. 2017 - Jun. 2018*

- Developed an algorithm for inferring human emotion from multi-spectral images.

High Quality 2D-to-Multiview Contents Generation from Large-Scale RGB+D Database *S.Korea*

Funded by Institute of Information & Communication Technology. *Mar. 2016 – Aug. 2017*

- Developed an algorithm for inferring high-quality depth from a single 2-D image.

Yonsei University, Dept. of Electrical and Electronic Engineering *S.Korea*

Teaching Assistant. *Mar. 2016 – Feb. 2017*

- Digital signal processing, Electrical and electronic engineering experiments: fundamentals.

Professional Activities

Reviewers

IEEE Access, IEEE Transactions on Image Processing

Media Coverage

"A deep learning technique for context-aware emotion recognition."

TechXplore *Aug. 2019*

Talks

"Comprehensive Video Understanding: from Recognition to Reasoning."

Microsoft Research AI Breakthroughs *Sep. 2020*

Honors & Awards

2019	**3rd Award**, CoVieW 2019 (IEEE ICCV Challenge)	*CoVieW'19*
2016	**Finalist & Award**, University Startup 300	*Ministry of Education, S.Korea*
2015	**Silver Prize**, Yonsei Creative Design Challenge	*Yonsei University*
2015	**Award**, Campus Reboot Startup Camp	*Ministry of Education, S.Korea*

Skills

Programming	Python, C/C++, JAVA, Ruby, Lua, MATLAB, OpenCV, LaTeX, Linux
Deep learning	PyTorch, Tensorflow, Caffe, Torch
Web	Django, Ruby on Rails, HTML5, CSS, Javascript
Languages	Korean, English