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, multi-modal learning, video understanding

Education

Yonsei University   *Seoul, S.Korea*

PH.D. CANDIDATE IN SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING   *Mar. 2016 - Present*

- Supervised by Prof. Kwanghoon Sohn.
- Graduation expected in February, 2022.

Yonsei University   *Seoul, S.Korea*

B.S. IN SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING   *Mar. 2012 - Feb. 2016*

Experience

Adobe Research   *San Francisco, USA*

INTERN   *May. 2021 -*

- Audio Research Group.
- Remote working with Dr. Justin Salamon and Dr. Dingzeyu Li.
- Audio-visual Few-shot Event Detection.

Microsoft Research   *Redmond, USA*

REMOTE CO-WORKER   *Apr. 2020 - Feb. 2021*

- Human Understanding and Empathy Group, and Computer Vision Group.
- Working with Dr. Daniel McDuff, Dr. Yale Song, and Dr. Vibhav Vineet.
- Causal Discovery and Simulation for Autonomous Driving.

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**)

"Recursive Spatio-temporal Graph Relation Networks for Video Summarization"

Jungin Park, JIYOUNG LEE, AND Kwanghoon Sohn   *May. 2021*

- IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**). (Under Review)

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

JIYOUNG LEE, Seungryong Kim, Sunok Kim, AND Kwanghoon Sohn   *May. 2021*

- Pattern Recognition (**PR**). (Under Review)

International Conference

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

JIYOUNG LEE*, Soo-Whan Chung*, Sunok Kim, Hong-Goo Kang, AND Kwanghoon Sohn (* INDICATES EQUAL CONTRIBUTION.)   *Jun. 2021*

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

"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**).

"Self-balanced Learning for Domain Generalization"

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

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

"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**)

"Context-Aware Emotion Recognition Networks"

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

- IEEE/CVF International Conference on Computer Vision (**ICCV**)

"Video Summarization by Learning Relationships between Action and Scene"

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

- IEEE/CVF 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 Video 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

"Emotion recognition apparatus and method based on multimodal fusion"

Jiyoung Lee, and Kwanghoon Sohn   *Dec. 2020*

- Korean patent, 10-2020-0180996

"Audio-Video Matching Area Detection Apparatus and Method"

Jiyoung Lee, and Kwanghoon Sohn   *Jul. 2019*

- Korean patent, 10-2019-0090937

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

Jiyoung Lee, and Kwanghoon Sohn   *Mar. 2019*

- Korean patent, 10-2019-0034501

"Emotion Recognition Apparatus and Method Based on Spatiotemporal Attention"

Jiyoung Lee, and Kwanghoon Sohn   *May. 2018*

- Korean patent, 10-2018-0053306

Research Experiences

Development of Multi-modal Data Fusion and Artificial Social Intelligence for Comprehensive Scene Understanding and Forecasting   *S.Korea*

Funded by Ministry of Science, South Korea   *Mar. 2021 – Present*

- Developed artificial social intelligence based on scene recognition and reasoning for future forecasting.

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, SOUTH KOREA   *Mar. 2020 – Present*

- Developed algorithms for autonomous delivery robot that can robust perform computer vision tasks in real-world environments.
- Developed an algorithm for domain generalization using meta-learning.

Fundamental Study of Vision Algorithms for Comprehensive and Through Understanding of Videos

S.Korea

FUNDED BY MINISTRY OF SCIENCE, ICT AND FUTURE PLANNING, SOUTH KOREA.   *Sep. 2017 - Dec. 2020*

- Developed algorithms for scene understanding and reasoning tasks that can robust perform in real-world videos.
- Construction two video datasets related to emotion and scene recognition.

Intelligent Virtual Reality: Deep Audio-Visual Representation Learning for Multimedia Perception and Reproduction

S.Korea

FUNDED BY INSTITUTE OF INFORMATION & COMMUNICATION TECHNOLOGY, SOUTH KOREA.   *Sep. 2017 – Aug.2019*

- Developed an emotion recognition algorithm using audio-visual data.

Emotional Intelligence Technology to Infer Human Emotion and Carry on Dialogue Accordingly

S.Korea

FUNDED BY INSTITUTE OF INFORMATION & COMMUNICATION TECHNOLOGY, SOUTH KOREA.   *Sep. 2017 - Jun. 2018*

- Implemented a multi-modal dataset using color, depth, and FIR sensors.
- Developed an algorithm for inferring human emotion from multi-spectral sensors.

High Quality 2D-to-Multiview Contents Generation from Large-Scale RGB+D Database

S.Korea

FUNDED BY INSTITUTE OF INFORMATION & COMMUNICATION TECHNOLOGY, SOUTH KOREA.   *Mar. 2016 – Aug. 2017*

- Implemented depth and stereo data acquisition system using ZED and Kinect v2 cameras.
- Implemented a large scale RGB+depth dataset including indoor and outdoor scenes.
- Developed an algorithm for synthesizing 3D view from single view image (2D-to-3D conversion).

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, HTTPS://TECHXPLORE.COM/NEWS/2019-08-DEEP-TECHNIQUE-CONTEXT-AWARE-EMOTION-RECOGNITION.HTML   *Aug. 2019*

Talks

"Comprehensive Video Understanding: from Recognition to Reasoning."

MICROSOFT RESEARCH AI BREAKTHROUGHS   *Sep. 2020*

Honors & Awards

2019	**Outstanding 100 National Research Projects**, Research Assistant	*Ministry of Science and ICT, S. Korea*
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
Deep learning	PyTorch, Tensorflow, Caffe, Torch
Web	Django, Ruby on Rails, HTML5, CSS, Javascript