Jiyoung Lee

Ph.D. Candidate · Yonsei University

Digital Image Media Laboratory, C129, The 3rd Engineering Building, Yonsei-ro 50, Seodaemun-Gu, Seoul, Rep. of KOREA

(+82) 10-2413-9335 | easy00@yonsei.ac.kr | https://easy00.github.io/ | leejy0924

Summary

Research Interest Computer vision, affective computing, machine learning

Current Focus Multi-modal Learning, visual reasoning, meta-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 -*

- Creative Intelligence Lab.
- 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.
- Remote 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**)

Preprint

"CausalCity: Complex Simulations with Agency for Causal Discovery and Reasoning"

Daniel McDuff, Yale Song, **Jiyoung Lee**, Vibhav Vineet, Sai Vemprala, Hadi Salman, Shuang Ma, Kwanghoon Sohn, and Ashish Kapoor *Jun. 2021*

- arXiv preprint arXiv:2106.13364, `https://arxiv.org/abs/2106.13364`

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, Link *Aug. 2019*

"CausalCity: Introducing a high-fidelity simulation with agency for advancing causal reasoning in machine learning."

Microsoft Blog, Link *Jun. 2021*

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