Curriculum Vitae — Jisu Kim

Contact Information

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Positions

Research Assistant *June 2025 – August 2025*
Biosciences Group, Advisor : Dr. Byoung-keon Daniel Park
University of Michigan Transportation Research Institute, Ann Arbor, MI, USA

Research Assistant *August 2023 – present*
The IMAGE and Signal Analysis (IMAGES) Laboratory, Advisor : Dr. Benjamin Riggan
University of Nebraska-Lincoln (UNL), Lincoln, NE, USA

Researcher *April 2021 – May 2023*
SW Research Dept.
Gyeongbuk Research Institute of Vehicle Embedded Technology(GIVET), Republic of Korea

Visiting Researcher *March 2020 – August 2020*
Alternative Powertrain Research Lab (APRL), Supervisor : Songyul Choe
Auburn University, Auburn, AL, USA

Research Assistant *June 2018 – February 2021*
Image and Signal Information Processing Laboratory(ISIP), Director : Deokwoo Lee
Keimyung University, Daegu, Republic of Korea

Research Interests

My research focuses on developing robust computer vision and machine learning models for understanding human behavior in complex, real-world environments. I specialize in leveraging multimodal data and sequence modeling to address challenges in automotive and human-computer interaction domains. My work also explores advanced deep learning techniques, such as cross-domain adaptation, to enhance model performance in challenging conditions like tiny object detection and tracking.

- Computer Vision for Human Behavior Understanding
- Multimodal Learning & Emotion Recognition
- Sequence Modeling (RNNs, Transformers) for Activity Recognition
- Object Detection, Tracking, and Cross-Domain Adaptation
- Applications in Automotive AI & In-Vehicle Monitoring Systems

Education / Qualifications

Ph.D. in Electrical Engineering *August 2023 – present*
(Advisor : Dr. Benjamin Riggan)
University of Nebraska-Lincoln, Lincoln, NE, USA

M.S in Computer Engineering *March 2019 – February 2021*
(Advisor : Dr. Deokwoo Lee)

Keimyung University, Daegu, South Korea
(Thesis title : Activity Recognition Based On Visual Attention Using Deep Neural Network)

B.S. in Computer Engineering (Minor in Japanese Studies) *March 2013 – February 2019*
Keimyung University, Daegu, South Korea
(Mandatory military service in Korean marine corps: 2014 – 2016)

Publications

International Journals

J1 **Jisu Kim**, and Byoung-keon Daniel Park*, Robust Occupant Behavior Recognition via Multimodal Sequence Modeling: A Comparative Study for In-Vehicle Monitoring Systems, *Sensors*, Vol. 25, No. 20, 6323, 2025. (**SCIE**)

J2 **Jisu Kim**, and Deokwoo Lee*, Activity Recognition with Combination of Deeply Learned Visual Attention and Pose Estimation, *Applied Sciences*, Vol. 11, No. 9, 2021. (**SCIE**)

International Conferences

C1 Youssef Boulaouane, **Jisu Kim**, Jimin Park, and Deokwoo Lee*, Improving Image Classification Efficiency with Knowledge Distillation and Channel Attention, *International Conference on Multimedia Information Technology and Applications*, 2025, Singapore.

C2 **Jisu Kim**, Alex Mattingly, Eung-joo Lee and Benjamin Riggan*, Using Cross-Domain Detection Loss to Infer Multi-Scale Information for Improved Tiny Head Tracking, *IEEE International Conference on Automatic Face and Gesture Recognition (FG)*, 2025, Tampa, FL, USA.

C3 Geonwoo Kim, **Jisu Kim**, and Deokwoo Lee*, Computational Complexity of View Synthesis with the Number of Selected Images using Array Cameras, *IEEE International Conference on Consumer Electronics - Asia (ICCE-Asia)*, 2020, Seoul, Korea.

C4 **Jisu Kim**, and Deokwoo Lee*, Action Recognition using Pose Estimation with an Artificial 3D Coordinates and CNN, *Electronic Imaging (EI)*, Vol. 32, pp. 1–7, 2020, Burlingame, CA, USA.

C5 **Jisu Kim**, Cheolhyeong Park, Juo Kim, and Deokwoo Lee*, Occlusion Handled Block-Based Stereo Matching with Image Segmentation, *Computer Science & Information Technology (CS & IT)*, Vol. 9, No. 3, pp. 1–9, 2019, Sydney, Australia. (SIPM 2019)

C6 Cheolhyeong Park, **Jisu Kim**, and Deokwoo Lee*, Geometric Deep Learned Feature Classification Based Camera Calibration, *Computer Science & Information Technology (CS & IT)*, Vol. 9, No. 3, 2019, Sydney, Australia. (SIPM 2019)

C7 Suyeol Kim, Chaehwan Hwang, **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee*, Similarity Based Classification and Detection of Respiratory Status in Frequency Domain, *Computer Science & Information Technology (CS & IT)*, Vol. 9, No. 3, 2019, Sydney, Australia. (SIPM 2019)

C8 **Jisu Kim**, and Deokwoo Lee*, Improvement of a Speed for View Synthesis with Robust Feature Detection, *International Conference on Algorithms, Machine Learning and Signal Processing*, 2019.

Domestic Journals (Korea)

J1 Young-Su Jeong, **Jisu Kim**, and Deokwoo Lee*, A Comparative Study of Stereo Matching Algorithms: Focusing on BM, SGBM, ELAS, *KIPS Transactions on Software and Data Engineering*, Vol. 11, No. 11, pp. 667–673, 2024. (**KCI**)

J2 **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee*, Block-Based Stereo Matching Using Image Segmentation, *The Journal of Korean Institute of Communications and Information Sciences*, Vol. 44, No. 7, pp. 1402–1410, 2019. (**KCI**)

J3 Juo Kim, **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee*, Polygon-shaped Filters in Frequency Domain for Practical Filtering of Images, *Journal of the Korea Academia-Industrial Cooperation Society*, Vol. 20, No. 3, pp. 1–7, 2019. (**KCI**)

J4 Deokwoo Lee*, **Jisu Kim**, and Cheolhyeong Park, Concepts of System Function and Modulation-Demodulation based Reconstruction of a 3D Object Coordinates using Active Method, *Journal of the Korea Academia-Industrial Cooperation Society*, Vol. 20, No. 5, pp. 530–537, 2019. (**KCI**)

J5 **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee*, Occlusion Handled Block-Based Stereo Matching with Image Segmentation, *Journal of The Korean Society of Computer and Information*, 2019. (**KCI**)

Domestic Conferences (Korea)

C1 Jieun Kim, **Jisu Kim**, and Deokwoo Lee*, Facial Expression Recognition using Deep Neural Network with Face Alignment Network, *Autumn Annual Conference of IEIE*, 2021, Incheon.

C2 **Jisu Kim**, Jieun Kim, and Deokwoo Lee*, Efficient Sampling based Camera Calibration using LSTM, *Autumn Annual Conference of IEIE*, 2021, Incheon.

C3 Inseung Jeong, Jaehoon Choi, **Jisu Kim**, and Deokwoo Lee*, Fusion and Registration between Depthmap and RGB image using Lidar sensor and a camera, *Proceedings of Symposium of the KICS*, 2020.

C4 Geonwoo Kim, Jaehoon Choi, **Jisu Kim**, and Deokwoo Lee*, Mesh Generation and Texture Mapping Using Binocular Images from Multiple-View Cameras, *Proceedings of Symposium of the KICS*, 2020.

C5 **Jisu Kim**, Oheun Kwon, Byungkyo Oh, Hyungwoo Kwak, Sanghyup Lee, Juyoung Jang, Seungjun Yang, Suyeol Kim, and Deokwoo Lee*, LSTM based intelligent forecasting power load and SMP, *Autumn Annual Conference of KIEE*, 2019, Ansan.

C6 Byungkyo Oh, Yoonjae Choi, Byoungju Choi, **Jisu Kim**, Oheun Kwon, Deokwoo Lee, Hyungwoo Kwak, Juyoung Jang, and Sanghyup Lee, A Study on Improving Performance of AI-based System Marginal Price Forecasting Methods, *Fall Conference of KIEE*, 2019.

C7 **Jisu Kim**, Jaehoon Choi, and Deokwoo Lee*, Homography based Image Synthesis using Multiple Camera, *Conference on Information and Control Systems (CICS)*, 2019.

C8 Cheolhyeong Park, **Jisu Kim**, Juo Kim, and Deokwoo Lee*, Application to Camera Calibration using Learning Based Corner and Edge Detection, *Autumn Annual Conference of IEIE*, 2018.

C9 Juo Kim, **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee*, Polygon-shaped Filters for Analysis of Images in Frequency Domain, *Autumn Annual Conference of IEIE*, 2018.

C10 Taewoo Kwon, **Jisu Kim**, Junghun Kim, Minjae Jin, Jiyoung Heo, and Donghyun Hong, Development of Smartband for Psychological Analysis and Diagnosis of a Companion Dog based on the Internet of Things, *Korea Computer Congress*, 2018.

C11 Taewoo Kwon, **Jisu Kim**, Junghun Kim, Minjae Jin, Jiyoung Heo, and Donghyun Hong, Psychological Analysis and Diagnosis of a Companion Dog based on the Internet of Things, *Korea Software Congress*, 2017.

Teaching Experience

- Jan 2023 - Jan 2023, Special Lecture, Engineer Information Security, Keimyung University
- Jul 2022 - Jul 2022, Special Lecture, Engineer Information Processing, Keimyung University
- Sep 2019 - Feb 2020, Teaching Assistant, Data Structure(2), Keimyung University
- Mar 2019 - Aug 2019, Teaching Assistant, Data Structure(1), Keimyung University

Award and Honors

- Oct 2025, Reviewer Certificate, *Signal, Image and Video Processing*, Springer Nature.

- May 2022, Best Paper Award, Korea Multimedia Society.
- Jan 2021, Best Paper Award, The Institute of Electronics and Information Engineers.
- Nov 2019, Best Paper Award, The Korean Institute of Electrical Engineers.

Research Projects

- DEVCOM Army Research Laboratory (ARL), contract W911NF-21-2-0076 – Cross-domain adaptation for tiny object detection and tracking, University of Nebraska-Lincoln.
- Baltimore Police Department (BPD) – Body-worn camera video analysis for law enforcement de-escalation, University of Nebraska-Lincoln.
- University of Michigan Transportation Research Institute (UMTRI) – Multimodal in-vehicle occupant behavior recognition system development, Ann Arbor, MI.

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