# Curriculum Vitae
## - Jisu Kim -

## Contact Information

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## Positions

**Research Assistant(Summer Internship)**                    *June 2025 – August 2025*
Biosciences Group, Supervisor : Byoung-Keon (Daniel) Park
University of Michigan Transportation Research Institute (UMTRI), Ann Arbor, MI, USA

**Research Assistant**                                        *August 2023 – present*
The IMAGE and Signal Analysis (IMAGES) Laboratory
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

Primary research interest covers theory and applications of image processing, signal processing and analysis, computer vision, pattern recognition and machine learning for diverse applications such as 3D vision system, robotics, machine vision, activity recognition, dimensionality reduction, automotive engineering and others.

- Computer Vision
- Pattern Recognition
- Activity recognition
- Deep Learning / Machine Learning
- Learning based data prediction

## 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)

## PROJECTS

All of the projects are conducted with skills of Python, C#/C++, MATLAB.

- Development of variable mechanism robot platform for industrial 4-inch pipe inspection
  - Roll: Development of YOLOv5-based system for pipe inspection
- Development of rapid reconfiguration for robot through remote autonomous notification/correction of key root processes
  - Roll: Classification system development
- Development of a remote control system for autonomous vehicles (HYUNDAI AUTOEVER)
  - Roll: Image processing and codec
- Development of infinitely expandable rectangular parallelepiped large-capacity SMD storage tower line and SMT logistics processing automation
  - Roll: Development of efficient system using a classification algorithm
- Development of algorithms for vision inspection systems for module lines using Artificial Intelligence (HYUNDAI MOBIS)
  - Roll: Development of YOLOv3 system for vision inspection
- Depth Camera Calibration Based Deep Learning and Real-Scene for an Intelligent Vision System for unmanned moving objects 09/2019 - 02/2022 (National Research Foundation of Korea, NRF)
  - Roll: Development of camera calibration algorithm
- 3D Mesh Structure and Texture Generation using Plenoptic camera 08/2019 - 11/2019 (Electronics and Telecommunications Research Institute, ETRI)
  - Roll: Development of computer vision part
- Learning based prediction of SMP(system marginal price) in Hydroelectricity system 06/2019 - 11/2019 (Korea Water Resources Corporation, K-water)
  - Roll: Research of deep learning-based prediction algorithm
- Pedestrian detection and tracking using multi-sensor fusion 06/2019 - 01/2020 (National Research Foundation of Korea, NRF)
  - Roll: Research of algorithm fusion camera and Lidar
- Development of prediction system using Power Station with Intelligent Charge and Discharge System 06/2019 - 02/2020 (Korea Technology  Information Promotion Agency for SMEs, TIPA)
  - Roll: Deep learning-based prediction algorithm Development
- AI flagship Project 05/2018 - 12/2020 (Ministry of Science and ICT, MSIT)
  - Development of intelligent interaction technology based on content awareness and human intention understanding
  - Radar signal analysis for an intelligent interaction systems
  - Roll: Development of deep learning-based respiration classification algorithm
- Keimyung University Project 05/2018 - 04/2020
  - An efficient camera calibration for smart vision system, Keimyung Univ.
  - Roll: Development of camera calibration algorithm

## SKILLS

**Python, C#, C++, Go, JAVA, PHP, SQL, MATLAB** etc.
**Tensorflow, PyTorch**

## PUBLICATIONS

**Conference (C) and Journal (J) (Conference 22, Journal 4)**

C23 **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, Florida, USA. (**accepted**)

C22 **Jisu Kim\***, Oheun Kwon, Myeongsu Jeong, Daehyeok Gwon, Changsoo Moon, and Jaehoon Chung, Duty Cycle-based Efficient Management of Large-Volume SMD Storage Tower Line Using Deep Learning, *2nd International Conference of Next Generation Convergence Technology(ICNGCT)*, 2023, Clark, Philippines. (**oral**)

C21 **Jisu Kim**, Oheun Kwon, Myeongsu Jeong, Changsoo Moon, and Jaehoon Chung\*, Duty Cycle-Based SMD storage Efficiency Management Using Deep Learning, *Autumn Annual Conference of Institute of Embedded Engineering of Korea*, Nov 3, 2022, Jeju. (**poster**)

C20 **Jisu Kim\***, Myeongsu Jeong, Oheun Kwon, and Changsoo Moon, Remote control system for self-driving car, *Spring Annual Conference of Korea Multimedia Society*, May 19, 2022, Busan. (**oral**)

C19 Jieun Kim, **Jisu Kim**, and Deokwoo Lee\*, Facial Expression Recognition using Deep Neural Network with Face Alignment Network, *Autumn Annual Conference of IEIE*, Vol. 44, No. 2, pp. 372-373, Nov 26, 2021, Incheon.

C18 **Jisu Kim**, Jieun Kim, and Deokwoo Lee\*, Efficient Sampling based Camera Calibration using LSTM, *Autumn Annual Conference of IEIE*, Vol. 44, No. 2, pp. 374-376, Nov 26, 2021, Incheon.

 J4 **Jisu Kim**, and Deokwoo Lee\*, Activity Recognition with Combination of Deeply Learned Visual Attention and Pose Estimation, *Applied Science*, Vol. 11, pp. 1-18, 2021. (**SCIE**)

C17 **Jisu Kim**, and Songyul Choe\*, Development of algorithms for vision inspection systems for module lines using Artificial Intelligence, *International Conference on Innovation Convergence Technology(ICICT) 2021*, Jeju, Korea. (**online**)

C16 **Jisu Kim**, and Songyul Choe\*, Development of algorithms for vision inspection systems for module lines using Artificial Intelligence, *Autumn Annual Conference of The Korean Society of Automotive Engineers(KSAE) 2020*, Daegu, Korea. (**online**)

C15 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 Korean Institute of communications and Information Sciences*, pp. 758-759, 2020.

C14 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 Korean Institute of communications and Information Sciences*, pp. 751-753, 2020.

C13 Geonwoo Kim, **Jisu Kim**, and Deokwoo Lee\*, Computational Complexity of View Synthesis with the Number of Selected Images using Array Cameras, *2020 IEEE International Conference on Consumer Electronics - Asia (ICCE-Asia)*, Seoul, Korea. (**poster**)

C12 **Jisu Kim**, and Deokwoo Lee\*, Action Recognition using Pose Estimation with an Artificial 3D Coordinates and CNN, *Electronic Imaging (EI) 2020*, Burlingame, California, USA. (**oral**)

C11 Byeongchan Oh, Yeonjoo Choi, Bonggi Choi, **Jisu Kim**, Oheun Kwon, Deokwoo Lee, Heejin Kwak, Jeongho Jang, Seonghoon Lee, Sieun Yang, and Sungyul Kim\*, A study on how to improve the performance of AI-based SMP prediction algorithm, *Autumn Annual Conference of Korea Institute of Electrical Engineers(KIEE)*, Nov. 2019, Ansan-si, Gyeonggi-do.

C10 **Jisu Kim**, Oheun Kwon, and Deokwoo Lee\*, LSTM based intelligent forecasting power load and SMP, *Autumn Annual Conference of Korea Institute of Electrical Engineers(KIEE)*, Nov. 2019, Ansan-si, Gyeonggi-do.

 C9 **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 Singapore (AMLSP) 2019*, Nanyang Technological University, Singapore. (**oral**)

 C8 **Jisu Kim**, Jaehoon Choi, and Deokwoo Lee\*, Homograhy based Image Synthesis using Multiple Camera, *Conference on Information and Control Systems*, Oct. 2019, Gyeongju-si, Gyeongsangbuk-do. (**poster**)

 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**)

 J2 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, May. 2019. (**KCI**)

J1 **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, July 2019. (**KCI**)

C7 Cheolhyeong Park, **Jisu Kim**, and Deokwoo Lee\*, Geometric Deep Learned Feature Classification Based Camera Calibration, *International Conference on Signal Image Processing and Multimedia (SIPM) 2019*, Sydney, Australia.

C6 Suyeol Kim, Chaehwan Hwang, **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee\*, Similarity based Classification and Detection of Respiratory Status in Frequency Domain, *International Conference on Signal Image Processing and Multimedia (SIPM) 2019*, Sydney, Australia.

C5 **Jisu Kim**, Cheolhyeong Park, Juo Kim, and Deokwoo Lee\*, Occlusion handled block-based stereo matching with image segmentation, *International Conference on Signal Image Processing and Multimedia (SIPM) 2019*, Sydney, Australia. (**oral**)

C4 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*, pp. 395-397, Nov. 2018.

C3 Juo Kim, **Jisu Kim**, Cheolhyeong Park, and Deokwoo Lee\*, Polygon-shaped Filters for analysis of Images in Frequency Domain, *Autumn Annual Conference of IEIE*, pp. 524-526, 2018.

C2 Taehee Kwon, **Jisu Kim**, Jiyun Kim, Minkang Jin, Jungwon Heo, and Dongkwon Hong\*, Development of Smartband for Psychological analysis and diagnosis of a companion dog based on the Internet of Things, Korea Software Congress, pp. 1,817-1,819, 2018. (**poster**)

C1 Taehee Kwon, **Jisu Kim**, Jiyun Kim, Minkang Jin, Jungwon Heo, and Dongkwon Hong\*, Psychological analysis and diagnosis of a companion dog based on the Internet of Things, *Korea Software Congress*, pp. 1,848-1,850, 2017. (**poster**)

## 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

- May 2022, Best paper award of Korea Multimedia Society.
- Jan 2021, Best paper award of The Institute of Electronics and Information Engineers.
- Nov 2019, Best paper award of startup idea (4th industrial revolution talent development).
- Nov 2019, Best paper award The Korean Institute of Electrical Engineers.
- Nov 2018, Participation prize of startup idea (4th industrial revolution talent development).
- Feb 2018, Startup Club Excellence Award.

## PATENTS

- Mar 2020, Method and device for generating depth map and matching RGB image and depth map.

## REFERENCES

- References available upon request.

Updated on the April 10, 2025.