

# WooYoung Lee

June 11, 1993/Male

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Republic of Korea



## SKILLS

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- **Programming language:** Python, C++, MATLAB
- **Framework/Library:** PyTorch, LibTorch, Darknet, TensorFlow, ONNX, TensorRT, Caffe
- **OS:** Windows, Linux(Ubuntu)

## RESEARCH INTERESTS

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Deep Learning, Machine Learning, Classification, Object Detection, Image Segmentation, Person Re-Identification, Pattern Recognition

## EXPERIENCE

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### Korea Institute of Industrial Technology

Ansan, Korea

**Researcher**(Technical Research Personnel)/Applied Robot R&D Department-AI Lab

2019.11-Current

- Developed data annotation tool for instance segmentation
- Trained instance segmentation model for implementing a tomato harvesting robot
- Developed mask defect recognition system

### IntelliVIX Co., Ltd

Seoul, Korea

**Researcher**(Technical Research Personnel)/R&D Center-AI development team

2018.02-2019.11

- Trained deep learning models for classification, object detection and person re-identification
- Developed deep learning runtime engine for face recognition and human pose estimation, etc

## EDUCATION

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### Chung-Ang University

Seoul, Korea

Department of Electrical and Electronics Engineering

2016.03-2018.02

- Thesis: Determination Method of Hyperparameters based on HS Algorithm for Design of Optimal Convolutional Neural Network
- Advisor: Kwee-Bo Sim
- Master of Science in Electrical and Electronics Engineering
- GPA: 4.50/4.50

### Chung-Ang University

Seoul, Korea

School of Electrical and Electronics Engineering

2012.03-2016.02

- Bachelor of Science in Electrical and Electronics Engineering
- GPA: 3.55/4.50

## PROJECTS

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1. **Development of robot systems and operation procedures for unmanned automation on monitoring, spray, harvest and movement in horticulture**
  - Programming language: Python, C++
  - Developed data annotation tool for instance segmentation 2020.03–2020.04
  - Trained instance segmentation model for implementing a tomato harvesting robot 2020.04–2020.06
  - Development of program for remote control of UR5e robot 2020.01–2020.03
2. **Development of Intelligent Multi-Joint Meal Assisted Robot for the Elderly and Disabled with Easy Installation**
  - Programming language: Python
  - Converting object detection model to the form available in Android applications 2020.09–2020.09
3. **Development of Intelligent Marine Robot to Improve Convenience of Underwater Works**
  - Programming language: C++
  - Trained deep learning based object detection model for UAV driving 2020.08–Current
4. **Development of Intelligent Video Surveillance Technology to Solve Problem of Deteriorating Arrest Rate by Improving CCTV Constraint**
  - Programming language: Python, C++
  - Trained deep learning based person re-identification model for CCTV surveillance 2018.06–2018.12
  - Developed deep learning runtime engine for face recognition and person re-identification 2019.03–2019.04
5. **Development and Demonstration of Smart City Service Based on 5G**
  - Programming language: C++
  - Trained deep learning based object detection model for CCTV surveillance 2019.07–2019.11
6. **Development of the Robot System for Shoe-upper Manufacturing Process based on Fuse Sewing**
  - Programming language: C++, MATLAB
  - Trained Deep learning based classification model for shoe-upper pattern recognition 2017.04–2017.05
  - Developed algorithm for adhesive point generating 2017.01–2017.03

## PATENTS

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1. Kwee-Bo Sim and **Woo-Young Lee**, Terminal device and Method for setting hyperparameter of convolutional neural network, Korea Patent No.10-2129161, June 25, 2020
2. Kwee-Bo Sim and **Woo-Young Lee**, Method for deriving optimal solution using the HS algorithm and Terminal device for performing the same, Korea Patent No.10-2042323, November 01, 2019

## PUBLICATIONS(SCIE)

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- [1] **W.-Y. Lee**, S.-M. Park, and K.-B. Sim, “Optimal hyperparameter tuning of convolutional neural networks based on the parameter-setting-free harmony search algorithm”, *Optik*, vol. 172, pp. 359–367, 2018.
- [2] **W.-Y. Lee**, K.-E. Ko, and K.-B. Sim, “Robust lip detection based on histogram of oriented gradient features and convolutional neural network under effects of light and background”, *Optik*, vol. 136, pp. 462–469, 2017.

## PUBLICATIONS(DOMESTIC)

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- [3] **W.-Y. Lee**, S.-W. Lee, S. M. Park, T.-H. Kim, Z. W. Geem, I.-H. Geem, and K.-B. Sim, “Generating a adhesive nozzle path by the parameter-setting-free harmony search algorithm for a shoe-upper assembly process”, *Journal of Korean Institute of Intelligent Systems*, vol. 28, no. 1, pp. 49–56, 2018.
- [4] **W.-Y. Lee**, K.-E. Ko, Z.-W. Geem, and K.-B. Sim, “Method that determining the hyperparameter of cnn using hs algorithm”, *Journal of Korean institute of intelligent systems*, vol. 27, no. 1, pp. 22–28, 2017.
- [5] **W.-Y. Lee**, S.-M. Park, I. Jang, T.-H. Kim, and K.-B. Sim, “Cnn-based shoe-upper pattern recognition and generation of adhesive point”, *Journal of Institute of Control, Robotics and Systems*, vol. 23, pp. 725–731, 2017.
- [6] J.-W. Kim, **W.-Y. Lee**, J.-H. Yu, and K.-B. Sim, “Autonomous mobile robot control using the wearable devices based on emg signal for detecting fire”, *Journal of Korean Institute of Intelligent Systems*, vol. 26, no. 3, pp. 176–181, 2016.
- [7] **W.-Y. Lee**, H.-M. Ko, J.-H. Yu, and K.-B. Sim, “An implementation of smart dormitory system based on internet of things”, *Journal of Korean Institute of Intelligent Systems*, vol. 26, no. 4, pp. 295–300, 2016.

## AWARDS

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- Best paper award at 2017 Korea Institute of Intelligent Systems autumn conference 2017.11
- Best paper award at 2016 Korea Institute of Intelligent Systems autumn conference 2016.10