WooYoung Lee

June 11, 1993 / Male
Phone: +82-10-4621-8218
Email: wylee.dev@gmail.com
LinkedIn: wylee19930611
Portfolio: wylee-dev.github.io/_pages/portfolio
Address: 14-12, Wonjong-ro 107beon-gil, Bucheon-si, Gyeonggi-do, Republic of Korea

Skills

- **Programming language:** Python, C/C++, MATLAB
- **Framework/Library:** PyTorch, LibTorch, Darknet, TensorFlow, ONNX, ONNX Runtime, OpenCV, Qt, OpenVINO, TensorRT, Caffe
- **OS:** Windows, Ubuntu
- **Tool:** Visual studio, CMake, ROS

Research Interests

Deep learning-based computer vision(classification, object detection, image segmentation, person re-identification, face recognition, human action recognition, pattern recognition, etc.)

Experience

LG CNS Co., Ltd. Seoul, Korea
Artificial Intelligence Specialist/AI Technology LAB/CTO D&A Research Center 2021.04–Current

- Developed deep learning-based face recognition technology
- Developed deep learning-based human action recognition technology

Korea Institute of Industrial Technology Ansan, Korea
Researcher(Technical Research Personnel)/AI Lab/Applied Robot R&D Department 2019.11–2021.02

- 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)/AI development team/R&D Center 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

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

1. **Development of robot systems and operation procedures for unmanned automation on monitoring, spray, harvest and movement in horticulture**
   - Programming language: C/C++, Python
   - 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
   - Trained instance segmentation model for food recognition 2020.10–Current
3. **Development of Intelligent Marine Robot to Improve Convenience of Underwater Works**
   - Programming language: C/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: C/C++, Python
   - 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/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

1. Kwee-Bo Sim and **Woo-Young Lee,** Terminal device and Method for setting hyperparameter of convolutional neural network, KR-Registration, 10–2129161–0000
2. Kwee-Bo Sim and **Woo-Young Lee,** Method for deriving optimal solution using the HS algorithm and Terminal device for performing the same, KR-Registration, 10–2042323–0000

Publications(scie)

[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)

[3] **W.-Y. Lee**, K.-E. Ko, J. Kang, H. Park, and I. Jang, "Instance segmentation based recognition system tracking tomatoes by ripeness in natural light conditions", *Journal of Institute of Control, Robotics and Systems*, vol. 26, no. 11, pp. 940–948, 2020.

[4] **W.-Y. Lee**, S.-W. Lee, S. M. Park, T.-H. Kim, Z. W. Geem, I. Jang, 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.

[5] **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.

[6] **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.

[7] 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.

[8] **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

- 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