WooYoung Lee

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Republic of Korea

Skills

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

Research Interests

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

Experience

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

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
    - Period: 2019.11–Current
    - Programming language: Python, C++
    - Developed data annotation tool for instance segmentation
    - Trained instance segmentation model for implementing a tomato harvesting robot
    - Development of program for remote control of UR5e robot
2. Development of Intelligent Multi-Joint Meal Assisted Robot for the Elderly and Disabled with Easy Installation
    - Period: 2019.11–Current
    - Programming language: Python
    - Converting object detection model to the form available in Android applications
3. 수중 작업 편의성 향상을 위한 지능형 해양로봇 개발
    - Period: 2019.11–Current
    - Programming language: C++
    - Trained deep learning based object detection model for UAV driving
4. Development of Intelligent Video Surveillance Technology to Solve Problem of Deteriorating Arrest Rate by Improving CCTV Constraint
    - Period: 2018.04–2019.11
    - Programming language: Python, C++
    - Trained deep learning based person re-identification model for CCTV surveillance
    - Developed deep learning runtime engine for face recognition and person re-identification
5. 5G 기반의 스마트시티 서비스 개발 및 실증
    - Period: 2019.01–2019.11
    - Programming language: C++
    - Trained deep learning based object detection model for CCTV surveillance
6. Development of the Robot System for Shoe-upper Manufacturing Process based on Fuse Sewing
    - Period: 2016.05–2017.12
    - Programming language: C++, MATLAB
    - Trained Deep learning based classification model for shoe-upper pattern recognition
    - Developed algorithm for adhesive point generating

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**, 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.

Patents

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

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