Sunoh Lee

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Research Interests

Computer Vision, Robotics
Open-World Perception, Open-Vocabulary Interaction, Representation Learning

Education

Gwangju Institute of Science and Technology (GIST)   Mar 2018 – Feb 2022
Bachelor of Science in Electrical Engineering and Computer Science
Minor in Economics
GPA: 4.2/4.5 (rank: 1/121)

Hansung Science High School   Mar 2015 – Feb 2018

Publications

* indicates equal contribution.

1. **OW-Rep: Open-World Object Detection with Instance Representation Learning [paper]**
   Sunoh Lee*, Minsik Jeon*, Jihong Min, Junwon Seo
   arXiv preprint, Under Review, 2025
   Accepted to **IROS Workshop** on Label Efficient Learning Paradigms for Autonomy at Scale, 2024

Work Experience

Republic of Korea Army (ROKA)   Apr 2022 – Present
First Lieutenant   Daejeon, Republic of Korea

- Selected as one of the 25 officers in Korea dedicated to science and technology research for national defense. Assigned to ADD for the development of defense technology.

Agency for Defense Development (ADD)   Jun 2022 – Present
Deep Learning Researcher   Daejeon, Republic of Korea

- **Project: Multi Robot Cooperative Autonomous Driving**
  Developed a method to merge detection results, enabling multiple Unmanned Ground Vehicles (UGVs) to cooperate effectively while in motion, based on ROS2.

- **Project: Unmanned Reconnaissance Vehicles Development**
  Developed a method to filter moving objects from LiDAR points using the Iterative Closest Point (ICP) algorithm, enabling robust path planning.

- **Project: Autonomous Tunnel Exploitation**
  Developed an unseen object detection method for autonomous robotic exploration in subterranean environments using an IP-camera and ROS2.
  Extracted generalizable latent features of previously unlearnable objects, enabling the system to recognize similarities between objects and detect hazardous materials.

- **Project: Deformable Object Recognition Technology**
  Constructed a dataset to enable the detection of deformable objects, such as animals, which may appear in specific environments like off-road terrain, rather than common objects like humans or vehicles.
  Developed a voxel-based 3D object detection method using LiDAR to identify deformable objects.

Computer Vision Lab (GIST)   Mar 2021 – Dec 2021
Researcher Intern   Gwangju, Republic of Korea
Advisor: Prof. Jonghyun Choi

- **Project: Image Dataset occluded by various type of wires**
  Built an image dataset of objects occluded by various types of wires and validated it through object classification and segmentation.
  Conducted performance analysis on object recognition under wire occlusions using various augmentations and data preprocessing techniques.

Teaching Experience

Tutor, Linear Algebra, Gwangju Institute of Science and Technology

Selected Awards & Honors

2nd Place - Forest Public • Big Data Start-up Competition   Sep 2022
- Won second place in a start-up competition organized by Korea Forest Service
- IDEA: Customized hiking trail recommendation service

2nd Place – World Friends ICT volunteers Program   Dec 2019
- Won second place in the final presentation of volunteer program
  organized by National Information Society Agency (NIA)

National Excellence Scholarship for Science and Engineering   Mar 2020 – Feb 2022
National Scholarship for Undergraduate Study   Mar 2018 – Feb 2020

Skills

Programming Languages: python, C/C++, MATLAB
Technologies: Pytorch, Docker, Git, OpenCV, ROS2, Ubuntu

Extracurricular Activities

Volunteer Activities
- **World Friends ICT Volunteers Program in Moldova**   Jun 2019 – Jul 2019
  Provided programming and Korean language education, along with cultural exchange activities.
- **Happy Move Global Youth Volunteer Program in India**   Jul 2018
  Developed appropriate desk technology for small spaces, participated in school facility maintenance, and engaged in cultural exchange initiatives.

The dormitory council   Sep 2018 – Feb 2020
Planned and organized various events and welfare programs