MINSIK JEON

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RESEARCH INTEREST

- **Robotics**
  Robotic Perception, Autonomous Driving in Complex Environments, Semantic Scene Understanding
- **Computer Vision**
  Domain Adaptation & Generalization, Self-supervised Learning, Open-World Perception, Sensor Fusion

EDUCATION

- **Korea Advanced Institute of Science and Technology (KAIST)** — Daejeon, Korea
  Bachelor of Science in Computer Science — *Mar. 2018 – Feb. 2022*
  Bachelor of Science in Electrical Engineering
  GPA: 4.01/4.30 (Total 157 Credits); Dean's List 3 semesters; ***Summa Cum Laude***
- **Gyeonggi Science High School for Gifted Students** — Suwon, Korea
  High school for talented students in math and science — *Mar. 2015 – Feb. 2018*

PUBLICATIONS

* indicates equal contribution.

1. **Open-World Object Detection with Instance Representation Learning**
   Sunoh Lee, Minsik Jeon*, Junwon Seo, Jihong Min.*
   Submitted to IEEE International Conference on Robotics and Automation (**ICRA**), 2025. [link]
   Accepted to **IROS Workshop** on Label Efficient Learning Paradigms for Autonomy at Scale, 2024
2. **DA-RAW: Domain Adaptive Object Detection for Real-World Adverse Weather Conditions**
   Minsik Jeon, Junwon Seo*, Jihong Min.*
   IEEE International Conference on Robotics and Automation (**ICRA**), 2024. [link] [project page]

DOMESTIC PUBLICATIONS

1. *M. Jeon, et al.* "Generalizing Temporally Consistent LiDAR Feature Map using a Foundation Model." Korea Institute of Military Science and Technology (KIMST), 2024.
2. *M. Jeon, O. Kim, J. Min.* "Off-road BEV Semantic Map Generation Using a Foundation Model for Autonomous Driving." Korea Institute of Military Science and Technology (KIMST), 2024.
3. *M. Jeon, et al.* "Open Set Object Detection with Pseudo Labels Obtained via SAM." Korea Institute of Military Science and Technology (KIMST), 2024.
4. *M. Jeon, B. Lee, S. Jang.* "Integrating Reflectivity Images to Enhance LiDAR-Based 3D Object Detection." Korea Robotics Society Annual Conference (KRoC), 2024.
5. *H. Ham, M. Jeon, S. Jang.* "Unsupervised Learning with Pseudo-Labels for Object Detection in LiDAR Pointcloud." Korea Institute of Military Science and Technology (KIMST), 2023.
6. *J. Seo, M. Jeon, S. Lee, O. Kim, J. Min.* "2D Object Detection Under Adverse Lighting Conditions Using Near Infrared Images from 3D LiDAR." Korea Institute of Military Science and Technology (KIMST), 2023.
7. *J. Seo, M. Jeon, J. Min.* "Robust Domain Adaptive Object Detection in Adverse Weather Conditions." Korea Institute of Military Science and Technology (KIMST), 2023.
8. *M. Jeon, J. Seo, S. Lee, J. Lee.* "Self-Supervised Traversability Data Generation for Traversability Estimation on Images." Korea Robotics Society Annual Conference (KRoC), 2023.
9. *O. Kim, M. Jeon, S. Shim, J. Seo.* "Traversability Estimation on Unstructured Environments Using IR and RGB Fusion." Korea Robotics Society Annual Conference (KRoC), 2023.
10. *M. Jeon, C. Park.* "Performance and Operation Analysis of On-Board RAID." Korea Institute of Information Scientists and Engineers (KIISE), 2020.

Research Experience

- **Agency for Defense Development - AI Autonomy Center** — Daejeon, Korea
  Research Officer for National Defense — *Jun. 2022 – Present*
  - **Project: Multi-robot Cooperative Autonomous Driving**
    – Build a generalizable LiDAR semantic segmentation model across various LiDAR sensor configurations on robotic platforms.
    – Develop a BEV traversability map by combining traversability estimates from multiple UGVs and UAVs for off-road autonomous driving, including sensor data acquisition and integration, UAV image registration, and uncertainty-aware mapping.
  - **Project: Deformable Object Recognition Technology**
    – Researched an open-world object detection and instance representation learning method using foundation models, enhancing the reliability and adaptability of detectors in off-road environments with unknown objects.
    – Devised an unsupervised domain adaptation method for object detection, improving robustness in real-world adverse weather.
  - **Project: Adaptive Path Planning Based on Situational Awareness and Dynamic Model Learning**
    – Designed a perception system with multi-sensor fusion for robust off-road autonomous driving, integrating LiDAR and cameras for semantic terrain classification, mapping, and dynamic object detection and tracking.
    – Examined path planning and control algorithms for high-speed navigation in complex environments.
  - **Project: Unmanned Reconnaissance Vehicles Development**
    – Implemented a real-time LiDAR and Infrared camera fusion method for robust object detection, enabling reliable vehicle operation in visibility-constrained scenarios.
- **Neuro-Instrumentation and Computational Analysis Lab, KAIST** — Daejeon, Korea
  Undergraduate Researcher, advised by Prof. Young-Gyu Yoon — *Oct. 2021 – Feb. 2022*
  - **Project: Microscopy Image Artifact Removal and Super-Resolution**
    – Built a super-resolution network for light sheet microscopy images using a 3D style transfer model and confocal microscopy data, improving the quality of 3D microscopy images by removing line artifacts.
- **Unmanned System Research Group, KAIST** — Daejeon, Korea
  Undergraduate Researcher, advised by Prof. David Hyunchul Shim — *Jun. 2021 – Sep. 2021*
  - **Project: Indy Autonomous Challenge (IAC)**
    – Developed the detection and tracking algorithm and the overtaking policy for the Indy Autonomous Challenge (IAC), the first autonomous car racing competition, as an intern of Team KAIST *(Achieved 4th place)*.

Work Experience

- **Research Officer for National Defense** — Daejeon, Korea
  First Lieutenant, Republic of Korea Army — *Apr. 2022 – Present*
  - Selected as one of the only 20 officers in the nation dedicated to science and technology research for national defense.
  - Organized weekly machine learning and computer vision seminars, exploring applications of recent papers to current projects.
- **SK Hynix** — Seongnam, Korea
  Winter Intern — *Dec. 2019 – Feb. 2020*
  - **Project: Performance and Operation Analysis of On-board RAID**
    – Analyzed the performance and operations of each RAID option in the on-board RAID system *(Selected as Best Intern Project)*.

Teaching Experience

- **Tutor**, Calculus, KAIST — *Mar. 2021 – Dec. 2021*
- **Major-specific Mentoring** on Computer Science, Young Engineers Honor Society (YEHS) — *Jan. 2021 – Mar. 2022*

Scholarships

- **National Excellence Scholarship for Science and Engineering**, Korea Student Aid Foundation — *Mar. 2020 – Feb. 2022*
- **SK Hynix Scholarship for Excellence**, SK Hynix — *Mar. 2020 – Feb. 2021*
- **National Scholarship for Undergraduate Study**, Korea Student Aid Foundation — *Mar. 2018 – Feb. 2020*

Reviewer Service

- IET Image Processing — *2024*

Extracurricular Activities

- **32th Class of Professional Officer** *2022 – 2025*
  Military Service, First Lieutenant, Republic of Korea Army
- **Young Engineers Honor Society (YEHS)** *2021 – Present*
  Association of Korean engineering students under the National Academy of Engineering of Korea
- **Nanyang Technological University Summer Exchange Student** *2019*
  Short-term (6 weeks) exchange student at Nanyang Technological University (NTU)
- **KAIST Freshman Student Council** *2018 – 2019*
  Student Council for Freshmen at KAIST

Skills

- **Programming Languages:** Python, C, C++, MATLAB
- **Technologies:** PyTorch, ROS2, ROS1, Docker, Linux, GIT, OpenCV
- **Languages:** Korean (Native), English (Fluent, TOEFL iBT 105)