Joonhyung Lee

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Education

Korea University Sep. 2022 - Present
M.S. in Artificial Intelligence **GPA: 4.11/4.5**
Advisor: Sungjoon Choi

Korea University Mar. 2018 - Feb. 2022
B.S. in Electro-Mechanical Systems and Engineering **GPA: 4.11/4.5 (cumulative) 4.3/4.5 (major)**
Advisor: Hyunhwan Jeong

Research Experience

Machine Decision Intelligence & Learning Lab | KAIST (*Prof. Donghwan Lee*) Jan. 2022 - Jun. 2022

Research Intern *Python, Reinforcement Learning, PyTorch, ROS1*

- Study the basic theory of Reinforcement Learning
- Implemented PPO, SAC, DDPG to solve tasks in OpenAI Gym, achieving 10% improvement over baselines.
- Solve robotics tasks: Manipulator Motion Planning and Navigation.

Human-oriented Robot System & Control Lab | Korea Univ. (*Prof. Hyunhwan Jeong*) Sep. 2019 - Feb. 2021

Undergraduate Research Student *C/C++, Control, Robotics, ROS1, GitHub*

- Participated in projects on robotics, computer vision,
  - Robotics: 3 DOF Robot Arm Manipulation Motion planning
  - Computer Vision: Color-based object position tracking via Kalman Filter
- Poster presentation on Visual serving control robot arm-gripper system at 7th Korea University EMSE Student Academic Conference (The most excellent prize)

KUCIRA | Student Club Mar. 2018 - Feb. 2021

Undergraduate Research Club *C/C++, Control Theory, Embedded System*

- Participated in projects on robot programming, H/W design
  - Robot programming: Implemented Robot Programming
  - H/W Design: Design Mobile Robot and Robot Arm-gripper
- Poster presentation on Rescue Smart Car at 7th Korea University EMSE Student Academic Conference (The excellent prize)

Experience

ROBOTIS Sep. 2022 - Aug. 2023

Software Engineer *PyTorch, TensorRT, ROS2*

- Contributing to ROBOTIS AI Team, an Autonomous Elevator Boarding using a Mobile Manipulator AI project focused on robust detection and autocompletion.
- Using a YOLO-based detection model, and mitigating the class imbalance problem with diffusion models.
- Implemented an automated elevator boarding system that runs in real-time in a ROS2 environment.

Skills

Languages:

Python, C/C++, Matlab

Technologies & Tools:

MuJoCo, Git, Linux, ROS(1&2), Docker, AVR

Robots & Controller Hardware:

UR5e, Franka Panda, Aimbot (ROBOTIS), Jetson Nano, ATmega128, Raspberry PI, Arduino