Hojune Kim

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Research Interests

Robot Perception: Multi-sensor SLAM, Autonomous Navigation, Multi-agent Systems
System Engineering: System Design, Modelling and Manufacture

Education

Seoul National University Mar. 2019 – Aug. 2025(Expected)
B.S. in Aerospace Engineering *Seoul, South Korea*
- GPA: 4.21/4.30(Major), 4.07/4.30(Overall)

ETH Zürich Feb. 2024 – Aug. 2024
Exchange Student in Mechanical Engineering *Zürich, Switzerland*

Working Experience

German Aerospace Center DLR Sept. 2024 – Feb. 2025(Expected)
Guest Researcher, Advisor: Prof. Jinoh Lee *Munich, Germany*
- Topic : Humanoid Robot Navigation via Vision and Force-Torque Sensor

Research Experiences

Vision for Robotics Lab Feb. 2024 – Aug. 2024
Undergraduate Researcher, Advisor: Prof. Margarita Chli *ETH Zürich*
- Topic : Continuous-Time SLAM via Gaussian Belief Propagation for distributed system

Robust Perception and Mobile Robotics Lab Jan. 2023 – Mar. 2024
Undergraduate Researcher, Advisor: Prof. Ayoung Kim *Seoul National University*
- Topic : Robust mmWave Radar Odometry / Direct SLAM with Infrared camera and LiDAR / Camera-LiDAR-Radar Calibration via Graph Optimization

Satellite Geophysics Lab Aug. 2020 – May. 2021
Undergraduate Researcher, Advisor: Prof. Duk-jin Kim *Seoul National University*
- Topic : Real-time flood monitoring system via segmentation using satellite SAR image

Publication

Peer-Reviewed Workshop Paper

- (Oral) H. Kim, H. Jang and A. Kim. 2D Ego-Motion with Yaw Estimation using Only mmWave Radars via Two-Way weighted ICP. ***ICRA2024 Workshop*** *on Radar in Robotics, Yokohama, Japan, 2024.*

Honors & Awards

Awards:

Gold Prize, International Student Car Competition Autonomous Driving Sector Oct. 2021
Ministry of Land, Infrastructure and Transport, Republic of Korea

Minister of National Defense Award, Minister of Defense Startup Competition Dec. 2022
Ministry of National Defense, Republic of Korea

Final Selected, Star-Exploration Startup Support Project Feb. 2021
Korea Aerospace Research Institute(KARI)

Honors:

Korea-Germany Junior Research Fellowship Support, $9,000 Max Planck POSTECH Sept. 2024
- Full coverage of expenses during in DLR as a guest researcher

Kwanjeong Undergraduate Scholarship, Kwanjeong Educational Foundation Mar. 2021
- Full coverage of junior and senior tuition and $2,200 per semester

Global Leadership Program Scholarship, $3,300 Seoul National University — Spring 2024
Certificate of Appreciation(AI Tech Play), Dean, College of Engineering in SNU — Jun. 2021
Undergraduate Research Internship Scholarship, Seoul National University — Mar. 2020
Merit-based Scholarship, Seoul National University — Fall 2019, Spring & Fall 2020

Graduate Course Projects

Perception and Learning for Robotics(5.5/6.0) — Spring 2024
Topic: Crowd Navigation with LiDAR via Reinforcement Learning — *ETH Zürich*
- Trained End-to-end model by teacher-student policies in Orbit(built on Isaac Sim)

Decision Making for Autonomous Aerospace Systems(A+) — Spring 2023
Topic: Fault Tolerant Control of Quadrotor — *Seoul National University*
- Designed Controller via Feedback Linearization, Sliding Mode and Backstepping

Sensor-Based Spatial Intelligence(A0) — Fall 2023
Topic: Analysis of LiDAR SLAM in long-term localization — *Seoul National University*
- Compared LiDAR SLAM in urban datasets for long term localization

Memberships & Activities

AI Tech Play(KAIT Foundation), Non-Profit Organization for AI education — Feb. 2021 – Aug. 2021
Tech/Assembly Team Leader
- served as Organizer : AI RC-car competition for nationwide students(200+ students participated)
- served as Developer : Modeled and manufactured AI RC-car system from skeleton for education and competition

SNU ZERO, Autonomous Driving Car Club in SNU — 2021
- Performed Extended-Kalman Filter with IMU, GPS and land detection for robust localization
- Developed dynamic obstacle avoidance by clustering LiDAR and combining vision detection

Bulnabi, Autonomous Flight Drone Club in SNU — 2023
- Developed auto-landing algorithm with path planning via bézier curve for continuous trajectory and control
- Verified in Gazebo simulation and on-board flight tests; finalizing technology transfer to the company

CH-47D Helicopter Flight Attendant, Republic of Korea Army — Aug. 2021 – Feb. 2023
- Put on tactical missions including forest fire extinguish mission for 60+ hours flight during the military service

SNU Tomorrow's Engineers Membership(STEM), SNU — Sept. 2023 – Present
- Launched academic mentoring : Organized mentoring seminar for engineering freshmen
- Launched academic talks : LiDAR vs Radar in perception field / Start-up business model building

Science Volunteer Corps, SNU — Jul. 2019
- Held science experiment and mentoring for students in Gochang

Teaching Experience

Teaching Assistant — Spring 2023
(M3228.001300)Basic of Robot Programming and Mechanical System Design — *Seoul National University*
- taught ML algorithms in Python and soldered propeller competition kits for 100+ students

Teaching Tutor — Fall 2023
Engineering Mathematics I & Dynamics — *Seoul National University*

Patent

Parking Location Tracking System, KR102291377B1 — 2021
- H. Kim, T. Kim, J. Na, J. Lee, S. Jeong

Skills

Programming: C/C++, Python, Javascript
Frameworks: ROS, Isaac Sim, Gazebo, Pytorch
Manufactures: SolidWorks, 3D printer(Stratasys), Laser cutter
Tools: PX4-Autopilot, Matlab, Docker, Figma, QGIS