

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 (SNU) Mar. 2019 – Present
B.S. in Aerospace Engineering, summa cum laude (expected) *Seoul, South Korea*
• GPA: 4.21/4.30(Major), 4.07/4.30(Overall) * 1.5-year absence from military service
ETH Zürich Feb. 2024 – Aug. 2024
Exchange Student in Mechanical Engineering *Zurich, Switzerland*

WORKING EXPERIENCE

German Aerospace Center DLR Sept. 2024 – Present
Guest Student Researcher, Advisor: Prof. Jinoh Lee *Munich, Germany*
• Topic : Humanoid Navigation via Semantic Mapping and Force-Torque Sensor Compensation

RESEARCH EXPERIENCES

Vision for Robotics Lab | ETH Zürich Feb. 2024 – Aug. 2024
Semester Project Intern, Advisor: Prof. Margarita Chli *Zurich, Switzerland*
• Topic : Continuous-Time SLAM via Gaussian Belief Propagation for distributed system
Robust Perception and Mobile Robotics Lab | SNU Jan. 2023 – Mar. 2024
Undergraduate Researcher, Advisor: Prof. Ayoung Kim *Seoul, South Korea*
• Topic : Robust mmWave Radar Odometry / Direct SLAM with Infrared camera and LiDAR
• Topic : Handheld Sensor System Development / Camera-LiDAR-Radar Calibration via Graph Optimization
Satellite Geophysics Lab | SNU Aug. 2020 – May. 2021
Undergraduate Researcher, Advisor: Prof. Duk-jin Kim *Seoul, South Korea*
• Topic : Real-time flood monitoring system via segmentation using satellite SAR image

PUBLICATION

Peer-Reviewed Workshop Paper
• 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:

Minister of National Defense Award, Minister of Defense Startup Competition Dec. 2022
Ministry of National Defense, Republic of Korea
Gold Prize, International Student Car Competition Autonomous Driving Sector Oct. 2021
Ministry of Land, Infrastructure and Transport, 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, \$17,000 | Kwanjeong Educational Foundation Mar. 2021
• Full coverage of junior and senior tuition and stipend

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

SELECTED GRADUATE COURSE PROJECTS

Perception and Learning for Robotics ETH Zürich	Spring 2024
Topic: Crowd Navigation with LiDAR via Reinforcement Learning	
• Trained End-to-end model by teacher-student policies in Orbit(built on Isaac Sim)	
Decision Making for Autonomous Aerospace Systems SNU	Spring 2023
Topic: Fault Tolerant Control of Quadrotor	
• Designed Controller via Feedback Linearization, Sliding Mode and Backstepping methods	
Sensor-Based Spatial Intelligence SNU	Fall 2023
Topic: Analysis of LiDAR-Inertial SLAM in long-term localization	
• Compared and evaluated LiDAR-Inertial SLAM in urban datasets	

MEMBERSHIPS & ACTIVITIES

Army Aviation Operations Command Republic of Korea Army	Aug. 2021 – Feb. 2023
<i>CH-47D Helicopter Maintenance Mechanics & Flight Attendant</i>	
• Produced CH-47D maintenance and put on tactical missions including forest fire extinguish for 60+ hours flight	
AI Tech Play(KAIT Foundation) , Non-Profit Organization for AI education	Feb. 2021 – Aug. 2021
<i>Tech/Assembly Team Leader</i>	
• 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 SNU	Jan. 2021 – Oct. 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 SNU	Feb. 2023 – Jan. 2024
• Developed auto-landing algorithm with path planning via bezier curve for continuous trajectory and control	
• Verified in Gazebo simulation and on-board flight tests; finalizing technology transfer to the company	
SNU Tomorrow's Engineers Membership(STEM) SNU	Sept. 2023 – Present
• Launched academic mentoring : Organized a 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 camp for students in Gochang	

TEACHING EXPERIENCES

Teaching Assistant	Spring 2023
(M3228.001300) Basic of Robot Programming and Mechanical System Design SNU	
• Taught machine learning algorithms in Python and developed propeller competition kits for 100+ students	
Teaching Tutor	Fall 2023
Engineering Mathematics I & Dynamics SNU	

PATENT

Parking Location Tracking System , KR102291377B1	2021
• <u>H. Kim</u> , T. Kim, J. Na, J. Lee, S. Jeong	

SKILLS

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