Sangbum Lee

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Personal git: https://github.com/Sangbum99

Personal Profile

Master student majoring in aerospace engineering at the Navigation and Electronics Lab(NESL), Seoul National University, and researching semantic SLAM using deep neural networks(DNN). Capable of designing a navigation system using cameras, LiDARs, inertial measurement units, and Global Navigation Satellite System(GNSS) with C++, Python, and Robot Operating System(ROS). Passionate about exploring new technologies and integrating them into real-world applications to enhance system performance and reliability.

Education

M.S. in Aerospace Engineering Sep. 2023 – Aug. 2025(Exp.)

Seoul National University, Seoul, South Korea GPA: 3.8/4.3

[Thesis] "*Semantic-aware Visual-Inertial Odometry Based on Plane Constraints for Ground Mobile Robots*"

International Exchange Student Aug. 2022 – Dec. 2022

Hamline University, Minnesota, United States GPA: 3.55/4.0

B.S. in Mechanical and Aerospace Engineering Mar. 2018 – Aug. 2023

Konkuk University, Seoul, South Korea Major GPA: 3.91/4.5

Major Coursework

Integrated Navigation System, M.S.	A+
Machine Learning for Visual Understanding, M.S.	A0
Aerospace Estimation, M.S.	A-
Control Engineering, B.S.	A0

Experience

Research Member, NESL, Seoul National University Sep. 2023 – Current

- Participation in a project of developing an EKF-based integrated navigation system using a LiDAR, camera, inertial measurement unit, and GNSS for an unmanned vehicle with Korea Aerospace Research Institute(KARI).
- Research to improve the performance of the Visual-Inertial Navigation System(VINS) for autonomous mobile robots by imposing additional constraints using semantic information from DNN.

H-Mobility: Autonomous Driving Course, Hyundai Motor Group Mar. 2024 – Aug. 2024

- Education and implementation of the overall autonomous vehicle system including perception, control and network system. In-depth education for perception system including DNN-based object detection and SLAM.

Military Service, Republic of Korea Army Mar. 2020 – Sep. 2021

- Served as a maintenance technician for medium transport helicopters, and discharged at the rank of sergeant.

Publications

GRVIO: Semantic-aware Visual-Inertial Odometry for Ground Robot Platforms

Sangbum Lee, Hanyeol Lee, and Chan Gook Park IEEE Access, Aug 2025

Visual-Inertial Odometry based on Dynamic Measurement Model

Sangbum Lee, Hanyeol Lee, and Chan Gook Park KSAS, Apr. 2025

G4Q-VIO: Ground constraints for a quadruped robot VIO

Sangbum Lee, Hanyeol Lee, and Chan Gook Park ICRA 40, Sep. 2024

Improvement of Visual-Inertial Odometry Utilizing Plane-Constraints for a Quadruped Robot

Sangbum Lee, Hanyeol Lee, and Chan Gook Park ICROS, Jul. 2024

Performance Enhancement Analysis of Mars Unmanned Helicopter Rotor

Seong Hyun Hong, Sangbum Lee, Jae Seong Bae, Sung Nam Jung, et al. KSAS, Apr. 2023

Projects

Development of Indoor and Outdoor Integrated Navigation Technology for private repo.

Operating in Unknown and Harsh Environments

- Implementation of an integrated navigation system with ROS2 using multi-sensors(Camera, LiDAR, IMU, GPS) and a low-cost mission computer.
- IDE: C/C++, Python, Opencv, ROS2, Linux

H-Mobility-Autonomous-driving-course public repo.

- Implementation of an overall autonomous driving system incorporating visual perception, path planning, and control system using a camera, LiDAR and arduino.
- IDE: C/C++, Python, OpenCV, ROS2, Arduino, Linux

SimMSCKF public repo.

- Implementation of a VINS simulation based on Multi-State Constraints Kalman Filter with python and ROS2 in ubuntu 22.04 for easy debugging and development.
- IDE: Python, ROS2, Linux

Skills

Programming languages: C/C++, Python, MATLAB

Technical tools: ROS, ROS2, OpenCV, CATIA, AutoCAD, Docker, Github, MS Office.

Language certificates:

OPIC, IH Feb. 2025

TEPS, 397 Jan. 2023