Hoang Viet Do, Ph.D.

SLAM Researcher
MobilTech Co., Ltd.

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⌂ Personal Homepage
○ GitHub Profile
⌂ Company Website

Education

2025
(Dual Degree)

Ph.D. in Intelligent Mechatronics Engineering (GPA: 4.5/4.5)
Ph.D. in Convergence Engineering for Intelligent Drone (BK21 FOUR)
Sejong University, Seoul, Republic of Korea

- Dissertation: *Dead Reckoning Based on Radar Odometry: Approaches, Design, and Experiments* [**PDF**]
- Advisor: Associate Professor Jin Woo Song

2021
(Dual Degree)

M.Eng. in Unmanned Vehicle Engineering (GPA: 4.38/4.5)
M.Eng. in Convergence Engineering for Intelligent Drone (BK21 FOUR)
Sejong University, Seoul, Republic of Korea

- Thesis: *A Monocular Visual-Inertial Navigation System based on Multi-state Constraint Kalman Filter with Comprehensive Feature Motion Measurements* [**PDF**]
- Advisor: Associate Professor Jin Woo Song

2018

B.S. in Control Engineering and Automation Technology
Hanoi University of Science and Technology, Hanoi, Vietnam

- Thesis: *Applying Convolutional Neural Networks for road lane detection, Adaboost for traffic light recognition and PID for trajectory tracking for an autonomous car* (in Vietnamese)
- Advisor: Associate Professor Thu Ha Nguyen and Associate Professor Thi Lan Le

Awards and Scholarship

2021	Brain Korea 21 Phase Four (BK21 FOUR) Scholarschip
2018	Best Final Year Project (B.S. Thesis).
2017	Hanoi University of Science and Technology Award for Excellent Students

Technical Skills and Interests

Research Interests: Artificial intelligence for robotics, Kalman filtering, SLAM, state estimation, sensor fusion (LiDAR, Radar, Camera, IMU, and GNSS)

Programming: C++, ROS 1/2, Python, MATLAB, LaTeX

Open-source Software

2024	Dead Reckoning Based on Radar Odometry (C++) – *IEEE IROS* [**Code**]
2021	Drone Visual-Inertial Navigation System Simulation (MATLAB) – *IEEE ICCAS* [**Code**]

Journals

1. **Hoang Viet Do**, Bo Sung Ko, Yong Hun Kim, and Jin Woo Song, "CREVE: An Acceleration-based Constraint Approach for Robust Radar Ego-Velocity Estimation," preparing for resubmission [**Arvix**]
2. Joo Han Lee, Yong Hun Kim, **Hoang Viet Do**, Bo Sung Ko, and Jin Woo Song, "Real-time smoothing filter based on constraints for backward filtering," *Measurement*, vol. 262, pp. 120013, 2026. [**Paper**]
3. Bo Sung Ko, Joo Han Lee, **Hoang Viet Do**, Yong Hun Kim, and Jin Woo Song, "INS/Multi-Positioning Sensor-Based Fault Tolerant VTOL Navigation System Via 3D Distance Constraints," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 61, no. 5, pp. 14490-14503, Oct. 2025 [**Paper**]
4. **Hoang Viet Do** and Jin Woo Song, "Error-state Kalman Filtering with Linearized State Constraints," *Aerospace* 2025, 12, 243 [**Paper**]
5. Min Ho Lee, Kyeong Wook Seo, Dong Yun Hwang, Jin Woo Song, and **Hoang Viet Do**, "Radar Dead-reckoning Based EKF-SLAM Using Virtual Line Segment," *Journal of Institute of Control, Robotics and Systems*, vol. 30, no. 9, pp. 996-1003, 2024
6. Kyeong Wook Seo, Dong Yun Hwang, Min Ho Lee, Jin Woo Song, and **Hoang Viet Do**, "Re-estimate the Robot Position by Estimating the Location of Unknown ArUco Markers with Feature Velocity Aid," *The Transactions of the Korean Institute of Electrical Engineers*, vol. 73, no. 4, pp. 711-717, 2024
7. Duyen Ha Thi Kim, Tien Ngo Manh, Chien Nguyen Nhu, **Viet Do Hoang**, Huong Nguyen Thi Thu, "Tracking control for electro-optical system in vibration enviroment based on self-tuning fuzzy sliding mode control," *Journal of Computer Science and Cybernetics*, vol. 35, no. 2, pp. 185-196, 2019 [**Paper**]

Conferences

1. **Hoang Viet Do**, Yong Hun Kim, Joo Han Lee, Min Ho Lee, and Jin Woo Song, "DeRO: Dead Reckoning Based on Radar Odometry With Accelerometers Aided for Robot Localization," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024 [**Code**][**Paper**][**ArXiv**]
2. **Hoang Viet Do**, Yeong Seo Kwon, Hak Ju Kim, and Jin Woo Song, "An Improvement of 3D DR/INS/GNSS Integrated System using Inequality Constrained EKF," *22nd International Conference on Control, Automation and Systems (ICCAS)*, 2022 [**Paper**]
3. **Hoang Viet Do**, Yong Hun Kim, Yeong Seo Kwon, San Hee Kang, Hak Ju Kim, and Jin Woo Song, "An Adaptive Approach based on Multi-State Constraint Kalman Filter for UAVs," *21st International Conference on Control, Automation and Systems (ICCAS)*, 2021 [**Code**][**Paper**]
4. Yeong Seo Kwon, Yong Hun Kim, **Hoang Viet Do**, San Hee Kang, Hak Ju Kim, and Jin Woo Song, "Radar Velocity Measurements Aided Navigation System for UAVs," *21st International Conference on Control, Automation and Systems (ICCAS)*, 2021 [**Paper**]
5. Hoang Anh Tran, **Hoang Viet Do**, and Jin Woo Song, "State Estimation for Polysolenoid Linear Motor based on an Adaptive Unscented Kalman Filter with Unknown Load and Measurement Noises," *20th International Conference on Control, Automation and Systems (ICCAS)*, 2020 [**Paper**]
6. Min Jun Choi, Yong Hun Kim, Eung Ju Kim, **Hoang Viet Do**, and Jin Woo Song, "Land-Vehicle Navigation System for Autonomous Driving with Averaged Nonholonomic Measurement," *IEEE Vehicle Power and Propulsion Conference (VPPC)*, 2019 [**Paper**]

Research and Work Experience

2025 – present **Development of SLAM algorithm for low-cost IMU-GNSS-LiDAR-Camera sensor system**
SLAM Researcher at MobilTech Co., Ltd., Seoul, Republic of Korea.
- Full-time position.

2024 – 2025 **Development of 3D Sensor Fusion Technology for Improving Detection Performance of Unmanned Vehicles**
Graduate Research Student at Sejong University
- Funded by the National Research Foundation of Korea (NRF)
- Building a ROS 2 package to gather sensor data from a LiDAR (Livox Avia), a radar (RETINA-4FN), and a camera (OAK-D Pro)

2022 – 2023 **Development of Indoor and Outdoor Integrated Navigation Technology for Operating in Unknown and Harsh Environments**
Graduate Research Student at Sejong University
- Funded by the National Research Foundation of Korea (NRF)
- Collaborating with Seoul National University
- Building a simulation for ground and aerial vehicles using Unreal Engine and AirSim to generate LiDAR, IMU, and camera data in harsh environments (rain, snow, fog, and tunnels) [**Code**]

2019 – 2021 **Development of Core Technology for Next Generation AI-based Unmanned Flying Vehicles**
Graduate Research Student at Sejong University
- Funded by the Ministry of Science and ICT, Republic of Korea
- Outdoor and indoor autonomous landing of a drone on static and moving targets using an IMU and camera
- Simulation (Gazebo, ROS 1, Python) [**Code**] and real-world experiments (CUAV v5+, Raspberry Pi 4 and Intel Realsense T265)

2016 – 2017 **Research and Development of Control Algorithms for Electro-Optical Tracking and Omnidirectional Robotics**
Undergraduate Research Student at Vietnam Academic of Science and Technology (VAST)
- One domestic conference paper.