Duy-Nam Bui

Ph.D. Candidate in Automatic Control

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Duy-Nam Bui
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Research Interests

Multi-agent Systems, Networked Control Systems, Control Theory

Education

Linköping University — **Linköping, Sweden**
Doctor of Philosophy in Automatic Control — Aug. 2025 – Present

- Supervisor: Prof. Claudio Altafini

Vietnam National University, Hanoi — **Hanoi, Vietnam**
Master of Science in Electronics Engineering — Oct. 2022 – Dec. 2024

- Thesis title: *"Distributed Control strategies for Changing Multiple UAV Formation"*
- Supervisor: Dr. Hung Pham Duy
- Co-Supervisor: Dr. Manh Duong Phung

Vietnam National University, Hanoi — **Hanoi, Vietnam**
Bachelor of Engineering in Robotics Engineering — Aug. 2018 – Jun. 2022

- Thesis title: *"Lyapunov-based Nonlinear Model Predictive Control for Trajectory tracking and Navigation of a Four wheeled omni-directional Mobile Robot"*
- Supervisor: Dr. Van Nguyen Thi Thanh

Awards and Honors

International Awards

- *Best Paper Award*, the 7th International Conference on Control, Robotics and Informatics 2024

Domestic Awards

- *Excellent Employee 2024*, VinAI Research 2025
- *Master Scholarship*, Vingroup Innovation Foundation (VINIF) 2023, 2024
- *Valedictorian*, Robotics Engineering, Vietnam National University, Hanoi 2022
- *Best Under-graduation Thesis Award*, Robotics Examination Committee 2022

Academic Services

Reviewer

- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Aerospace and Electronic Systems
- Swarm and Evolutionary Computation
- ISA Transactions
- Neural Computing and Applications
- Intelligent Service Robotics

Work Experiences

VinAI Research **Hanoi, Vietnam**

Automotive Embedded Engineer at Smart Mobility Division, full-time Oct. 2023 – Aug. 2025

– **Parking Solutions**: Algorithms developed and system integrated into car to assist drivers in parking process.

+ **Fully Automatic Parking Assist** *(Smart Parking Innovation of the Year – Autotech Breakthrough Award 2024)*

+ **Reverse Autonomous Emergency Braking**

+ **Home-zone Park Assist**

- Developed optimal controller, with focus on Model Predictive Control solution.
- Developed and integrated motion planning modules (A*, JPS, Hybrid A*).
- Developed and enhanced the smooth movement of low-level controller.

Rikkeisoft **Hanoi, Vietnam**

Robotics Engineer at Rikkei AI Division, full-time Jul. 2022 – Aug. 2023

– **Indoor Service Robot**: System integrated into assistance robot for home applications

- Developed a ROS-based automated navigation system.
- Developed and integrated an autonomous exploration, focus on frontier-based method.
- Designed and developed software architecture to integrate AI model into robot.
- Designed 3D structures for a mobile robot.

Publications

Journal

- Duy-Nam Bui, Manh Duong Phung and Hung Pham Duy. "Event-based Reconfiguration Control for Time-varying Formation of Robot Swarms in Narrow Spaces", *Intelligent Service Robotics*, vol. 18, pp. 647–659, May 2025.
- Thu Hang Khuat, Duy-Nam Bui, Hoa TT. Nguyen, Mien L. Trinh, Minh T. Nguyen and Manh Duong Phung. "Multi-goal Rapidly Exploring Random Tree with Safety and Dynamic Constraints for UAV Cooperative Path Planning", *IEEE Transactions on Vehicular Technology*, pp. 1–12, April 2025.
- Thuy Ngan Duong, Duy-Nam Bui and Manh Duong Phung. "Navigation Variable-based Multi-objective Particle Swarm Optimization for UAV Path Planning with Kinematic Constraints", *Neural Computing and Applications*, vol. 37, pp. 5683–5697, January 2025.
- Duy-Nam Bui and Manh Duong Phung. "Radial basis function neural networks for formation control of unmanned aerial vehicles", *Robotica*, vol. 42, pp. 1842–1860, June 2024.
- Duy-Nam Bui, Thi Thanh Van Nguyen, and Manh Duong Phung. "Lyapunov-based nonlinear model predictive control for attitude trajectory tracking of unmanned aerial vehicles", *International Journal of Aeronautical and Space Sciences*, vol. 24, pp. 502–513, April 2023.
- Manh Cuong Nguyen, Nhu Toan Nguyen, Duy-Nam Bui, and Tung Lam Nguyen. "Adaptive fuzzy lyapunov-based model predictive control for parallel platform driving simulators", *Transactions of the Institute of Measurement and Control*, vol. 45, pp. 838–852, September 2022.

Conference

- Duy-Nam Bui, Thu Hang Khuat, Manh Duong Phung, Thuan Hoang Tran, Dong LT Tran. "Model Predictive Control for Optimal Motion Planning of Unmanned Aerial Vehicles", in *7th International Conference on Control, Robotics and Informatics (ICCRI)*, pp. 1–6, 2024.
- Duy-Nam Bui, Thuy Ngan Duong, and Manh Duong Phung. "Ant colony optimization for cooperative inspection path planning using multiple unmanned aerial vehicles", in *IEEE/SICE International Symposium on System Integration (SII)*, pp. 675–680, 2024.
- Duy-Nam Bui, Manh Duong Phung, and Hung Pham Duy. "Self-reconfigurable V-shape formation of multiple UAVs in narrow space environments", in *IEEE/SICE International Symposium on System Integration (SII)*, pp. 1006–1011, 2024.

- Thuy Ngan Duong, Duy-Nam Bui, Manh Duong Phung, and Duy Hung Pham. "Deployment of UAVs for optimal multihop ad-hoc networks using particle swarm optimization and behavior-based control", in *11th International Conference on Control, Automation and Information Sciences (ICCAIS)*, pp. 304–309, 2022.
- Hoang-Anh Phan, Duy-Nam Bui, Tuan Nguyen Dinh, Bao-Anh Hoang, An Nguyen Ngoc, Dong Tran Huu Quoc, Ha Tran Thi Thuy, Tung Thanh Bui, and Van Nguyen Thi Thanh. "Development of a Vision System to Enhance the Reliability of the Pick-and-Place Robot for Autonomous Testing of Camera Module used in Smartphones", in *International Conference on Engineering and Emerging Technologies (ICEET)*, pp. 1–6, 2021.