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Education

Master of Sci. in Automation and Control, Hanoi University of Science and Technology ([HUST](#)), Jul 2024 - present

- **Research project:** Design control structures for Parallel Platforms in Maritime applications
- **Funded by:** Master, PhD Scholarship Programme of Vingroup Innovation Foundation ([VinIF](#))

Bachelor of Sci. in Automation and Control, Hanoi University of Science and Technology ([HUST](#)), Oct 2020 - Mar 2024

- **Excellent degree**, GPA: 3.71/4 (Rank: 22/499). Finished the 4-year BSc program in **just 3.5 years**.
- **Thesis:** Balancing, motion planning, and tracking control for ballbot systems [[pdf](#)] (The best thesis defense)

Selected publications

Journal Ocean Engineering (SCIE Q1) (2025)

Glocal trajectory generation and tracking control for AUVs with optimal coverage sensor networks [[pdf](#)]

Duc Cuong Vu*, Son Tran*, Tung Lam Nguyen, and Duc Chinh Hoang

Journal Ocean Engineering (SCIE Q1) (2025)

Lagrangian-based modeling and safety-critical controls for Stewart platforms under marine operations [[pdf](#)]

Duc Cuong Vu, Danh Huy Nguyen, Minh Nhat Vu, and Tung Lam Nguyen

Journal IEEE Access (SCIE Q2) (2025)

CBFs-based Model Predictive Control for Obstacle Avoidance with Tilt Angle Limitation for Ball-Balancing Robots [[pdf](#)]

Minh Duc Pham, **Duc Cuong Vu**, Thi Thuy Hang Nguyen, Thi Van Anh Nguyen, Minh Nhat Vu, and Tung Lam Nguyen

Journal Results in Engineering (ESCI Q1) (2025)

A novel approach of Consensus-based Finite-time Distributed Sliding Mode Control for Stewart platform manipulators motion tracking [[pdf](#)]

Duc Cuong Vu, Danh Huy Nguyen, and Tung Lam Nguyen

Journal International Journal of Robust and Nonlinear Control (SCIE Q1) (2024)

Time-optimal trajectory generation and observer-based hierarchical sliding mode control for ballbots with system constraints [[pdf](#)]

Duc Cuong Vu, Minh Duc Pham, Thi Thuy Hang Nguyen, Thi Van Anh Nguyen, and Tung Lam Nguyen

Work experience

VinRobotics

Sep 2025 - present

Robotics Engineer

Hanoi, Vietnam

- Responsible for System Identification, State Estimation, Model Predictive Control (MPC), and Whole Body Control (WBC) for VinRobotics Humanoids robot.

Mechatronics Engineering Group at HUST

Oct 2021 - present

Research Assistant supervised by [Assoc.Prof.PhD. Tung Lam Nguyen](#),

Hanoi, Vietnam

- Conducted research on advanced control strategies, robotics, motion control, and multi-agent systems, focusing on both theoretical development and practical implementation.

Academic projects

Advanced Control of a Ship-Mounted Stewart Platform for Marine Applications

Mar 2025 - Dec 2025

Research assistant supervised by [PhD. Minh Nhat Vu](#) (PI) and [Assoc.Prof.PhD. Tung Lam Nguyen](#)

- Field: Marine Robotics and Control Systems.
- International Collaboration of Korea Institute of Science and Technology and Institute ([KIST](#)) for Control Engineering and Automation ([HUST](#)) via the *KIST School Partnership Project*.
- Designed and implemented advanced control algorithms for a Stewart platform in marine environments, supported by high-fidelity simulations (Simscape, MuJoCo) and validated through a full experimental setup (mechanical assembly, hardware integration, Linux real-time kernel, EtherCAT communication).
- Collaborated with cross-institutional teams on system integration, troubleshooting, and documentation, while authoring peer-reviewed publications (Ocean Engineering, Results in Engineering) and presenting outcomes to academic and industrial partners.

Robot navigation system integrating sensor network and wireless communication

Jan 2025 - Dec 2027

Research assistant supervised by [PhD. Chinh Hoang Duc](#) (PI) and [Assoc.Prof.PhD. Tung Lam Nguyen](#).

- Field: Communications, Optimization, Robotics, and Control Systems.
- Funded by Hanoi University of Science and Technology ([HUST](#)).
- Designed and developed a comprehensive MuJoCo-based simulation environment for AUVs, incorporating underwater dynamics, sensor feedback, environmental disturbances, and communication constraints to evaluate system performance.
- Implemented and validated advanced control algorithms for navigation, obstacle avoidance, and trajectory tracking, while collaborating on integration, troubleshooting, and authoring a peer-reviewed scientific paper.

Balancing, motion planning, and tracking control for ballbot systems

Jul 2023 - Jul 2024

Bachelor graduated project supervised by [Assoc.Prof.PhD. Tung Lam Nguyen](#)

- Field: Optimization, Robotics, and Control Systems.
- Developed mathematical models, simulation environments, advanced control and trajectory planning methods for ballbot navigation, including observer-based hierarchical sliding mode control, NMPC with control barrier functions (CBFs), and flatness-based time-optimal motion planning, with outcomes published in the International Journal of Robust and Nonlinear Control (RNC) and IEEE Access.

Academic activities

Invited review for

Nonlinear Dynamics (this is my first time as a reviewer)

Seminars and Talks

2025: Talk "MuJoCo for Advanced Physics Simulation: From manipulators to autonomous vehicles" for "Motion Control" master course at HUST and MoCAR seminar [[pdf](#)]

2025: Seminar "Underwater Vehicles" for modeling training of Autonomous Underwater Vehicle at MEG-MoCAR [[pdf](#)]

Honours & awards

Master, PhD Scholarship Programme

Vingroup Innovation Foundation (VINIF)

Best Thesis Defense Award

Hanoi University of Science and Technology

Skills

Programming	Python, C/C++, MATLAB for algorithms and embedded applications.
Simulation	Simulink, Simscape, MuJoCo for modeling and dynamics.
Control & Math	Rigid body dynamics, motion control, optimization, GNC.
Engineering	Git, PCB design, SolidWorks, experimental platforms.
Systems	Real-time Linux, EtherCAT, embedded robotics/automation.
Research	Publications, presentations, literature review, validation.