

# NGUYEN MANH CUONG

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[Homepage](#) ◊ [Google Scholar](#) ◊

## EDUCATION

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### Hanoi University of Science and Technology (HUST)

Oct 2020 - May 2022

M.S. in Control Engineering and Automation

GPA: 3.67/4.0 (Very Good Grade)

Thesis: *Design an adaptive controller and a state observer based on neural network for the 4DOF parallel robot (Excellent Grade Thesis)*

### Hanoi University of Science and Technology (HUST)

Aug 2015 - Aug 2020

The Degree of Engineer in Control Engineering and Automation

GPA: 3.2/4.0 (Very Good Grade)

Thesis: *Design an intelligent navigation system for the Omni mobile robot in uncertain environments (Best Graduate Thesis Award)*

## RESEARCH INTERESTS

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Intelligent Control, Adaptive Control, Model Predictive Control, Robot Systems, and Robot Navigation.

## RESEARCH EXPERIENCE

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**Vietnam's National project - Research and develop an intelligent mobile robot using different types of sensing technology and IoT platform, AI, and implemented in radioactive environment monitoring application**

Oct 2023 - Present

Supervisor: Dr. Ngo Manh Tien

Vietnam Academy of Science and Technology

- Mentoring Graduate students
- Working on intelligent controllers for robot systems
- Proposed and Designed the Planning and Control Module

**Master Project - Design adaptive controllers and a state observer for the parallel robot [1], [2]**

Oct 2020 - May 2022

Supervisor: Assoc. Prof. Nguyen Tung Lam

Hanoi University of Science and Technology

- Designed a novel Adaptive Neural Network Control combined with a high-gain observer for the parallel robot, that not only improved control performance in terms of uncertainties and external noise, but compensated for conventional controllers' problems, published in [1]
- Designed a Lyapunov-based Model Predictive Controller to enhance the control performance and guarantee the convergence, published in [2]
- Mentored Undergraduate and Graduate students (2 Graduate students successfully applied for Vin-group Innovation Foundation scholarship)

**Research, design, and manufacture an intelligent humanoid robot IVASTBot implemented in communication and serving people [3], [4]**

Oct 2020 - Sep 2023

Supervisor: Dr. Ngo Manh Tien

Vietnam Academy of Science and Technology

- Designed and Implemented Model predictive control for mobile robots using ROS, applied into Navigation system
- Designed and Implemented the Navigation System. [Experimental Result](#)
- Mentored Graduate students

**Graduation Project - Design an intelligent navigation system for the Omni mobile robot in uncertain environments** Jan 2019 - Oct 2020

Supervisor 1: Assoc. Prof. Nguyen Tung Lam

Hanoi University of Science and Technology

Supervisor 2: Dr. Ngo Manh Tien

Vietnam Academy of Science and Technology

- Proposed and Designed the Planning and Control Module.
- Designed and Implemented the Navigation System.

**Research and design nonlinear adaptive controllers for robot systems based on Radial Basis Function neural network (RBFNN) and Fuzzy logic [5]** Jan 2019 - Oct 2020

Supervisor: Assoc. Prof. Nguyen Tung Lam

Hanoi University of Science and Technology

- Studied and Designed nonlinear controllers, including Backstepping, Sliding Mode Control, and Dynamic Surface Control
- Studied and Designed adaptive controllers based on RBFNN and Fuzzy Logic

## SELECTED PUBLICATIONS

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- [1] **Cuong Nguyen Manh**, T. N. Manh, D. H. T. Kim, Q. N. Van, and T. L. Nguyen, “[An adaptive neural network-based controller for car driving simulators](#),” *International Journal of Control*, 2021, [Full paper](#).
- [2] **Cuong Nguyen Manh**, N. T. Nguyen, N. B. Duy, and T. L. Nguyen, “[Adaptive fuzzy Lyapunov-based model predictive control for parallel platform driving simulators](#),” *Transactions of the Institute of Measurement and Control*, 2023, [Full paper](#).
- [3] H. D. Quang, T. L. Tran, T. N. Manh, **Cuong Nguyen Manh\*(corresponding author)**, T. N. Nhu, and N. B. Duy, “[Design a Nonlinear MPC Controller for Autonomous Mobile Robot Navigation System Based on ROS](#),” *International Journal of Mechanical Engineering and Robotics Research*, 2022, [Full paper](#).
- [4] D. H. T. Kim, T. N. Manh, **Cuong Nguyen Manh**, et al., “[Adaptive Control for Uncertain Model of Omni-directional Mobile Robot Based on Radial Basis Function Neural Network](#),” *International Journal of Control, Automation and Systems*, 2021, [Full paper](#).
- [5] **Cuong Nguyen Manh**, M. T. Van, D. N. Duc, L. N. Tung, D. P. Tien, and L. T. Thi, “[Neural Network Based Adaptive Control of Web Transport Systems](#),” in *2019 International Conference on System Science and Engineering (ICSSE)*, [Full paper](#), 2019.

## INDUSTRIAL EXPERIENCE

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**Autonomous industrial Forklifts for container loading and unloading, and smart warehouse application** Oct 2022 - Present

Senior Robotics Engineer

Goldbell Group, Singapore

- Module Owner: Pallet Docking (High Accuracy: millimeter level)
- Module Owner: Pallet Dropoff in narrow racking area
- Feature: Forklift’s motion control and planning for navigation task

**Auto Pilot (Autonomous Electrical Car)**

Dec 2020 - Oct 2022

Robotics Engineer

VinAI Research, Vietnam

- Motion Control for Autonomous Parking Feature
- Vehicle Modeling and Control
- Vehicle State Estimation and Localization

## ACHIEVEMENTS

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Excellent Grade Thesis - Hanoi University of Science and Technology	<i>2022</i>
Postgraduate Scholarships - Vingroup Innovation Foundation (VinIF)	<i>2020 - 2021</i>
Merit-based Scholarship – (HUST)	<i>2020</i>
Best Graduation Thesis	<i>2020</i>

## SKILLS

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<b>Programming Languages</b>	C/C++, Python, MATLAB/Simulink
<b>Robotics Tool</b>	ROS, ACADO Toolkit

## REFERENCES

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