NGUYEN MANH CUONG

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Homepage ◇ Google Scholar ◇ github

EDUCATION

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

Intelligent Control, Robot Motion Planning and Control, and Learning-based control.

RESEARCH EXPERIENCE

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 Vingroup 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

[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**, D. P. Tien, M. T. Van, and M. P. Xuan, "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

Autonomous industrial forklifts for container loading and unloading *Oct 2024 - Present*

Senior Robotics Engineer Goldbell Group, Singapore

- Module Owner: Pallet Docking (High Accuracy: millimeter level)
- Module Owner: Multiple Pallet Detection and Tracking
- Feature: Forklift's planning and control
- Feature: Mission Control and Task Management for Autonomous Forklift System

Autonomous industrial forklifts for smart warehouse application *Oct 2022 - Oct 2024*

Robotics Engineer Goldbell Group, Singapore

Robots have been delivered to multiple customers' sites in Singapore

- Module Owner: Pallet Docking
- Module Owner: Pallet Dropoff, including narrow racking area

· Feature: High precision SLAM-based Localization and Navigation
· Feature: Forklift's motion control and planning for navigation task

Auto Pilot (Autonomous Electrical Car) *Dec 2020 - Oct 2022*
Robotics Engineer VinAI Research, Vingroup, Vietnam

· Motion Planning and Control for Autonomous Parking and High-way Driving Feature
· Vehicle Modeling and Control
· Vehicle State Estimation and Localization
· Vehicle Smart Mirror Adjustment

ACHIEVEMENTS

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

SELECTED SKILLS

Programming Languages	C/C++, Python, MATLAB/Simulink
Robotics Tool	ROS/ROS2, Gazebo
Others	Docker, Git, Linux, Behavior Tree

REFERENCES

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