

TRAN VAN MANH

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EDUCATION

Master of Science: Control and Robot Engineering

Cheongju, Korea

Chungbuk National University

March 2022 - August 2024

- GPA: 3.69/4.0.
- Thesis: Autonomous Navigation in Complex Environments Based on Deep Reinforcement Learning Using Selective Policy Switching for Mobile Robots.

Bachelor of Science: Control Engineering And Automation

Hanoi, Vietnam

Hanoi University of Science And Technology

August 2015 - August 2020

- Ranked 1st in Vietnam in Electrical and Electronic Engineering by QS Rankings.
- GPA: 3.12/4.0.

EXPERIENCE

Robotics Engineer

Seoul, South Korea

ROBOT GLOBAL TEAM (RGT) company

September 2024 – Present

- Development of a global and local planner for autonomous mobile robot navigation.
 - Utilizing sampling-based, search-based methods with interpolation methods for path planning.
- Develop and maintain the motor controller for service robots.
 - Develop parts of motor controller such as emergency button, stable serial port connection.
 - Maintain and handle safety issues of motor controller, log system file.

Master Student/ Researcher at Intelligent Robot Laboratory

Seoul, South Korea

Chungbuk National University

March 2022 – August 2024

ATC-project: Development and implementation of a navigation algorithm with collision avoidance based on deep reinforcement learning (Deep-RL) .

- Sim-to-real transfer models based on deep reinforcement learning for service robots.
- Evaluate mapless navigation and localization with motion capture system. (completed with KR certificate).
- **Frameworks used:** probabilistic reinforcement learning, actor-critic models, navigation-stack, amcl, rtab-map.

Researcher

Hanoi, Vietnam

Vietnam - Korea Institute of Science and Technology

August 2020 – February 2022

- Research and development of autonomous mobile robot technology for industrial transport applications.
- Design and simulate magnetic flux density in PMSM motor.
- Design and develop the framework of autonomous navigation for mobile robot.
- **Frameworks used:** Optimization using genetic algorithm, navigation-stack, amcl, Kalman filter.

Research Intern

Hanoi, Vietnam

Vietnam Academy of Science and Technology

March 2018 – August 2020

Participate in Project: 'Smart Human-Form IVASTBot Robot Applied in Communication and Serving Humans', phase 01.

- Design an intelligent trajectory system for an omnidirectional mobile robot.
- Design and simulink backstepping control, sliding mode control algorithms in Matlab.
- Programming low-level control in C on embedded systems for omnidirectional mobile robot.

SKILLS

- **Programming language:** C++, C, Python, MATLAB, HTML.
- **Software and framework:** Linux, Gazebo, Stage, ROS/ROS2, JMAG, Excel, LaTeX, GitHub.

- **Libraries and APIs:** Pytorch, NumPy, Matplotlib, Rtab-map, gym.
- **Other:** Problem solving, team work, leadership.

PUBLICATIONS AND PATENTS

Publications

- 2024/07, "Cooperative Deep Reinforcement Learning Policies for Autonomous Navigation in Complex Environments," in *IEEE Access*, vol. 12, pp. 101053-101065, 2024, doi: 10.1109/ACCESS.2024.3429230. (**First author**)
- 2024/03, "Mapless Navigation with Distributional Reinforcement Learning", Journal of Korea Robotics Society, Korea. (**First author**)
- 2021/04, "Adaptive Control for Uncertain Model of Omni-directional Mobile Robot Based on Radial Basis Function Neural Network", *International Journal of Control, Automation, and Systems*. (**Co-author**)
- 2020/04, "Autonomous Navigation for Omnidirectional Robot Based on Deep Reinforcement Learning", *International Journal of Mechanical Engineering and Robotics Research*. (**Co-author**)
- 2019/12, "Nonlinear Backstepping-Sliding Mode Control of Electro-Hydraulic Systems", *ICERA 2019 International Conference on Engineering Research and Applications*. (**Co-author**)
- 2019/12, "Mapping and Navigation with Four-Wheeled Omnidirectional Mobile Robot based on Robot Operating System", *2019 International Conference on Mechatronics, Robotics and Systems Engineering (MoRSE)*. (**Co-author**)
- 2019/12, "Neural network based adaptive control of web transport system", *2019 International Conference on System Science and Engineering (ICSSE)*. (**Co-author**)
- 2019/12, "Trajectory tracking control for four-wheeled Omni directional mobile robot using backstepping technique aggregated with sliding mode control", *2019 First International Symposium on Instrumentation, Control, Artificial Intelligence, and Robotics (ICASYMP)*. (**Co-author**)

Patents

- **Van Manh Tran** and Gon-Woo Kim, "Autonomous navigation system in complex environments based on deep reinforcement learning using selective policy switching for a mobile robot," [*KR Patent MP24-0134/MP24-0141*](#), 2024 (patent application accepted).

ACHIEVEMENT

- Won scholarship for four semesters of master's program at Chungbuk National University, 2022-2024.
- Best paper in the journal Journal of Korea Robotics Society, Korea, 2024.
- Best graduation thesis defence for undergraduations, Hanoi University of Science and Technology, Vietnam, 2020.

RELATED COUSEWORK

Master program

- Autonomous Mobile Robot
- Robot Vision
- Introduction to Deep Learning
- Artificial Intelligent System I
- Pattern Recognition
- Advanced Intelligent System