THANH-TUNG NGO

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RESEARCH INTERESTS

Reinforcement Learning, Robotics, Computer Vision, SLAM

EDUCATION

M.Sc. in **Mechatronics Engineering**, Hanoi University of Science and Technology 2020 - 2022
GPA: 3.86/4.0
Thesis: Landmark detection and localization solution for GraphSLAM in autonomous vehicles

B.S.E. in **Mechatronics Engineering**, Hanoi University of Science and Technology 2015 - 2020
GPA: 3.25/4.0 (**Highest entrance score** of the **Talented Program** in Mechatronics)

EXPERIENCE

Teaching Assistant Sep 2022 - present
College of Engineering and Computer Science, VinUniversity *Hanoi, Vietnam*

- Courses: Intelligent Physical Systems, Mechatronics, Mechanical Synthesis, Mechanics of Engineering Materials, Introductory Fluid Mechanics, and Thermodynamics;
- Prepared documents for ABET accreditation of Mechanical Engineering program.

Research Assistant Mar 2022 - Aug 2022
VinUni-Illinois Smart Health Center, VinUniversity *Hanoi, Vietnam*
PI: Dr. Hieu Pham, Prof. Minh Do
Project: Automatic Cranial Implant Design with Artificial Intelligence

- Proposed a method using Reinforcement Learning to design implants for varied skull defects.

Research Assistant May 2018 - Aug 2022
Autonomous Intelligent Robotics Lab, Hanoi University of Science and Technology (HUST) *Hanoi, Vietnam*
PI: Dr-Ing. Xuan-Ha Nguyen
Project: Deep Learning in Computer Vision and GraphSLAM for long-term autonomous vehicle applications
Collaborator: Autonomous Intelligent Systems Lab, University of Freiburg, Germany

- Researched probabilistic navigation algorithms: GMapping, EKFSLAM, and GraphSLAM;
- Customized and evaluated deep learning models (object detection, instance segmentation, and stereo depth estimation) with Cityscapes and ApolloScape datasets;
- Proposed and evaluated a lightweight traffic sign perception method combining object detection and depth estimation, which increased the accuracy and reduced the computational cost.

Project: R&D of SLAM algorithms for autonomous intelligent robots in logistics and services

- Designed software and hardware systems of an intelligent service mobile robot (AIR-HUST);
- Developed robot applications based on ROS: navigation, GUI, and speech recognition;
- Proposed and evaluated a multi-layer sensor fusion (IR, LIDAR, sonar) SLAM solution.

R&D Intern May 2018 - Jul 2020
CMC Institute of Science and Technology, CMC Corporation *Hanoi, Vietnam*
PI: Dr-Ing. Xuan-Ha Nguyen
Project: CMC intelligent service robot

- Developed a reception robot (C-Bot) based on TurtleBot2;
- Researched autonomous navigation algorithms: Gmapping, AMCL, and DWA.

PUBLICATIONS

[1] H. X. Nguyen, **T. T. Ngo**, and A. D. Nguyen, "Development of real-time traffic-object and traffic-sign detection models applied for autonomous intelligent vehicles," J. Sci. Technol. Smart Syst. Devices, vol. 32, pp. 17-24, Jan. 2022, doi: 10.51316/jst.155.ssad.2022.32.1.3.

[2] H. X. Nguyen, **T. T. Ngo**, and H. V. Nguyen, "Development of an autonomous intelligent mobile robot based on AI and SLAM technology," in Proc. Int. Conf. Intell. Syst. Netw. 2021, pp. 319-326, doi: 10.1007/978-981-16-2094-2_40.

[3] H. X. Nguyen, H. V. Nguyen, **T. T. Ngo**, and A. D. Nguyen, "Improvement of Control Algorithm for mobile robot using multi-layer sensor fusion," Vietnam J. Sci. Technol., vol. 59, no. 1, pp. 110-119, Feb. 2021, doi: 10.15625/2525-2518/59/0/15301.

[4] H. X. Nguyen, H. V. Nguyen, and **T. T. Ngo**, "A new landmark detection approach for SLAM algorithm applied in mobile robot," J. Sci. Technol. Tech. Univ., vol. 146, pp. 31-36, Nov. 2020, doi: 10.51316/30.7.6.

[5] H. X. Nguyen, **T. T. Ngo**, T. V. Nguyen, A. D. Pham, and T. D. Nguyen, "An efficient approach for traffic sign detection, classification, and localization applied for autonomous intelligent vehicles," in J. Mordern Phys. B (submitted).

HONORS AND AWARDS

Nominee of VEF2.0 (top 30) and Vingroup Scholarship for Overseas Study (top 20) 2021

Domestic Master Scholarship (full tuition fee and monthly stipend) 2020
Vingroup Innovation Foundation, Vingroup Big Data Institute

1st Prize in Student Research Competition 2020
Hanoi University of Science and Technology

4th Prize in the 2017 Blitz Research Competition 2017
Vietnam Summer School of Science, Rencontres du Vietnam

Student with five good merits (morality, studying, physical training, volunteer, integration) 2016-2019
Vietnam National Union of Students of Hanoi University of Science and Technology

FYT Scholarship for Outstanding Students (top *25 nationwide*) 2015-2017
FPT Center for Young Talents, FPT Corporation

SKILLS

Programming languagues	Python, C/C++, Matlab, XML
Frameworks	Pytorch, Scikit-Learn, Numpy, Gym | TensorBoard, WandB | Vim | Git | Latex
Robotics	ROS, 2D LIDAR, Embedded computer deployment
Languages	IELTS 7.0 (R 8.0, L 7.5, S 6.0, W 6.5)

EXTRA-CURRICULAR ACTIVITIES

- Top 12 Vietnamese - NUS Enterprise Summer Program in Entrepreneurship, Singapore 2019
- Top 25 HUST - TFI Specialists' Community Action and Leadership Exchange (TFI SCALE) 2018
  at Temasek Polytechnic, Singapore and HUST, Vietnam
- Member of Management Board - FPT Center for Young Talents, FPT Corporation, Vietnam 2015-2017
- President - HUST Lean Six Sigma Club 2017-2019
- President - GSTT Group Hanoi 2015-2017
  (online academic support for high school students by volunteers from top universities in Hanoi)