

QUANG PHAM

quang.pham@mbzuai.ac.ae | Abu Dhabi, United Arab Emirates | [Google Scholar](#)
(+84) 355 020 602 | [linkedin.com/in/quangpham2006](#) | [github.com/quangpham2006](#) | Vietnamese

I'm interested in developing AI solutions for robotics, particularly leveraging small language models and knowledge distillation for path planning, scene understanding through graph neural networks, tactile sensing for manipulation tasks, and vision-based localization systems for resource-constrained robotic applications.

RESEARCH EXPERIENCES

Netbot Laboratory, MBZUAI - Texas A&M University

Research Assistant

UAE, September 2024 - now

Research in scene understanding, knowledge distillation, and language models (LLMs/SLMs) for resource-constrained systems. Developing AI solutions for robotic perception, path planning, and control. Projects under Netbot are listed as follows:

1. **SmallPlan: Leverage Small Language Models for Sequential Path Planning with Simulation-Powered, LLM-Guided Distillation**

Publication: [1] | Supervisor: Professor [Dezhen Song](#), MBZUAI

- Proposed a framework to **enhance SLMs for sequential high-level path planning** by combining **LLM-guided distillation** with real-time simulation-powered Supervised Fine-tuning (SFT) and Reinforcement Learning (RL).
- Surveyed the effects of SFT and RL on the fine-tuned SLMs and the reasoning capability of SLMs in unseen environments.

2. **Robust-DP3 for Strawberry picking**

IROS 2024 Demonstration, ongoing project | Supervisor: Professor [Dezhen Song](#), MBZUAI

- Proposed a pipeline integrating Diffusion Policy with tactile sensing for efficient strawberry picking. Training data is collected from Isaac Sim simulations and real-world experiments.
- A real experiment on the strawberry farm is going to be conducted.

3. **Abstract Map Navigation**

Ongoing project | Supervisor: Professor [Dezhen Song](#), MBZUAI

- Proposed a pipeline integrating Diffusion Policy with tactile sensing for efficient strawberry picking. Training data is collected from Isaac Sim simulations and real-world experiments.

ARAM Lab, VinUniversity

Founder/Leader

Vietnam, Aug 2022 - Jun 2024

Founding the research lab, working on developing an advanced collaborative robot, and also the first robotics research lab in VinUniversity. Awarded **\$35,000** (as of June 2024) to support research development and establish collaborations with professors worldwide.

1. **Research on Scene Graph, Graph Neural Networks (GNN) to improve scene understanding and robot navigation**

Publications: [2], [3] | Supervisor: Professor [Hy Truong Son](#), Professor [Do Tho Truong](#)

- Applied **Equivariant GNN to enhance scene graph generation** from 3D point clouds. This approach improved the output scene graphs by preserving the symmetry of input point clouds under different camera angles and rotations.
- Proposed a novel **Temporal Graph Matching architecture to fuse multiple local scene graphs** into a unified global representation. This embedding-based approach merges identical objects (graph nodes) by their similarity.

2. **Research on developing a low-cost exoskeleton for rehabilitation**

Publications: [4] | Supervisor: Professor [Nguyen Vu Linh](#)

- Passive exoskeleton design using a **compact gear-spring mechanism**. Evaluation of the method through electromyography signals attached to vital muscles.

3. **Research on developing a Cost-effective On-device Natural Language Command Navigation System for Mobile Robots**

Publications: [5] | Supervisor: Professor [Do Tho Truong](#)

- Applied a **BERT-based model for token classification** for nature navigation commands. Also applied April Tag for localizing through challenging environments.

4. **Research on designing an efficient heat exchanger (side project)**

Publications: [6] | Supervisor: Professor [Ahmad Hajar](#), Professor [Nguyen Vu Linh](#)

- Introduces a novel single-shell-pass shell-and-tube heat exchanger design with alternative inclined baffles, featuring paired half-hyperboloid shapes interlocked in a crossed pattern (XX-STHX). *This is further developed from the heat transfer course project.*
- Results demonstrate that the new heat exchanger **significantly outperforms conventional SG-STHX and CH-STHX**.

VinUni-Illinois Smart Health Center - VISHC, VinUniversity - UIUC

Research Assistant

Vietnam, Nov 2021 - March 2023

Research in trustworthy machine learning focuses on Federated Learning.

Awards: Champion of VietNam Blockchain Olympiad, HealthTech category winner of International Blockchain Olympiad |

Supervisor: Professor [Kok-Seng Wong](#)

- Improved client selection and data subset prioritization for efficient model training.
- Proposed a framework named **"Blockchain-based Federated Learning in Healthcare System"** for utilizing data in the Healthcare system while maintaining the fairness and privacy of the data holders.

Quang Pham Curriculum Vitae

RESEARCH PUBLICATIONS

Preprint [1] Quang P.M. Pham et al., **SmallPlan: Leverage Small Language Models for Sequential Path Planning with Simulation-Powered, LLM-Guided Distillation**, under review [[preprint](#)]

Journal [2] Quang P.M. Pham, Khoi N.T. Nguyen (co-first author), et al., **TESGNN: Temporal Equivariant Scene Graph Neural Networks for Efficient and Robust Multi-View 3D Scene Understanding**, Transactions on Machine Learning Research [[paper](#)][[code](#)]

Late Breaking Report [3] Quang P.M. Pham et al., **ESGNN: Towards Equivariant Scene Graph Neural Networks for 3D Scene Understanding**, Late Breaking Report at the 33rd IEEE International Conference on Robot and Human Interactive Communication RO-MAN 2024 [[preprint](#)][[poster](#)]

Conference [4] Q. P. Minh Pham, H. Q. Nguyen, Q. M. Vo, T. Dac Lai, H. Vu Thu Nguyen and V. L. Nguyen, **Towards A Wearable Passive Lower-Limb Exoskeleton Based on the Compact Gear-Spring Mechanism**, 2024 IEEE International Conference on Robotics and Biomimetics (ROBIO), Bangkok, Thailand, 2024, pp. 98-103, doi: 10.1109/ROBIO64047.2024.10907335. [[paper](#)]

Conference [5] T. T. Ngo et al., **Development of a Cost-effective On-device Natural Language Command Navigation System for Mobile Robots in Challenging Indoor Scenarios**, 2025 IEEE/SICE International Symposium on System Integration (SII), Munich, Germany, 2025, pp. 1255-1259, doi: 10.1109/SII59315.2025.10870597. [[paper](#)]

Journal [6] Hoang, Huy Minh Khoi, et al. **A novel shell-and-tube heat exchanger design with alternative inclined baffles**, Case Studies in Thermal Engineering 65 (2025): 105542. (Q1 Journal). [[paper](#)]

INDUSTRY EXPERIENCES

Alpha Asimov Robotics - Autonomous delivery robot for Southeast Asia

AI Engineer

Vietnam, Nov 2023 - Jul 2024

Enhancing robot localization through vision-based odometry by integrating RGB-D images, IMU, and GPS data under diverse weather conditions to ensure system robustness.

- **Deploy HybVIO/ORB-SLAM** on the Alpha Asimov Robotic Platform.
- Built autonomous testing environments using CARLA simulator.
- Implemented a CNN-based obstacle avoidance module for policy learning.

EDUCATION

M.Sc in Robotics, Mohamed bin Zayed University of Artificial Intelligence (MBZUAI)

UAE, August 2024 - Expected 2026

- **Award:** Full-ride scholarship, outstanding award Fall 2024

Exchange semester, Israel Institute of Technology - Technion

Israel, March 2023 - August 2023

- **Relevant courses:** Autonomous Navigation and Perception, Mobile Robots, Introduction to Robotics.

B.Sc Mechanical Engineering, VinUniversity

Vietnam, 2020 - 2024

- **Concentration:** Intelligent Robotics.
- **Award:** Dean's List Award, Merit-based Scholarship.

SKILLS

- **Programming:** Python, C, C++, Matlab, Julia, PLC.
- **Robotics:** ROS1, ROS2, Isaac Sim, Strong Probabilistic Robotics and Control Foundation.
- **Deep learning:** Strong ML foundation. Strong background in CV and NLP.
- **Design and Modeling Tools:** Basic SolidWorks, Ansys, and AutoCAD.

HONORS AND AWARDS

2022-2024	\$35000 raised for ARAM Lab from VinUniversity, E-Lab, CEI, and UROP program
2022	HealthTech category winner of the International Blockchain Olympiad (Bangladesh)
2022	Champion of the Vietnam Blockchain Olympiad
2020-2024	Dean's List: Awarded to excellent students
2021	1st prize for robot competition on CECS day 2021
2020	Odon Vallet scholarship for excellent Vietnamese students
2020	3rd prize in the Vietnam Chemistry Olympiad

PROFESSIONAL ACTIVITIES

Reviewer for NeurIPS, IROS, and ICRA.

REFERENCES

Prof. Dezhen Song

Academic Advisor

Mohamed bin Zayed University of Artificial Intelligence, UAE

E: Dezhen.Song@mbzuai.ac.ae

Prof. Truong Son Hy

Research collaborator

The University of Alabama at Birmingham, US

E: thy@uab.edu

Prof. Truong Do

Undergraduate Supervisor

VinUniversity, Vietnam

E: truong.dt@vinuni.edu.vn