

# Phạm Quang Hà

 [hapham258.github.io](https://github.com/hapham258) |  [qha258@gmail.com](mailto:qha258@gmail.com)

## EXPERIENCE

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### Software Engineer

Oct 2022 – present

VinAI

- Build an auto-parking software suite for electric vehicles.
- Contribute to the development of driver monitoring system on numerous electric vehicles.

### Graduate Research Assistant

Oct 2020 – June 2022

VIAM Lab, University of Technology, VNUHCM

- Develop a direct SLAM based on camera-LiDAR fusion.
- Build a ROS2-based version of VIAM-USV-VC autopilot software suite.
- Build a ROS-based autopilot software suite, namely VIAM-USV-VC, for VIAM-USV2000 unmanned surface vehicle.
- Simulate some autonomous capabilities for USV on Gazebo.
- Build a customized version, namely VIAM-USV-GC, of QGroundControl ground control station for VIAM-USV2000 unmanned surface vehicle.

### Research Assistant

Jul 2018 – Oct 2020

VIAM Lab, University of Technology, VNUHCM

- Develop an online, graph-based 2D LiDAR SLAM.
- Build a Qt-based GUI to remotely command and monitor delivery AGV.
- Build a ROS-based autopilot software suite for delivery AGV.

## PROJECTS

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### Design and Control a Delivery AGV

Sep 2019 – Sep 2020

2019 FEEE Scientific Research for Student

- **Role:** I was responsible for building the autopilot software suite on embedded computer, implementing guidance and control laws, designing monitor GUI on laptop.
- **Description:** We aim to make local delivery faster and cheaper without human intervention by designing an automated guided vehicle. Our team managed to design the electrical components of the vehicle, build ordering mobile application for buyers and monitor GUI for shop-owners, as well as automate the vehicle's journey.
- **Result:** The project earned an acceptance certificate at the end of the program.

## EDUCATION

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**M.Eng.** University of Technology, VNUHCM

Mar 2021 – Nov 2022

- **Major:** Control Engineering & Automation (*Research Program*)
- **GPA:** 8.85/10.0
- **Thesis:** Simultaneous Localization and Mapping based on Camera-LiDAR Fusion in Riverine Environments (*defended with 9.3/10.0*)

- **Major:** Control Engineering & Automation (*Honors Program*)
- **GPA:** 8.42/10.0
- **Thesis:** Constructing Map and Collision-Free Path for Autonomous Vehicles (*defended with 9.58/10.0*)

## SCIENTIFIC PUBLICATIONS

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- [1] **Q.-H. Pham**, N.-H. Tran, and T.-D. Nguyen, “IMU-Assisted Direct Visual-Laser Odometry in Challenging Outdoor Environments,” in *International Conference on Green Technology and Sustainable Development*, Springer, 2023, pp. 497–508.
- [2] **Q.-H. Pham**, N.-H. Tran, T.-T. Nguyen, and T.-P. Tran, “Online Robust Sliding-Windowed LiDAR SLAM in Natural Environments,” in *2021 International Symposium on Electrical and Electronics Engineering (ISEE)*, IEEE, 2021, pp. 172–177.
- [3] N.-H. Tran, **Q.-H. Pham**, J.-H. Lee, and H.-S. Choi, “VIAM-USV2000: An Unmanned Surface Vessel with Novel Autonomous Capabilities in Confined Riverine Environments,” *Machines*, vol. 9, no. 7, p. 133, 2021.
- [4] N.-H. Tran, M.-H. Vu, T.-C. Nguyen, M.-T. Phan, and **Q.-H. Pham**, “Implementation and Enhancement of Set-Based Guidance by Velocity Obstacle along with LiDAR for Unmanned Surface Vehicles,” in *2020 5th International Conference on Green Technology and Sustainable Development (GTSD)*, IEEE, 2020, pp. 430–435.

## SKILLS

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**Maths:** Linear Algebra, Probability, Differential Equation, Vector Calculus, Calculus of Variations, Fourier Analysis, Numerical Analysis, Complex Analysis, Differential Geometry.

**Language:** C/ C++, MATLAB, Python.

**Framework:** ROS, ROS2, Gazebo, MATLAB/Simulink, Qt, OpenCV, Eigen, Boost/Asio, CUDA, GStreamer