THANH-LOC **PHAM**

ROBOTIC ENGINEER

CONTACT

+34 652 058 596

phamthanhloc.bkhn@gmail.com

loc-thanhpham

leopt4

EXPERIENCE

Technical Lead | Robotics - Autopilot 2021 - 2023

Viettel High Technology Industries Corporation

- Led an autopilot team of 5 members.
- Responsible for technical decisions, team communication.
- Designed software system of the autopilot

Robotics Engineer 2020 - 2021

Viettel Aerospace Institute

- Designed and developed a navigation system for UAV
- Tested and calibrated sensors: IMU, Barometers, GNSS, Magnetometer

Junior Researcher 2016 - 2020

Hanoi University of Science and Technology

- Researched new algorithms and control theory in autonomous vehicles.
- Published 5 papers on journals and conferences.

ACHIEVEMENTS

CONTROL

Adaptive/Approximate Dynamic Programming

- Developed an optimal path following controller based on Reinforcement Learning without requiring prior knowledge of the dynamic systems.

Controller and Seeker for Suicide Drone

- Designed controllers in attack phase based on image processing data. They allow drones to attack the target with an error of less than 3 meters.

Pick and Place Task on Turtlebot Kobuki 4-DoF Mobile Manipulator

- Applied Task-Priority Kinematic Controller for mobile base and manipulator, Image Processing to detect objects, Behavior-tree for task planning.

NAVIGATION

Robust Graph SLAM for Autonomous Navigation

- Implemented an online SLAM and full SLAM using GTSAM library and ROS on the turtlebot platform with onboard sensors - 2D LIDAR, Wheel Encoders, and Magnetometer compass.
- The system's positioning error is less than 3cm in lab environment and is capable of close-loop detection.

GNSS-Denied Navigation System for Unmanned Aerial Vehicles

- Applied Extended Kalman Filter and SLAM to navigation system which allow UAV to operate in GNSS-denied environment.
- Optimized modelling and calibration methods for low-cost sensors: IMU, Barometer, GNSS receiver helping to reduce the cost of products

PERCEPTION AND PLANNING

Autonomous Exploration and Path Planning in 3D Environments

- Used TARE planner for global planner and Falco for local planner to solve the exploration task. The system was deployed in turtlebot with depth camera.

Visual Initial Odometry

- Integrated Camera and IMU data through Smart Projection Pose Factors for efficient state estimation.
- Implemented on Stonefish simulation using ROS and GTSAM.

PUBLICATIONS

- Van Tu Vu, **Thanh Loc Pham**, Phuong Nam Dao, "Disturbance Observer-Based Adaptive Reinforcement Learning for Perturbed Uncertain Surface Vessels", ISA Transactions, Volume 130, November 2022, Pages 277-292.
- Van Tu Vu, **Thanh Loc Pham**, Phuong Nam Dao, "Online Actor-Critic Reinforcement Learning Control for Uncertain Surface Vessel Systems with External Disturbances", International Journal of Control, Automation and Systems, Vol. 20, No. 3, pp. 1029-1040, 2022.

EDUCATION

2023 - present

ERASMUS MUNDUS JOINT MASTER

- Master Intelligent Field Robotic Systems
- CPA: 9.05/10

2015 - 2020

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

- Bachelor of Control Engineering and Automation

SKILLS

- C/C++, C#
- Python, Matlab/Simulink
- ROS/Gazebo
- Ardupilot/PX4
- Git
- Pytorch
- OpenMVG, Meshsroom

LANGUAGES

- English (Fluent)
- Vietnamese (Mother tongue)