Huu Tho DANG

Robotics/Automatic/AI (PhD.)

- Nat: French/Vietnamese

Skills

Linux, Windows, Office 10+ yrs.

Matlab/Simulink 10+ yrs.

Python/C++ 8+ yrs.

ROS/Git/GitHub 4+ yrs.

CAD 8+ yrs.

Languages

English

French

Vietnamese

Education

06/2021 - present

PhD in Robotics

Montpellier University, France

Underwater Robots for Karst and Marine Exploration: A Study of Redundant AUVs.

09/2017 - 05/2021

Biography

I obtained Engineering degree in electrical-electronic-control, and Master degree in control in 2003 and in 2006 in Vietnam, respectively. I got PhD degree of the Montpellier University in robotics in June, 2021. My interests are design, control, optimization, and artificial intelligence for robots. More information can be found on the website: https://thodangum.github.io/.

Work experiences

Post-doc **09/2024 - 31/08/2025**

Explore Team
Montpellier University, France
LIRMM, Montpellier University, France
http://www.lirmm.fr/

Artificial Intelligence for underwater robots:
+ *Reinforcement Learning methods for robots: A Survey.*
+ *Propose a neural network to estimate inverse dynamics model and control un underwater robot, BlueROV.*
Key Techniques: Robot simulation, Artificial intelligence, Reinforcement learning.
Tools: Matlab/C++/Python; ROS2/Gazebo; Tensorflow/PyTorch.

Lecturer - Researcher **09/2022 - 31/08/2024**

Teaching: Polytech Montpellier
https://www.polytech.umontpellier.fr/
Research: Explore Team - Underwater Robots
LIRMM, Montpellier University, France
http://www.lirmm.fr/

Research: Reinforcement Learning, Artificial Intelligence, Neural Network, Regression Algorithms, Inverse Problem:
+ *Propose Actor - Critic architecture to control underwater robots.*
+ *Propose a neural network architecture to estimate inverse model and control an underwater robot.*
Teaching: Mobile Robot, ROS project, Manipulation Robot, Robotic Projets, Linear Multivariable Systems, Discrete Systems, Network and Automatic.
Tools: Matlab/C++/Python; ROS; CoppeliaSim; Tensorflow/PyTorch.

Engineer **01/2022 - 31/08/2022**

Explore Team (Robot for Karst exploration)
LIRMM, Montpellier University, France
http://www.lirmm.fr/

LEZ 2020 project for Karst exploration: HIL simulation, Underwater robot controle - Télémaque : *realize the controller of Télémaque (by quaternions) which is used for Karst exploration.*
Key Techniques: Quaternion control, Backstepping; Kalman filter.
Tools: C++/Python.

Engineer **06/2021 - 31/12/2021**

Explore Team (Surface Autonomous Vehicles)
LIRMM, Montpellier University, France
http://www.lirmm.fr/

Energy - Efficient Path Planning for Surface Autonomous Vehicles:
+ *Propose a simulator to find energy-efficient path with respect to energy (consummation et production) a surface autonomous vehicle equipped by a kite, of solar panels and a propulsion system.*
+ *Implement un A* based algorithm to find a best path that optimizes consummation and production energies.*
Key Techniques: Path planning, A* algorithm, Energy model.
Tools: Matlab.

PhD candidate

Montpellier University, France

Underwater Robots

2004 - 2006

Master of Science

Vietnam National University, Ho Chi Minh City University of Technology (HCMUT), Vietnam

Control.

1998 - 2003

Bachelor of Engineering

Vietnam National University, Ho Chi Minh City University of Technology (HCMUT), Vietnam

Electrical, Electronic and Control.

Contacts

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References

Prof Lionel Lapierre
ROBEX Team, ENSTA Bretagne

lionel.lapierre@ensta-bretagne.fr

lapierre@lirmm.fr

Ph.D Candidate — **2017 - 05/2021**

Explore Team (Prof. Lionel Lapierre - Thesis Advisor)
LIRMM, Montpellier University, France
http://www.lirmm.fr/

Underwater Robots for Karst and Marine Explorations: Study of redundant systems:
+ *Propose performance indices to design optimal configurations of an underwater robot.*
+ *Optimize the configuration of a robot (static et dynamic) in function of performance indices.*
+ *Concept and design the umbrella robot with dynamic configuration (from hardware to software) which can vary its configuration with respect to missions.*
+ *Propose a real-time control allocation approach to optimize energy consumption of the robot. Kalman filter, IMU calibration, and 3D path following method have been implemented.*
+ *Design a controller by quaternions*.
Key Techniques: Optimization; Multiobjective optimization; Path following; Kalman filter; PID, Quaternion control; Backstepping; Control allocation.
Tools: Matlab/C++/Python; FreeCAD/AutoCAD; ANSYS; Electronics.

Research Assistant — **2015 - 2017**

Electrical and Electronic Department
Universiti Teknologi PETRONAS, Malaisie
https://www.utp.edu.my

Research: Nonlinear System and Model Predictive Control:
+ *Model the system "Twin-Rotor"*.
+ *Propose a model predictive controller to do trajectory tracking*.
Teaching: PID regulation, Random Process and Probability.
Key Techniques: System Identification; Model Predictive Control; Optimization.
Tools: Matlab/Simulink/C++/Python.

Lecturer — **2007 - 2015**

Electrical and Electronic Department
Ho Chi Minh University of Transport, Vietnam
https://ut.edu.vn/en/

Teaching: Robotic; Control and measurement systems, system identification, industrial networks, SLAM; linear and nonlinear systems, sensors and motors, PLC (Programmable Logical Controller).
Key Techniques: SLAM; Robotics, Control; Sensors; Motors; PLC.
Tools: Matlab/Simulink/C++/Python; Step7 - Siemens and Schneider PLCs

Engineer — **2003 - 2007**

Southern Airport Authority, Vietnam

PLC (Programmable Logical Controller), Supervision system, Electrical distribution system: *PLC Program*.
Key Techniques: Robotics; Energy system.
Tools: PLCs of Siemens and Schneider.