

# Hoang-Anh PHAM

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## EDUCATION

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- 2017 - 2021 **Ph.D in Automation, Signal, Production & Robotics** | *University of Toulon, France*
- Thesis: *Coordination of Autonomous Underwater Systems Based on an Integrated Methodology in an Open-source Environment*. PhD program financed by French Ministry of Education, France
  - Advisor: Prof. Thierry Soriano (University of Toulon)
- 2013 - 2015 **M.Sc. in Electronic Engineering** | *Hanoi University of Science and Technology (HUST), Vietnam*
- Thesis: *Real-time Navigation Algorithms for Unmanned Aerial Vehicles*
  - Advisor: Ass.Prof. Do Trong Tuan (Hanoi University of Science and Technology)
- 2008 - 2013 **B.Sc. in Electronics and Telecoms** | *Hanoi University of Science and Technology, Vietnam*
- Thesis: *Exploring the research and design of micro Multi-rotors Unmanned Aircraft*
  - Advisor: Ass.Prof. Do Trong Tuan (Hanoi University of Science and Technology)

## ACADEMIC EXPERIENCES

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- 2022 - present **Postdoctoral Fellow** | *COSMER Lab. and IM2NP Lab., University of Toulon, France*
- **Project RoboSCo**. Topic: *Collaborative robot swarms without digital communication*. Financed by Program specific support for Research and Innovation work in Defense, France  
Role: Senior member
  - **Project Challenge SwarmZ**. Topic: *Design a multi-drone simulation tool to detect explosions using ROS2/Gazebo*. Financed by Naval Group, MBDA Group and TVT Innovation/System Toulon, France  
Role: Senior member
- 2021 - 2022 **Research Engineer** | *ACWA Robotics Company, Aix-en-Provence, France*
- Role: R&D of positioning algorithms for robots operating in clean water pipes
- 2017 - 2021 **Doctoral Fellow** | *COSMER Lab., University of Toulon, France*
- 2016 - 2017 **Research Intern** | *IBISC Lab., University of Paris Saclay, France*
- Topic: *Autonomous navigation and localization of a Quad-motor indoors*
  - Financed by International Excellence Scholarship from the University of Paris Saclay
  - Advisor: Prof. Samia Bouchafa-Bruneau and Prof. Yasmina Bestaoui-Sebbane (Univ. of Paris-Saclay)
- 2013 - 2016 **Research Engineer** | *A&D Tech Company, Hanoi, Vietnam*
- Role: Project manager of the design of software and hardware for the Microcontroller (AVR, PIC, MSP430) and industrial equipment (PLC and HMI)
- 2013 - 2014 **Research Engineer** | *ASE Lab, School of Electronics and Telecommunications, HUST, Vietnam*
- Project: *Research, design unmanned Aerial Vehicles for Supporting Search and Rescue Activities at High-rise Building*, code 01C-02/04/2013-2. Project manager: Ass.Prof. Do Trong Tuan (HUST)
  - Financed by Department of Science and Technology in Hanoi, Vietnam
  - Role: Senior member
- 2011 - 2013 **Research Intern** | *School of Transportation Engineering, HUST, Vietnam*
- **Potential Scientific Research Project**: *Research design and manufacture control system with the integration of object-oriented technology (MDA & Real-Time UML) and navigation units (GPS/INS) for autonomous underwater vehicles*, code KC03.TN05/11-15.  
Supervise: Ass.Prof. NGO Van Hien. Financed by the Ministry of Science and Technology, Vietnam
  - **Potential Scientific Research Project**: *Research, design and manufacture of automated Unmanned Aerial Vehicle (UAV) flying in orbit requested*, code KC03.TN03/11-15.  
Supervise: Ass.Prof. NGUYEN Phu Hung. Financed by the Ministry of Science and Technology, Vietnam
  - Role: Junior member

## TEACHING

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**Robot simulation programming using ROS/Gazebo**

| *University of Toulon*, Spring, 2018 → 2021, 2023 → 2024

## SUPERVISION

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### Doctoral Student

- **1/2024** | *University of Toulon, France*, co-supervise with Prof. Thierry Soriano and Prof. Valentin Gies.  
Topic: Design methodology and algorithm for robot swarms. Financed by the PACA region, France (*Start: Jan. 2024-present*)

### Graduate students

- **Le Bihan Thibault** and **Alexis Rozier**, | *École d'Ingénieurs SeaTech, University of Toulon, France*.  
Topic: Tracking the course of an autonomous sailboat. (*Thesis defense: Dec. 2022*)
- **Savarin Christopher** and **Taleb Cody** | *École d'Ingénieurs SeaTech, University of Toulon, France*.  
Topic: Estimation of a relative position between 2 AUVs using a camera. (*Thesis defense: Feb. 2020*)

## HONORS, AWARDS, AND GRANTS

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**Soccer Robocup Middle Size League** | by Federation of International RoboCup | *Bordeaux, France*

June 2023

- First Place for Scientific Challenge
- Third Place for Technical Challenge
- Third Place for Soccer Robocup Middle Size League Competition

**Best Paper Award-Finalist** | at *IEEE Mechatronics, Japan*

April 2023

**Doctoral Fellowship** | by *French Ministry of Education, France*

2017-2021

**Research Intern's Scholarship** | by *University of Paris Saclay, France*

2016-2017

## OTHER ACTIVITIES

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### Member of technical committee (TPC)

- IEEE ICCE'24, IEEE ICCAIS'23

### Regular reviewer for

- Journals: IEEE RA-L, Journal of Simulation, Scientific Reports
- Conferences: IEEE ICCE'24, IEEE SII'23, IEEE ICCAIS'23, CVVR'23

**Member of the Board of Examiners of the Scholarship Fund "Dong Hanh" in France**

from 2018 - present.

- The purpose of the fund is to provide funding for Vietnamese students in difficult circumstances

## SKILLS

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**Languages:** Vietnamese (mother tongue), English (fluent), French (fluent)

**Frameworks:** ROS/Gazebo

**Programming:** C/C++, Python, Matlab

**Libraries:** Visp, OpenCV, matplotlib, NumPy

## PUBLICATIONS

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### Peer-reviewed journal papers

[PSGewa] Pham, H.A., T. Soriano, and V. Gies. "A simulator for multi-agent robots based on Digital Twin approach". In: *Journal of Simulation (under review) (Under review)*.

[PSGewb] Pham, H.A., T. Soriano, and V. Gies. "Multi-modal fusion Lidar 2D and Camera data for precise relative position between robots". In: *International Journal of Intelligent Robotics and Applications (under review) (Under review)*.

[SPG23a] T. Soriano, Pham, H.A., and V. Gies. "Experimental Investigation of Relative Localization Estimation in a Coordinated Formation Control of Low-Cost Underwater Drones". In: *Sensors* 23.6 (2023). ISSN: 1424-8220. DOI: [10.3390/s23063028](https://doi.org/10.3390/s23063028).

[Pha+20] Pham, H.A., T. Soriano, V.H. Ngo, and V. Gies. "Distributed Adaptive Neural Network Control Applied to a Formation Tracking of a Group of Low-Cost Underwater Drones in Hazardous Environments". In: *Applied Sciences* 10.5 (2020). ISSN: 2076-3417. DOI: [10.3390/app10051732](https://doi.org/10.3390/app10051732).

[PSN19a] Pham, H. A., T. Soriano, and V.H. Ngo. "Coordination of Multi-Underwater Drones: Towards an Integrated Object-Oriented Methodology in an Open-Source Environment". In: *INSIGHT* 22.4 (2019), pp. 43–45. DOI: <https://doi.org/10.1002/inst.12276>. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/inst.12276>.

*H.A.Pham (last updated Jan. 2024)*

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- [Sor+19] Thierry Soriano, Valentin Gies, Pham, H.A., and Van Hien Ngo. “Mechatronics Iterative Design for Robots Multi-agent Integration”. In: *Lecture Notes in Mechanical Engineering*. Springer (2019). DOI: [10.1007/978-3-030-46729-6\\_6](https://doi.org/10.1007/978-3-030-46729-6_6).
- [Die+14] P.G. Diem, Pham, H.A., Phu Khanh Nguyen, N.P. Hung, and N.V. Hien. “A Hybrid Control Model to Develop the Trajectory-Tracking Controller for a Quadrotor UAV”. In: *Mechanical and Aerospace Engineering V*. Advanced Materials Research 1016 (Nov. 2014), pp. 678–685. DOI: [10.4028/www.scientific.net/AMR.1016.678](https://doi.org/10.4028/www.scientific.net/AMR.1016.678).

#### Peer-reviewed conference papers

- [Do+23] Trong Tuan Do, Bao Duy Tran, Dinh Khai Vu, and Pham, H.A.. “Applying Deep Learning for UAV Obstacle Avoidance: A Case Study in High-Rise Fire Victim Search”. In: *12th International Symposium on Information and Communication Technology (SOICT), Vietnam*. 2023.
- [PGS23] Pham, H.A., Valentin Gies, and Thierry Soriano. “Decision-making strategy for multi-agents using a probabilistic approach: application in soccer robotics”. In: *IEEE 12th International Conference on Control, Automation and Information Sciences (ICCAIS), Vietnam*. 2023.
- [SPG23b] Thierry Soriano, Pham, H.A., and Valentin Gies. “Design of the dynamic behavior of soccer robots based on the Dec-POMDP framework”. In: *IEEE 14th France-Japan and 12th Europe-Asia Congress on Mechatronics, Japan*. 2023, **Best Paper Award–Finalist**.
- [PSN19b] Pham, H.A., Thierry Soriano, and Van Hien Ngo. “Applying AADL to realize embedded control systems for coordination of multiple low-cost underwater drones”. In: *IEEE OCEANS - Marseille, France*. 2019, pp. 1–7. DOI: [10.1109/OCEANSE.2019.8867198](https://doi.org/10.1109/OCEANSE.2019.8867198).
- [PSN18] Pham, H.A., Thierry Soriano, and Van Hien Ngo. “Integrated scenarios of formation tracking and collision avoidance of multi-vehicles”. In: *IEEE 13th Annual Conference on System of Systems Engineering (SoSE), Paris, France*. 2018, pp. 313–318. DOI: [10.1109/SYBOSE.2018.8428730](https://doi.org/10.1109/SYBOSE.2018.8428730).
- [SPN18] Thierry Soriano, Pham, H.A., and Van Hien Ngo. “Analysis of coordination modes for multi-UUV based on Model Driven Architecture”. In: *IEEE 12th France-Japan and 10th Europe-Asia Congress on Mechatronics, Japan*. 2018, pp. 189–194. DOI: [10.1109/MECATRONICS.2018.8495893](https://doi.org/10.1109/MECATRONICS.2018.8495893).
- [Pha+15] Pham, H.A. et al. “An Object – Oriented design method for controllers Quadrotor UAV”. In: *Proceeding of Fluid Mechanics Conference, Da Nang, Vietnam*. 2015.
- [Da14] Pham, H.A. DO Trong Tuan and et al. “Investigation of solutions in the rescue of marine victims using the UAV system with multi-communication”. In: *Proceeding of COMNAVI Conference, Hanoi, Vietnam*. 2014.
- [Pha+14] Pham, H.A., G.Diem Pham, Trong Tuan Do, V.H Ngo, and Phu Hung Nguyen. “A Hybrid Automata-Based Model to Develop Controllers for Quadrotor UAVs”. In: *Proceeding of AUN/SEED-Net Regional Conference on Mechanical and Manufacturing Engineering (RCMME), Hanoi, Vietnam*. 2014, pp. 397–401.
- [Tua+13] Do Trong Tuan, Ha Duyen Trung, H. Trong Thanh, P. Xuan Quang, and Pham, H.A.. “A Combined Differential Navigation and Communication Scheme for Unmanned Arial Vehicles for Supporting Search and Rescue Activities at High-rise Buildings”. In: *Proceeding of ICSANE Conference, Hanoi, Vietnam – pp.71-76*. 2013.

#### Workshops/Posters

- [PS18] Pham, H.A. and T. Soriano. “Poster at the Doctoral Seminar, GDR Macs/AFIS—Association Française d’Ingénierie Système, Nancy, France”. In: 2018.

#### REFERENCES

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**Mr. Thierry Soriano** | Full-Professor, Vice-President of University of Toulon, France

- PhD supervisor, Co-Project leader RoboSCo
- Email: [thierry.soriano@univ-tln.fr](mailto:thierry.soriano@univ-tln.fr)
- Webiste: <https://cosmer.univ-tln.fr/en/thierry-soriano-2/>

**Mr. Valentin Gies** | Full-Professor, University of Toulon, France

- Project leader RoboSCo
- Email: [valentin.gies@univ-tln.fr](mailto:valentin.gies@univ-tln.fr)
- Webiste: <https://www.vgies.com>