

CONTACTS

Hélénon François - PhD in AI applied to collaborative robotics

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ACADEMICAL BACKGROUND

nov. 2018- jan. 2022 **PhD**

PhD of HESAM University

Cognitive robotic architecture for human-aware interactive task learning. An application to human-robot collaboration in Industry 4.0.

2016-2018 **Engineering degree from École Supérieure d'Electricité and M.Sc. (MFA) from Lorraine University**

Jointly done in CentraleSupélec and Lorraine University

Training in Artificial Intelligence and interactive systems (machine learning, autonomous robotics, signal processing, stochastic calculus, ...)

2015-2016 **Bachelor in mathematics**

Besançon University (remote courses)

2014-2016 **Engineering degree from Arts et Métiers**

Arts et Métiers Sciences and Technology

Broad theoretical and practical training in mechanical, industrial and material engineering

2011-2014 **Preparatory classes**

Condorcet and Raspail high schools

Intensive study courses in mathematics and physics preparing for the Grandes Écoles competitive entrance examinations (highly-selective French institutions)

SELECTION OF PROFESSIONAL EXPERIENCES AND ACADEMIC PROJECTS

nov. 2018- jan. 2022 **PhD in AI applied to industrial collaborative robotics and teaching**

Arts et Métiers Sciences and Technologies at LISPEN | Supervisors: Olivier Gibaru, professor | Stéphane Thierry and Eric Nyiri, assistant professors

Co-development and validation of a prototype of cognitive robotic architecture for human-aware interactive task learning with real industrial collaborative robots. Practical works teaching in python/AI for engineering students.

october 2018 **Research exchange internship : Human/Robot interaction**

Collaborative Robotic Laboratory (CoRLuc), Coimbra University, Supervisor: Pedro Neto, assistant professor

Classification of EMG signals for gesture recognition and robotic control of an IIWA robot (python, java)

2018 (5 months) **R&D internship : Visual-Inertial navigation**

LVIC/CEA-LIST, Nano-Innov, Paris-Saclay, Supervisors: Richard Guillemard and Bruno Petit, research engineers

Zero velocity update for visual-inertial SLAM by developing a multimodal stationary detector (camera, IMU). (C++11 programming)

2018 (6 months) **Student project : Drone navigation by optical flow and self-organising maps**

CentraleSupélec, Supervisors : Hervé Frezza-Buet, professor | Jeremy Fix, assistant professor. In collaboration with Nino Vieillard and Nathan Darpentigny

Unsupervised classification of the optical flow of a drone navigating in a simulated cave under Unity/ROS.

2016-2017 **Student project: Autonomous robot navigation**

Centralesupélec, Supervisors: Anthony Kolar, Caroline Lelandais-Perrault, teachers-researchers. In collaboration with Thomas Cusson and Xiaoya Guo.

Real time images processing by exploiting the GPU of a raspberry pi 3 for autonomous robot navigation and obstacle avoidance (C++, python and OpenGL).

PRACTICAL SKILLS

Language	English (professional) German (intermediate) French (mother tongue)
Software	Machine learning : Python (keras, tensorflow, numpy, scikit-learn) Vision : OpenCV Robotics : ROS, C++, simulation notions (Vrep, Unity, CAD modeling) Documents : Latex/Beamer/TikZ, Microsoft Office Development: Linux, Emacs, Git, Docker
Soft skills	Student project management, research communications and vulgarisation
Hobbies	Choir singing, Classical guitar

PUBLICATIONS

- [1] Francois Helenon, Stephane Thiery, Eric Nyiri, and Olivier GIBARU. "Cognitive Architecture for Intuitive and Interactive Task Learning in Industrial Collaborative Robotics". In: *2021 the 5th International Conference on Robotics, Control and Automation*. New York, NY, USA: Association for Computing Machinery, Mar. 5, 2021, pp. 119–124. ISBN: 978-1-4503-8748-4. URL: <https://doi.org/10.1145/3471985.3472385>.
- [2] Francois Helenon, Laurent Bimont, Eric Nyiri, Stephane Thiery, and Olivier GIBARU. "Learning prohibited and authorised grasping locations from a few demonstrations". In: *29th IEEE International Conference on Robot and Human Interactive Communication, RO-MAN 2020*. 2020. ISBN: 9781728160757. DOI: [10.1109/RO-MAN47096.2020.9223486](https://doi.org/10.1109/RO-MAN47096.2020.9223486).
- [3] Richard Guillemard, François H  lenon, Bruno Petit, Vincent Gay-Bellile, and Mathieu Carrier. "Stationary Detector for Monocular Visual-Inertial SLAM". In: *2019 International Conference on Indoor Positioning and Indoor Navigation (IPIN)*. 2019, pp. 1–8. DOI: [10.1109/IPIN.2019.8911750](https://doi.org/10.1109/IPIN.2019.8911750).

TEACHING

2019-2021

Practical works

Arts et M  tiers Sciences and Technology, Lille

Introduction to python programming

2019-2021

Artificial intelligence for robotics (Practical works)

Arts et M  tiers Sciences and Technology, Lille

Supervision of mini projects in an introduction to artificial intelligence course

2019-2021

3rd year student projects

Arts et M  tiers Sciences and Technology, Lille

Co-supervision of projects in computer science, robotics and artificial intelligence for various groups of second and final year students of the engineering curriculum (Master)

COMPLEMENTARY DOCTORAL TRAINING

july 2021 (30h)

Deep Reinforcement Learning Summer School (DLRL)

CIFAR, Canada, Virtual

Training and review of the state of the art in deep learning and reinforcement learning by world leading experts in AI

june 2021 (30h)

Rehabilitation and Assistive Technologies based on Soft Robotics (Softech Rehab)

CREO Lab, University of Rome Bio-Medical Campus of Rome, (Virtual)

Introduction to soft robotics and its applications applications, especially in the field of assistance.