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.

2014-2018 **Double Degrees**

(2016-2018) Engineering degree from the École Supérieure d'Électricité and Research Master (Fundamental and Applied Mathematics) from the University of Lorraine

CentraleSupélec and University of Lorraine

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

(2014-2018) Engineering degree from the École Nationale Supérieure d'Arts et Métiers

Arts et Métiers Sciences et Technologies

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

2015-2016 **Bachelor in mathematics during M1 from Arts et Métiers**

Besançon University (remote courses)

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 Thiery 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.

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.

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

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)
	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

Journals

[1]   François Hélénon, Stéphane Thiery, Eric Nyiri, and Olivier Gibaru. "A cognitive architecture for human-aware interactive robot learning with industrial collaborative robots". *Manuscrit soumis pour publication*. 2022.

Conférences

[2]   François Hélénon (avec présentation), 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.

[3]   François Hélénon (avec présentation), 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.

[4]   Richard Guillemard, François Hélénon, 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.

TEACHING

| 2019-2021 | **Vacant teacher** |

Arts and Métiers Sciences et Technologies, Lille

Python programming (Practical work, Bachelor level)

Introduction to Python programming:

- Basics of the language

- File management

- Object Oriented Programming

- Graphical interface (Tkinter)

Artificial intelligence for robotics (Practical work, Bachelor)

Supervision of mini projects in an introduction course to artificial intelligence

- Classification/regression problems in deep learning for different types of input (sounds/images/trajectories)

- Technical aspects influencing generalisation (hyperparameters, pre-processing, post-processing, data augmentation, learning transfer, . . .)

- Analysis tools : (confusion matrices, visualisations, tests on predictions)

- Python programming with Tensorflow/Keras

Student projects (Master level)

Mentoring of projects in computer science, robotics and artificial intelligence for various groups of second and third year students.

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