

ALEXANDRE BONNEFOND

Drone Systems Architect - Control Systems & UX

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EXPERIENCE

Fly4Future System Engineer Specialist - UAV platforms

03 2024 – ongoing

Prague

- Led development of a web app for UAV setup and control
- Oversaw integration of diverse onboard sensors
- Defined UAV architectures from client needs to technical specifications

Dassault Systèmes Corporate Research Intern

03 2019 – 08 2019

Paris

- Implementation of bio-inspired control law for UAVs
- Obstacle avoidance and motion planning in dense environments

CorWave Technology Manager Intern

02 2018 – 07 2018

Paris

- Technical design and development of a new test bench

Airbus Safran Launchers Assistant Engineer Intern - Ariane 5

09 2016 – 02 2017

Les Mureaux

PROJECTS

DYNAFLOCK INRIA

Study of decentralized spatial coordination models allowing to deploy a swarm of UAVs in complex environments (urban-type) while maintaining the connectivity among them.

Catch the Drone Challenge MBDA

Design of tracking algorithms in order to intercept a malicious drone. These algorithms relies on multi-drone tracking strategies including reinforcement learning and full-state feedback control. Market analysis was also conducted. See video 1 and 2.

PUBLICATIONS

Journal Articles

- A. Bonnefond, O. Simonin, and I. Lassous, "Modèles de flocking adaptés aux environnements avec obstacles et communications dégradées," *Revue Ouverte d'Intelligence Artificielle*, vol. 4, pp. 123–145, Jul. 2023. DOI: 10.5802/roia.59.

Conference Proceedings

- A. Bonnefond, O. Simonin, and I. Guérin-Lassous, "Extension of flocking models to environments with obstacles and degraded communications," in *2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021, pp. 9139–9145. DOI: 10.1109/IROS51168.2021.9635944.

STRENGTHS

Multi-Agent Systems

Control Theory

Autonomous Vehicle

C++/C

Python

Motion Planning

ROS / GAZEBO

Reinforcement Learning

Math/Geometry

Genetic Algorithms

Cloud Computing

LANGUAGES

English



Spanish



EDUCATION

Ph.D. in Computer Science

INSA LYON

11 2019 – 06 2023

Thesis: Dynamic flocking based on link quality in swarm of UAVs

- Multi-agent autonomous system
- Asymmetric Flocking control: <https://youtu.be/-JISUy9WgX4>
- Evolutionary strategy
- Communication constraints
- Incremental Leader/Follower algorithm: <https://youtu.be/zKcpsBHAmAg>

M.Sc. in Complex Systems

UTC

09 2018 – 08 2019

Engineering Degree in Mechanics

UTC

09 2015 – 07 2018

REFEREES

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