

# Senior Research Engineer in Artificial Intelligence Algorithmics

**Main expertise: raise up the level of abstraction of the tools used to design artificial intelligence algorithms.**  
Randomized search, heuristics, numerical optimization, automated planning, motion planning. C++, Python, Linux.

**Prominent Achievements** { Science: **seminal papers & breakthrough in algorithm engineering.**  
Innovation: **award-winning open-source stochastic optimization solvers.**  
Transfer: **new planning algorithms used in market products.** }

**Notable skills** {Empirical sciences, Software development, Team work, Communication.}

## Science Background & Education

### Senior Research Engineer

Algorithm engineering, landscape-aware heuristics, motion planning, semantics, machine learning.

Aerial & underwater drones, sensor networks, crisis management, threat modelling.

International projects proposals & management  
R&D project manager, integration consulting

Thales R&T research center  
Decision and Optimization Laboratory

### Research Engineer

Automated planning, stochastic optimization, Evolutionary algorithms framework dev.

Defence, crisis management, ballistics, radars, Command & Control systems optimization

International projects proposals  
R&D project manager, open source maintainer

Thales R&T research center  
Mathematics and Decision Technology laboratory

### Post-doc Researcher

Operations Research, swarm robotics  
École Nationale Supérieure des Mines de Saint-Étienne  
Engineering & Health Laboratory

### Teaching Assistant

Stochastic algorithms engineering  
Experimental validation, design of experiments  
Paris 12 university  
Image, Signal and Intelligent Systems Laboratory

### Ph.D. in Computer Science

Paris 12, *summa cum laude*

### Ant Colony Optimization, metaheuristics

Bio-medical engineering, imaging  
Paris 12 university  
Study & Research in Instrumentation, Signals & Systems Laboratory

### Postgraduate biomathematics

Paris 6 & Paris 7  
*magna cum laude*

### Master's degree evolution & ecology

Rennes 1

2000 Modeling of a behavior in ants colony  
Univ. Libre de Bruxelles  
Non-linear Phenomenon and Complex Systems laboratory

## Knowledge transfer & Innovation

### Automated Solver Design Toolchain

Sensor Network Management  
Publications & Patents pending  
Internal PoC with breakthrough perf.

2018-2020 Lecturer on *Stochastic Optimization Heuristics*  
École Nationale Supérieure Techniques Avancées

### Per Instance Algorithm Configuration

Machine Learning & Optimization  
Open sourced & 4 publications  
Won Black Box Optimization Competition 2017

### Divide-and-Evolve for AI planning

Efficient implementation  
Open sourced & published  
Won International Planning Competition 2011

### Training courses on Wikipedia for researchers

2015 French Computer Science Society & Wikimedia  
<http://inria-alumni.fr/3-questions-a-johann-dreo-chercheur-en-algorithmique-et-wikipedia/>

### Complexity-based planning decomposition

Multi-drones/missions for surveillance  
2 patents  
Used in 4 Thales product/demonstrators  
Seen in Eurosatory and Thales InnovDays trade show

### Path planning w/ waysets constraints seq.

Aircraft taxi-routing ("GPS" for planes)  
Publication pending & 2 patents  
Used in an avionics Thales product  
[https://youtu.be/ateRShJKU\\_8?t=1m29s](https://youtu.be/ateRShJKU_8?t=1m29s)

### Constraints Management for Parallel EDAs

Defence system configuration  
1 patent & Thales award  
Used in a Thales product demonstrator

### ParadisEO: C++ framework for Evol. Algo.

Maintener since 2008  
Open sourced  
Used across several companies

2007-08 Elected board member of Wikimedia France  
Popular science Wikipedia & co.

2 231 citations, h-index = 17, i10-index = 21  
30+ publications, a translated book.

5 000+ stars on github  
Open source code: [github.com/nojhan](https://github.com/nojhan)

Fluent in English & French

