

# Senior Research Engineer in Artificial Intelligence Algorithmics

**Main expertise: raise up the level of abstraction of decision support systems and artificial intelligence algos.**  
*Randomized search, heuristics, numerical optimization, automated planning, eikonal PDE.* 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 Associate

**A.I. for Systems Biology**  
**Decision Support System Design for Cancer**  
 Institut Pasteur & CNRS, Computational Biology Dept.  
 Systems Biology Group

### Senior Research Engineer

**Auto. algorithm design, landscape-aware heuristics, Hamilton-Jacobi PDEs, machine learning.**  
**Aerial & underwater drones, sensor networks**  
 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

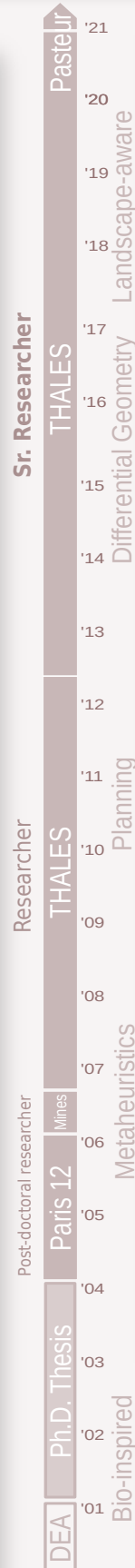
### Postgraduate biomathematics

Paris 6 & Paris 7  
*magna cum laude*

### Master's degree evolution & ecology

Rennes 1

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



## Knowledge transfer & Innovation

**Eikonal PDE solver for motion planning**  
**Vehicles & sensors planning**  
*Internal implementation & transfert*  
**Bootstrapped a Thales team & product(s)**

**Lecturer on Stochastic Optimization Heuristics**  
 18-21 École Nationale Supérieure Techniques Avancées

**Per Instance Algorithm Configuration**  
**Machine Learning & Optimization**  
*Open sourced & 4 publications*  
**Won Black Box Optimization Competition 2017**

**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-wikipedien/>

**Divide-and-Evolve for AI planning**  
**Efficient implementation**  
*Open sourced & published*  
**Won International Planning Competition 2011**

**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**

**Elected board member of Wikimedia France**  
*Popular science Wikipedia & co.*

**2 395 citations, h-index = 18, i10-index = 24**  
 30+ publications, a translated book.

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