

# Achille Thin

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## EDUCATION

### PHD, CENTRE DE MATHÉMATIQUES APPLIQUÉES (CMAP), ÉCOLE POLYTECHNIQUE

2019- 2022

- Directors: Eric Moulines (Ecole polytechnique), Arnaud Doucet (University of Oxford)
- Specializing in novel approaches for sampling high dimensional distributions in complex setting, with specific interest for generative models and Variational Inference (Application to Bayesian Inference and Uncertainty quantification). Relevant projects include:
  - 2<sup>nd</sup> prize at NeurIPS 2021 competition: Approximate Inference in Bayesian Deep Learning, development of a novel efficient method.
  - NeurIPS 2021 publication, [Non Equilibrium Sampling along the Orbit of a Deterministic transform](#): Leverage optimization-like transformations to build state-of-the-art estimators of normalizing constants, and extension to a sampling algorithm.
  - ICML 2021 publication (Spotlight paper), [Monte Carlo Variational Auto Encoder](#): Design an efficient Variational Auto Encoder (VAE) based on Markov transitions and state-of-the-art estimators of likelihood. The generative model presented compares to state-of-the-art VAEs.

### MSC IN STATISTICAL SCIENCE, DEPARTMENT OF STATISTICS, OXFORD UNIVERSITY, UNITED KINGDOM

2018-2019

- Specializing in foundations of Machine Learning and statistical tools for modeling data. Graduated with highest honors.
- Master Thesis with Robin Ryder and Judith Rousseau, "A Bayesian non-parametric methodology for inferring grammar complexity". Paper pending.

### ÉCOLE POLYTECHNIQUE, PALAISEAU, FRANCE

2015-2018

- Two years of pluridisciplinarity (*Quantum and Statistical Physics, Mathematics – Galois Theory, Fourier Analysis -, Measure and Probability Theory, Algorithmic and Foundation of Computer Science*), majoring in Applied Mathematics and Computer Science.
- Relevant coursework includes *Statistical Modeling, Stochastic Simulation and Monte-Carlo Methods*, ... GPA: 3,85/4.0, Top 6% (23/428)

### LYCÉE STANISLAS, PREPARATORY PROGRAM

2013-2015

- A post secondary two year program in advanced math and physics leading to nationwide entrance examinations to the Grandes Ecoles for scientific studies. Undergraduate coursework includes *Algebra, Topology, Mathematical Analysis, and Classical and Quantum Physics*. GPA: 4.0/4.0

## PROJECTS AND PROFESSIONAL EXPERIENCE

### RESEARCH INTERNSHIP AT CEA, Cadarache, France

2018

- Developed models for plasma in nuclear fusion reactors (tokamaks) for a better understanding of plasma wall interactions.
- Developed a synthetic measure to apply to simulations for a better comparison Simulation/experience (Paper published: [First modeling of strongly radiating WEST plasmas with SOLEDGE-EIRENE](#) in Nuclear Materials and Energy).

### R&D PROJECT, Papeete, French Polynesia

2017

- Developed an algorithm modeling the immersion of a pipe in great depths for a Sea-Water Air Conditioning (SWAC) system in python.
- Designed a technical maintenance system for a SWAC, built the model of an Ocean Thermal Energy Conversion system.

## LEADERSHIP EXPERIENCE

### HEAD OF AN A BRAS OUVERTS GROUP, Paris, France (<https://www.abrasouverts.fr/>)

2020 – 2022

- Head of a group of 60 volunteers and responsible for 26 children (from 6 to 40 years old) with disabilities.
- Organization of 2 to 3 week-ends per month and special link to the family of the children.

### FRENCH AIR FORCE - OFFICER CADET IN A COMMANDO UNIT, Orange, France

2015 - 2016

- In charge of the training of new recruits, and of the organization of the selection program for the French Commando Paratroopers

## SKILLS

- Computer Skills: C++, Java, Python & PyTorch, R, LaTex – Unix environment. Link to ssh servers for heavy computations.
- Languages: French: native, English: native, Russian, Spanish: basic.

## EXTRACURRICULAR ACTIVITIES

- Treasurer of Fresher's week-end (*In charge of logistics and global organization – 135,000 € budget*), in charge of the organization of Start-Up Cafés (small entrepreneurship events) in the Cabinet Start Up. Rewarded for Outstanding Investment at Polytechnique.
- Sports: *Rugby (2<sup>nd</sup> row on the varsity team), Tennis (competitive level), Sailing (part of the Polytechnique team at the Course Croisière EDHEC)*.