

Paul Bertin

PhD student in Machine Learning

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📍 Montréal, CANADA

EDUCATION

SEPTEMBER 2019 – PRESENT

PhD in Machine Learning

Mila, Université de Montréal

Interests : Gene Expression Data, Causality, Bayesian Deep Learning
Supervised by [Yoshua Bengio](#)

SEPTEMBER 2017 – AUGUST 2018

Mathématiques Vision Apprentissage

Ecole Normale Supérieure Paris-Saclay

Majors : Probability, Optimization
Minors : Differential Geometry, Topology

SEPTEMBER 2014 – AUGUST 2018

Master of Science

Ecole polytechnique

Majors : Applied Mathematics, Computer Science
Minors : Physics, Biology

SEPTEMBER 2012 – JUNE 2014

Preparatory courses

Lycée Louis Le Grand

Majors : Mathematics, Physics
Minors : Engineering Science, English

COMMUNICATION SKILLS

FRENCH Native speaker
ENGLISH Proficient
SPANISH Advanced
JAPANESE Beginner

SOFTWARE SKILLS

GOOD LEVEL Python, Java, Tensorflow, PyTorch
INTERMEDIATE C++, git, HTML, Linux, \LaTeX

EXPERIENCE

SEPTEMBER 2018 – JUNE 2019

Research Intern

[Montréal Institute for Learning Algorithms](#), Montréal

Development of a web based system for diagnosing chest X-ray images.
Analysis of Gene Interaction Graphs as prior knowledge for ML models.
Supervised by [Joseph Paul Cohen](#).

APRIL 2018 – AUGUST 2018

Research Intern

[Aramis Team, Inria, Paris](#)

Tackled the analysis of graphs embedded into 3D space in order to study the variability and plasticity of vessel networks in the adult mouse brain.
Supervised by [Stanley Durrleman](#)

APRIL 2017 – AUGUST 2017

Deep Learning Research Intern

[National Institute of Informatics, Tokyo](#)

Deep Learning for Medical Image Analysis (design and implementation). Classified cancerous and healthy cells in histopathology images.
Supervised by [Benjamin Renoust](#)

JUNE 2016 – AUGUST 2016

Development Intern

[Option, Santiago de Chile](#)

Mobile app development.

AUGUST 2015

Volunteer

[X-Microfinance, Guatemala](#)

Traveled to Guatemala with a group of students to grant microcredits to farmers and entrepreneurs with limited resources.

NOVEMBER 2014 – MARCH 2015

Navy Officer on the Supply Ship "La Somme"

[Marine Nationale, Brest, France](#)

Part of the engine department. Trained to be security coordinator during fire simulations onboard.

PROJECTS

2019
Graph-based selection of genes
Is graph-based feature selection of genes better than random?

2018
X-Ray Disease Prediction System
Chester : a web based (but locally run) prototype system for diagnosing chest X-ray images.

2018
Dynamics of glass-forming liquids
Data challenge : prediction of the dynamics of particles in glass-forming liquids.

2017
Deep Multi Armed Bandit
Apply Bayesian Deep Learning methods to deal with the Exploration-Exploitation dilemma in the Multi Armed Bandit problem.

2017
Style Transfer
Review and implement various approaches for Style Transfer in images (neural algorithm and unsupervised method).

2017
Restricted Boltzmann Machines
Review of various algorithms to train Restricted Boltzmann Machines.
K-step Contrastive Divergence and Persistent Contrastive Divergence algorithms.

2016
Self driving car on TORCS
Designed and implemented a genetic algorithm which learned to drive a simulated car.
A population of neural networks evolved (by dying and reproducing) until accurately driving along the road.

2014
Swarm-bots
Brought out emergent phenomena in a swarm of simulated robots. Designed a distributed policy to efficiently explore an unknown space with a swarm of robots.
Implemented a protocol so that two real robots pull objects in a cooperative manner.

COURSES

2018 **The curse of dimensionality**
COLLEGE DE FRANCE
Stéphane Mallat

2018 **Geometry and Shape Spaces**
ENS CACHAN
A. Trounev, J. Glaunes

2018 **Longitudinal Data Analysis**
ENS CACHAN
Stanley Durrleman

2018 **Kernel Methods for machine learning**
ENS CACHAN
J. Mairal, J.-P. Vert

2017 **Reinforcement Learning**
ENS CACHAN
Alessandro Lazaric

2017 **Topological Data Analysis**
POLYTECHNIQUE
Steve Oudot

2017 **Sparsity and Compressed Sensing**
ENS ULM
Gabriel Peyré

2017 **Probabilistic Graphical Models**
ENS CACHAN
F. Bach and G. Obozinski

2017 **Complex Systems**
POLYTECHNIQUE
J.P. Bouchaud and Kirone Mallick

2016 **Machine Learning**
POLYTECHNIQUE
Michalis Vazirgiannis

2016 **Operations Research**
POLYTECHNIQUE
Stéphane Gaubert

2016 **Randomization in Computer Science**
POLYTECHNIQUE
Benjamin Doerr

2016 **Neurobiology**
POLYTECHNIQUE
Nicolas David and Alice Meunier

2016 **Statistical Physics**
POLYTECHNIQUE
Gilles Montambaux