Pierre Wolinski

Curriculum Vitæ

Themes: theory of deep learning, optimization, Bayes.

Career

2023–now **Post-doc**, *Probability and Statistics team, LMO, Paris-Saclay University*, Orsay, France
Areas: neural networks theory, optimization.
Supervisors: Gilles Blanchard, Christophe Giraud.

2021–2023 **Post-doc**, *Statify team, LJK, UGA, Inria Grenoble-Alpes*, Grenoble, France
Areas: neural networks theory, variational inference, optimization.
Supervisor: Julyan Arbel.

2020–2021 **Post-doc**, *Department of Statistics, University of Oxford*, Oxford, UK
Areas: Bayesian neural networks, variational inference, neural networks theory.
Supervisor: Judith Rousseau.

Study

2016–2020 **PhD in Computer Science**, *TAO/Tau team, LRI, Inria Saclay, Paris-Saclay University*, Gif-sur-Yvette, France
Title: *Structural Learning of Neural Networks*.
Supervisors: Guillaume Charpiat, Yann Ollivier.

2011–2016 **École Normale Supérieure (Mathematics)**, Paris, France
2016: graduate, Mathematics with minor in Physics.
2015: Master of Mathematics (Probability and Statistics), Paris-Sud University, Orsay, France.
2015: Master thesis: *Consistency of RKHS Methods within the Framework of Minimization of a Convex Risk*, supervised by Éric Moulines, Florence d'Alché-Buc and François Roueff, Télécom Paris.

2008–2011 **CPGE Physics and Chemistry**, *Lycée Fénelon and lycée Saint-Louis*, Paris, France

2008 **Baccalauréat (S)**, *Lycée Marie-Curie*, Sceaux, France

Teaching

2016–2020 **Lecturer in Mathematics and Computer Science**, *IUT d'informatique*, Orsay, France
Courses: Algebra; Probability and Statistics; Java et OOP; Graphs, Languages and Finite Automata.

2012–2013 **Lecturer in CPGE (Mathematics)**, *Lycée Saint-Louis*, Paris, France

Works

Adapting Newton's Method to Neural Networks through a Summary of Higher-Order Derivatives (2023).
Author: P. Wolinski.

Efficient Neural Networks for Tiny Machine Learning: A Comprehensive Review (2023).
Authors: M. T. Lê, P. Wolinski, J. Arbel.

Rethinking Gauss-Newton for Learning Over-Parameterized Models (2023).
Authors: M. Arbel, R. Ménégaux*, P. Wolinski*.

Published at **NeurIPS 2023**, poster (conference with proceedings).

Gaussian Pre-Activations in Neural Networks: Myth or Reality? (2022)
Authors: P. Wolinski, J. Arbel.

An Equivalence between Bayesian Priors and Penalties in Variational Inference (2020).
Authors: P. Wolinski, G. Charpiat, Y. Ollivier.

Asymmetrical Scaling Layers for Stable Network Pruning (2020).
Authors: P. Wolinski, G. Charpiat, Y. Ollivier.

Learning with Random Learning Rates (2019).
Authors: L. Blier, P. Wolinski, Y. Ollivier.
Published at **ECML PKDD 2019**, poster and oral presentation (conference with proceedings).

* Equal contribution.

Conferences

2022 **ISBA** – *An Equivalence between Bayesian Priors and Penalties in Variational Inference* (oral presentation)

2022 **JdS** – *How to Impose Gaussian Pre-Activations in a Neural Network?* (oral presentation)

2020 **CMStatistics** – *Interpreting a Penalty as the Influence of a Bayesian Prior* (oral presentation)

Skills

Languages

French, English (+ German).

Computer Science

- Languages: Python, C++ (+ Java, matlab).
- Libraries: PyTorch, matplotlib (+ pandas, Hydra).
- Software: git.
- Cluster: GPU, job scheduling (Slurm), environment management (conda, docker).

Code

- `https://github.com/p-wol/GroupedNewton`:
  implementation of the technique proposed in *Adapting Newton's Method to Neural Networks through a Summary of Higher-Order Derivatives*;
- `https://github.com/p-wol/gaussian-preact`:
  reproducibility of *Gaussian Pre-Activations in Neural Networks: Myth or Reality?*
- `https://github.com/leonardblier/alrao`:
  implementation of the technique proposed in *Learning with Random Learning Rates*.

Experiences

- Paper reviewing for: NeurIPS, ICML, ICLR, AISTATS, JMLR, TMLR, Neural Networks, IEEE SPMAG.
- Support and writing of a wiki for the use of clusters and GPUs.

Hobbies

- Activities: theater, dance (rock, waltz, tango).
- Philospophy/history of science.
- Participation to the French Cup of Robotics (2012, 2013, 2015).