Pierre LAFORGUE

PhD in Machine Learning

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Research Experience

2020 - Present **University of Milan**, Postdoctoral researcher (Sup. N. Cesa-Bianchi)
RESEARCH TOPICS: Online Learning, Bandit Algorithms, Online Convex Optimization
SUPERVISING: Co-supervising a PhD thesis on sketching OVK machines with F. d'Alché-Buc

2016 - 2020 **Télécom Paris**, PhD in Machine Learning (Sup. F. d'Alché-Buc, S. Clémençon)
RESEARCH TOPICS: Kernel Methods, Robust Learning, Median-of-Means, Sample Bias Issues
DISSERTATION: *Deep Kernel Representation Learning for Complex Data and Reliability Issues*

Grants, awards Recipient of a research grant by the industrial chair *Good in Tech* (2020)
2nd Best Thesis of IP Paris's computer science department (2021)

Other Professional Experience

2021 - Present **Lecturer in machine learning**
- Online learning with applications to digital markets (PhD course, Scuola Superiore di Pisa 2022)
- Online Learning: Theory & Algorithms (PhD course, University of Milan 2021)
- Reinforcement Learning Virtual School (Teaching assistant, Online 2021)

2016 - 2019 **Teaching assistant at Télécom Paris** (64 hrs / yr)
- Theoretical classes: Statistics, Linear Models, Advanced Statistical Learning
- Practical sessions and computer classes: Applied Machine Learning, Data Mining

2016 - 2019 **Scientific advisor on Data Science projects at Télécom Paris**
- Energy saving in a silicon furnace (Bearing Point & Ferroglobe 2019)
- Multi-dimensional time series visualization (Safran 2018)
- Predictive maintenance on helicopters (Safran 2017)

Education

2015 - 2016 **ENS Cachan, Université Paris Dauphine**, master's degree MASH
Theoretical machine learning courses (joint with MVA's: statistical learning theory, kernel methods, convex optimization, graphical models) and applied ones (data marketing, privacy and fairness)

2013 - 2016 **ENSAE Paris**, master's degree in Statistical Learning
French engineering school (grande école) specialized in statistics and applied mathematics

2010 - 2013 **Lycée Henri IV (Paris)**, preparatory classes MPSI/MP
Undergraduate courses in mathematics and physics to prepare nationwide competitive exams

Skills & Languages

Research interests : Learning Theory, Online Learning, Robust Learning, Kernel Methods
Computer skills : Python (numpy, pytorch, pandas, scikit-learn), Latex, R
Languages : French (native), English (fluent), Italian (basics)

Publications by Topics

Online Learning and Bandits

AdaTask: Adaptive Multitask Online Learning (Preprint 2022).
P. Laforgue*, A. Della Vecchia*, N. Cesa-Bianchi, L. Rosasco.

Multitask Online Mirror Descent (TMLR 2022).
N. Cesa-Bianchi, P. Laforgue, A. Paudice, M. Pontil.

A Last Switch Dependent Analysis of Satiation and Seasonality in Bandits (AISTATS 2022).
P. Laforgue, G. Clerici, N. Cesa-Bianchi, R. Gilad-Bachrach.

Robust Learning and Median-of-Means

Concentration Bounds in the Presence of Outliers: a Median-of-Means Study (ICML 2021).
P. Laforgue, G. Staerman, S. Clémençon.

When OT meets MoM: Robust estimation of Wasserstein Distance (AISTATS 2021).
G. Staerman, P. Laforgue, P. Mozharovskyi, F. d'Alché-Buc.

On Medians-of-(Randomized)-Pairwise Means (ICML 2019).
P. Laforgue, S. Clémençon, P. Bertail.

Kernel Methods and Vector-Valued RKHSs

***p*-Sparsified Sketches for Fast Multiple Output Kernel Methods** (Preprint 2022).
T. El Ahmad, P. Laforgue, F. d'Alché-Buc.

Duality in RKHSs with Infinite Dimensional Outputs: Application to Robust Losses (ICML 2020).
P. Laforgue, A. Lambert, L. Brogat-Motte, F. d'Alché-Buc.

Autoencoding any Data through Kernel Autoencoders (AISTATS 2019).
P. Laforgue, S. Clémençon, F. d'Alché-Buc.

Statistical Learning and Sample Bias Issues

Fighting Selection Bias in Statistical Learning: Application to Visual Recognition from Biased Image Databases (Preprint 2022).
S. Clémençon, P. Laforgue, R. Vogel.

Statistical Learning from Biased Training Samples (Electronic Journal of Statistics, 2022).
S. Clémençon, P. Laforgue.

PhD Dissertation

Deep Kernel Representation Learning and Reliability Issues (2020).
P. Laforgue.

Research Activities

Reviewing NeurIPS, ICML, COLT, ICLR, AISTATS, JMLR, TMLR, Machine Learning Journal, ELLIS PhD Program

Talks Learning and Optimization in Luminy workshop (Marseille, Oct. 2022), ELLIS@Milan AI workshop (Milan, Sep. 2022), University College London, DELTA team (Online, Jul. 2022), ELLIS Theory workshop (Arenzano, Jun. 2022), Journées de Statistique (Lyon, Jun. 2022), Hi! Paris AI Symposium (Paris, Jun. 2022)