Yassine Laguel

90, New Street - Apt 1803
New Brunswick, USA 08901
(+1) (848) 702 0332
laguel.yassine@gmail.com
https://yassine-laguel.github.io

Education

2022–Present **Postdoctoral researcher at Rutgers University**, *Working with Mert Gürbüzbalaban*, New Brunswick, USA.

2018–2021 **Phd in Optimization and Machine Learning**, *Supervised by Jérôme Malick, Université Grenoble Alpes*, Grenoble, France.

2017–2018 **Master of Sciences in Industial and Applied Mathematics (MSIAM)**, *Master 2*, Grenoble, France.

2015–2018 **Ecole Nationnale Supérieure de l'Informatique et des Mathématiques Appliquée (ENSIMAG)**, *Engineering School, Financial Engineering track*, Grenoble, France.

2012–2015 **Classes Préparatoires MPSI-MP***, *Lycée Blaise Pascal*, Orsay, France, Math & Physics track.

2012 **Baccalauréat Option Sciences**, *Lycée Blaise Pascal*, Orsay, France, High honors.

Journal Papers

J7-2022 **Push–Pull with Device Sampling**, *Yu-Guan Hsieh, Yassine Laguel, Franck Iutzeler, Jérôme Malick*, Submitted to IEEE Transactions in Automatic Control.

J6-2022 **Federated Learning with Heterogeneous Data : A Superquantile Optimization Approach**, *Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui*, Submitted to Machine Learning Journal.

J5-2022 **Chance constrained problems : a bilevel convex optimization perspective**, *Yassine Laguel, Wim Van Ackooij, Jérôme Malick*, Submitted to Computational Optimization and Applications.
https://yassine-laguel.github.io/files/taco-paper.pdf

J4-2022 **Superquantile-based learning : a direct approach using gradient-based optimization**, *Yassine Laguel, Jérôme Malick, Zaid Harchaoui*, Journal of Signal Processing Systems, 94, pages 161–177.
https://yassine-laguel.github.io/files/2021_jsps.pdf

J3-2022 **On the convexity of level-sets of probability functions**, *Wim Van Ackooij, Yassine Laguel, Jérôme Malick, Guilherme Matiussi Ramalho*, Journal of Convex Analysis, 2, pages 411-442.
https://yassine-laguel.github.io/files/transconcavity-paper.pdf

J2-2021 **Superquantiles at Work : Machine Learning Applications and Efficient (Sub)gradient Computation**, *Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui*, Set-Valued and Variational Analysis, 29, pages 967–996.
https://yassine-laguel.github.io/files/svaa-paper.pdf

J1-2020 **Randomized Progressive Hedging methods for Multi-stage Stochastic Programming**, *Gilles Bareilles, Yassine Laguel, Dmitry Grishchenko, Franck Iutzeler, Jerome Malick*, Annals of Operations Research, 295, pages 535–560.
https://arxiv.org/abs/2009.12186

Conference Papers

C3-2022 **Differentially Private Quantiles with the Distributed Discrete Gaussian Mechanism**, *Krishna Pillutla, Yassine Laguel, Jérôme Malick, Zaid Harchaoui*, Submitted to the ICML Workshop on Differential Privacy.
`https://arxiv.org/abs/2002.11223`

C2-2021 **Device Heterogeneity in Federated Learning : A Superquantile Approach**, *Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui*, Proceedings of the 55^{th} Annual Conference on Information Sciences and Systems (CISS 2021).
`https://arxiv.org/abs/2002.11223`

C1-2020 **First Order Optimization for superquantile-based supervised learning**, *Yassine Laguel, Jérôme Malick, Zaid Harchaoui*, Proceedings of the Machine Learning and Signal Processing Conference (MLSP 2020) - Best Student Paper Award.
`https://arxiv.org/abs/2009.14575`

Software

Python **TACO**, *A Toolbox for chAnce Constrained Optimization*, Yassine Laguel, Wim Van Ackooij, Jérôme Malick.
`https://yassine-laguel.github.io/taco/`

Julia **RandomizedProgressiveHedging.jl**, *A toolbox for solving multistage stochastic problems by randomized versions of the progressive hedging algorithm*, Gilles Bareilles, Yassine Laguel, Dmitry Grishchenko, Franck Iutzeler, Jérôme Malick.
`https://yassine-laguel.github.io/RandomizedProgressiveHedging.jl/stable/`

Python **SPQR**, *A toolbox for superquantile minimization*, Yassine Laguel, Jérôme Malick, Zaid Harchaoui.
`https://yassine-laguel.github.io/spqr/`

Talks and Posters

2022 **New perspectives on robustness via the Conditional Value at Risk**, *Upcoming Talk*, ICCOPT.
Lehigh, USA

2022 **Federated Learning with Heterogeneous Data : A Superquantile Optimization Approach**, *Talk*, Magnet Seminar.
Lille, France

2022 **Convex risk measures : models, algorithms and applications in federated learning**, *Talk*, University of Washington ML Seminar.
Seattle, USA

2021 **Convex risk measures : models, algorithms and applications in federated learning**, *Talk*, Thoth Seminar.
Montbonnot, France

2021 **Risk-averse optimization : models, algorithms, and applications in machine learning**, *Talk*, PhD Defense.
Grenoble, France

2021 **Risk-sensitive learning for heterogeneous frameworks**, *Talk*, Journée des statistiques.
Nice, France

2021 **On hidden convexity in chance constrained problems**, *Talk*, ANSI Seminar.
Los Alamos, USA

2021 **Device heterogeneity in federated learning : A superquantile approach**, *Poster*, Workshop on Communication Efficient Distributed Optimization.
Online Seminar

2020 **Device heterogeneity in federated learning : A superquantile approach**, *Talk*, Federated Learning One World Seminar, `https://www.youtube.com/watch?v=W-oNzU04Y8I`.
Online Seminar

2020 **First-order optimization for superquantile-based supervised learning**, *Talk*, Machine Learning and Signal Processing Conference (MLSP 2020).
Espoo, Finland

2020 **A DC approach for chance constraints**, *Talk*, SMAI-MODE, `https://www.youtube.com/watch?v=KB3sV-trEy4&list`.
Saclay, France

2020 **Handling Device Heterogeneity in Federated Learning**, *Poster*, Optimization for Machine Learning.
Marseille, France

2020 **Practical Minimization of CVar-based Risk functions**, *Talk*, ROADEF.
Montpellier, France

2019 **Sur l'usage de la transconcavité pour les problèmes avec contraintes en probabilités**, *Talk*, Journées annuelles du GDR MOA 2019.
Rennes, France

2019 **On the interplay between generalized concavity and chance constraints**, *Talk*, ICCOPT 2019.
Berlin, Germany

2019 1^{st} **Order Methods for Minimization of Superquantile-based Risk Measures**, *Talk*, ICSP 2019.
Trondheim, Norway

Teaching Activities

2021 **Distributionally robust machine learning (4h)**, *University of washington*, Graduate Course, Guest Lecture.

2021 **Introduction to Federated Learning (1.5h)**, *ENSIMAG*, 2^{nd} Year, Guest Lecture.

2019-2020 **Introduction to R (2x30h)**, *Université Grenoble Alpes*, L1, Practical Work.

2019-2020 **Introduction to Python (2x30h)**, *Université Grenoble Alpes*, M1 SSD, Lectures and Practical Work.

2019 **Convex and Distributed Optimization (18h)**, *Université Grenoble Alpes*, M2 MSIAM, Lecture and Practical Work.

2019 **Numerical Optimization (25h)**, *ENSIMAG*, 2^{nd} Year, Directed Studies and Practical Work.

2016-2017 **Fundamentals of Analysis and Algebra (50h)**, *Grenoble INP*, Bachelor 1^{st} Year, Directed Studies.

2015-2016 **Fundamentals of Analysis and Algebra (50h)**, *Université Grenoble Alpes*, Bachelor 2^{nd} Year, Directed Studies.

Work Experience

2018 **Research Internship**, *University of Washington*, Seattle.
Initiated the series of works C1, J3, J4

2017 **Research Internship**, *EDF R&D*, Saclay.
Led to the publication of the journal paper J2

2017 **Conception and implementation of a transport management algorithm for an international firm**, *Consulting for a french company*.
Realization of an optimized algorithm for a transport network consisting of hundreds of sites and thousands of trucks.

2016 **Research Internship**, *WeSave, Financial Startup*, Paris.
Research Internship in mathematical finance, on the establishment of quantitative criterion based on correlations matrices to anticipate crises

2013 **Member of the Jury**, *ITYM*, IASI, Roumanie.
Member of the Jury at the International Tournament of Young Mathematicians (ITYM).

Service

2019-2021 **Founder and Organizer of GORGeous (Grenoble Optimization Reading Group)**.
`https://sites.google.com/view/gorgeous-optim/`

Prizes

2020 **Best Student Paper Award**,
Machine Learning and Signal Processing Conference (MLSP 2020), Espoo, Finland.

2012 **Finalist of the International Tournament of Young Mathematicians (ITYM)**.
Orsay, France. Rank : 3^{rd}

2012 **Finalist of the french tournament of young mathematicians (TFJM)**.
Saclay, France. Rank : 1^{st} ex-aequo

Hobbies

- Music, Hiking