

Yassine Laguel's Resume

CONTACT INFORMATION	Laboratoire Jean Alexandre Dieudonné Université Côte d'Azur 28 avenue Valrose, Nice, 06108, France	Phone: +33-745030188 Mail: yassine.laguel@univ-cotedazur.fr https://yassine-laguel.github.io
RESEARCH INTERESTS	My interests center around optimization under uncertainty and its applications to stochastic programming and machine learning. A common thread in my research is the design and analysis of numerical algorithms to address risk in data-driven applications. I draw and extend ideas and tools from convex optimization, probability theory and numerical analysis while keeping an <i>operational</i> approach, with a balance between theoretical and practical contributions.	
ACADEMIC POSITIONS	Université Côte d'Azur, Associate Professor. Nice, France. Rutgers University, Postdoctoral Associate at the Department of Management Sciences and Information Systems (MSIS), hosted by Prof. Mert Gürbüzbalaban. New Brunswick, USA. Princeton University, Departmental Guest at the Center for Statistics and Machine Learning (CSML). Princeton, USA.	Sep 2023 - Present Jan 2022 - June 2023 Fall 2022
EDUCATION	Ph.D. in Optimization and Machine Learning, Supervised by Jérôme Malick, Université Grenoble Alpes, Grenoble, France. B.S., M.S. in Computer Sciences and Applied Mathematics Diplôme d'ingénieur from ENSIMAG, Grenoble France. B.S., M.S. in Mathematics Master major in statistics, Université Grenoble Alpes, Grenoble, France. Degrees pursued in parallel to my diplôme d'ingénieur.	Oct 2018 - Nov 2021 Sep 2015 - Sep 2018 Sep 2015 - Sep 2018
JOURNAL PAPERS	<ul style="list-style-type: none">[1] Yassine Laguel, Mert Gürbüzbalaban, Necdet Serhat Aybat. High probability and risk-averse guarantees for stochastic saddle point problems. Accepted in the Journal of Machine Learning Research (JMLR). 2024 https://yassine-laguel.github.io/files/risk-averse-minimax.pdf[2] Yassine Laguel, Wim Van Ackooij, Jérôme Malick. Chance constrained problems: a bilevel convex optimization perspective. <i>Computational Optimization and Applications</i>. 2024. https://yassine-laguel.github.io/files/taco-paper.pdf[3] Yu-Guan Hsieh, Yassine Laguel, Franck Iutzeler, Jérôme Malick. Push-pull with device sampling. <i>IEEE Transactions in Automatic Control</i>. 2023. https://yassine-laguel.github.io/files/ppds-paper.pdf[4] Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui. Federated learning with heterogeneous data: a superquantile optimization approach. <i>Machine Learning Journal</i>. 2023. https://arxiv.org/pdf/2112.09429.pdf	

		<p>[5] Yassine Laguel. Risk-averse optimization: models, algorithms, and applications in machine learning. <i>Ph.D. Dissertation</i>. 2022. https://yassine-laguel.github.io/files/phd_thesis.pdf</p> <p>[6] Yassine Laguel, Jérôme Malick, Zaid Harchaoui. Superquantile-based learning: a direct approach using gradient-based optimization. <i>Journal of Signal Processing Systems</i>. No. 94, pages 161–177. 2022. https://yassine-laguel.github.io/files/2021_jsps.pdf</p> <p>[7] Yassine Laguel, Wim Van Ackooij, Jérôme Malick, Guilherme Matiussi Ramalho. On the convexity of level-sets of probability functions. <i>Journal of Convex Analysis</i>. No. 29.2, pages 411–442. 2022. https://yassine-laguel.github.io/files/transconcavity-paper.pdf</p> <p>[8] Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui. Superquantiles at work: machine learning applications and efficient (sub)gradient computation. <i>Set-Valued and Variational Analysis</i>. No. 29, pages 967–996. 2022. https://yassine-laguel.github.io/files/svaa-paper.pdf.</p> <p>[9] Gilles Bareilles, Yassine Laguel, Dmitry Grishchenko, Franck Iutzeler, Jerome Malick. Randomized progressive hedging methods for multi-stage stochastic programming. <i>Annals of Operations Research</i>. No. 295, pages 535–560. 2020. https://arxiv.org/abs/2009.12186</p>
CONFERENCE PAPERS		<p>[10] Yassine Laguel, Yasa Syed, Necdet Serhat Aybat, Mert Gürbüzbalaban. High-probability complexity guarantees for nonconvex minimax problems. Preprint. 2024 https://arxiv.org/pdf/2405.14130</p> <p>[11] Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui. Tackling Distribution Shifts in Federated Learning with Superquantile Aggregation. <i>NeurIPS 2022 Workshop on Distribution Shifts: Connecting Methods and Applications</i>. Spotlight paper. 2022.</p> <p>[12] Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui. Differentially Private Federated Quantiles with the Distributed Discrete Gaussian Mechanism. <i>International Workshop on Federated Learning: Recent Advances and New Challenges</i>. 2022.</p> <p>[13] Yassine Laguel, Krishna Pillutla, Jérôme Malick, Zaid Harchaoui. Device heterogeneity in federated learning: a superquantile approach. <i>Proceedings of the 55th Annual Conference on Information Sciences and Systems (CISS 2021)</i>. https://arxiv.org/abs/2002.11223</p> <p>[14] Yassine Laguel, Jérôme Malick, Zaid Harchaoui. First order optimization for superquantile-based supervised learning. <i>Proceedings of the Machine Learning and Signal Processing Conference (MLSP 2020)</i> - Best Student Paper Award. https://arxiv.org/abs/2009.14575</p>
SOFTWARE	TACO	2022
	Python toolbox for chance constrained optimization. Yassine Laguel, Wim Van Ackooij, Jérôme Malick. https://yassine-laguel.github.io/taco/ .	
	SPQR	2020
	Python toolbox for superquantile minimization. Yassine Laguel, Jérôme Malick, Zaid Harchaoui. https://yassine-laguel.github.io/spqr/ .	
	RandomizedProgressiveHedging.jl	2019
	Julia toolbox for solving multistage stochastic problems by randomized versions of the progressive hedging algorithm. Gilles Bareilles, Yassine Laguel, Dmitry Grishchenko, Franck Iutzeler, Jerome Malick. https://yassine-laguel.github.io/RandomizedProgressiveHedging.jl/stable .	

INVITED TALKS

On the acceleration/robustness trade-off for stochastic min-max problems

- 55th Journées des Statistiques 2024
High probability and risk-averse guarantees for stochastic saddle point problems
Talk. Bordeaux, France.
- Université Versailles Saint-Quentin 2024
High probability and risk-averse guarantees for stochastic saddle point problems
Talk. Versailles, France.
- Université Avignon 2024
High probability and risk-averse guarantees for stochastic saddle point problems
Talk. Avignon, France.
- Telecom Paris 2023
Robustness for Models and Algorithms in Machine Learning
Talk. Saclay, France.
- Laboratoire Jean Alexandre Dieudonné 2023
Robustness for Models and Algorithms in Machine Learning
Talk. Nice, France.
- Institut Montpellierain Alexander Grothendieck 2022
Robustness for Models and Algorithms in Machine Learning
Talk. Montpellier, France.
- INFORMS annual meeting 2022
A robust perspective on acceleration for saddle point problems
Talk. Indianapolis, USA.
- International conference on continuous optimization (ICCOPT) 2022
New perspectives on robustness via the Conditional Value at Risk.
Talk. Lehigh, USA.

Handling statistical heterogeneity in federated learning

- Magnet Seminar 2022
Federated learning with heterogeneous data: a superquantile optimization approach.
Talk. Inria Lille, France.
- University of Washington Machine Learning Seminar 2022
Convex risk measures : models, algorithms and applications in federated learning.
Talk. Seattle, USA.
- Thoth Seminar 2022
Convex risk measures : models, algorithms and applications in federated learning.
Talk. Inria Grenoble, France.
- Journées des Statistiques 2021
Risk-sensitive learning for heterogeneous frameworks.
Talk. Nice, France.
- Workshop on Communication Efficient Distributed Optimization 2021
Device heterogeneity in federated learning : a superquantile approach.
Poster Online workshop.
- Federated Learning One World Seminar 2020
Device heterogeneity in federated learning : a superquantile approach.
Talk. Online Seminar.
<https://www.youtube.com/watch?v=W-oNzU04Y8I>
- Optimization for Machine Learning Conference 2020
Handling device heterogeneity in federated learning.
Poster. Marseille, France.

PhD. Defense

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

Hidden convexity in probabilistic programming

- ANSI Seminar 2021
On hidden convexity in chance constrained problems.
Talk. Los Alamos, USA.
 - SMAI-MODE Conference 2020
A DC approach for chance constraints.
Talk. Saclay, France.
<https://www.youtube.com/watch?v=KB3sV-trEy4&list>
 - International conference on continuous optimization (ICCOPT) 2019
On the interplay between generalized concavity and chance constraints.
Talk. Berlin, Germany.
- Efficient oracles for distributionally robust optimization**
- IFDS Workshop on Distributional Robustness in Data Science 2022
SPQR : A Toolbox for Superquantile-based Learning
Talk. Seattle, USA.
 - Machine Learning and Signal Processing Conference (MLSP) 2020
First-order optimization for superquantile-based supervised learning.
Best student Paper Award. *Talk.* Espoo, Finland.
<https://www.youtube.com/watch?v=JRWvWxOxRiQ>
 - ROADEF 2020
Practical minimization of CVar-based risk functions.
Talk. Montpellier, France.
 - International conference on stochastic programming (ICSP) 2019
1st-order methods for minimization of superquantile-based risk measures.
Talk. Trondheim, Norway.

TEACHING EXPERIENCE

Instructor

- Introduction to measure theory and probability. 48h.
Université Côte d'Azur. *Undergraduate Course.* Nice, France.
- Introduction to numerical optimization. 8h.
Université Côte d'Azur. *Undergraduate Course.* Nice, France.
- Fundamentals of analysis and algebra. 37.5h.
Grenoble INP. *Undergraduate Course.* Grenoble, France.
- Fundamentals of analysis and algebra. 36h.
Université Grenoble Alpes. *Undergraduate Course.* Grenoble, France.
- Introduction to R. 2x30h.
Université Grenoble Alpes. *Undergraduate Course.* Grenoble, France.
- Introduction to Python. 2x30h.
Université Grenoble Alpes. *Graduate Course.* Grenoble, France.
- Convex and distributed optimization. 18h.
Université Grenoble Alpes. *Graduate Course.* Grenoble, France.
- Numerical optimization. 25h.
ENSIMAG. *Graduate Course.* Grenoble, France.

Guest Lecturer

- Introduction to risk-sensitive learning. 4h.
University of Tlemcen. *Graduate Course.* Tlemcen, Algeria.
- Distributionally robust machine learning. 4h.
University of Washington. *Graduate Course.* Seattle, USA.
- Introduction to federated learning. 1.5h.
ENSIMAG. *Graduate Course.* Grenoble, France.

PROFESSIONAL SERVICE	Committee Service <ul style="list-style-type: none"> • Co-organizer of the Probability and Statistics Seminar at Université Côte d’Azur, since Mar. 2024. • Founder and Organizer of the Optim & ML Seminar at Rutgers University, from Mar. 2022 to Jun. 2023. • Founder and Organizer of GORGeous (Grenoble Optimization Reading Group), at the Université Grenoble Alpes, from Sep. 2019 to Oct. 2021. https://sites.google.com/view/gorgeous-optim/ • Jury member for the International Tournament of Young Mathematicians (ITYM). Iasi, Romania. 2013. 	
	Referee Service <ul style="list-style-type: none"> • <i>Journal of Machine Learning Research (JMLR)</i> • <i>Mathematics of Operations Research</i> • <i>EURO Journal on Computational Optimization</i> • <i>Automatica</i> • <i>Optimization</i> • <i>Journal of Optimization Theory and Applications (JOTA)</i> 	
	Conference Service <ul style="list-style-type: none"> • Program Committee : 53rd International Conference on Parallel Processing (ICPP 2024). • Program Committee : 51st International Conference on Parallel Processing (ICPP 2022). • Organizer of the session <i>First-order methods for min-max problems</i> at ICCOPT 2022. • Organizer of the session <i>First-order methods for minimax problems</i> at INFORMS 2022. 	
PROFESSIONAL EXPERIENCE	Research Internships <ul style="list-style-type: none"> • University of Washington, Seattle, USA. 2018 Initiated the series of works [6, 8, 10, 11]. • EDF R&D, Saclay, France. 2017. Led to the publication of the journal paper [7]. • WeSave, Financial Startup in Paris, France. 2016 Worked on the establishment of quantitative criterion based on random correlations matrices to predict crises. 	
	Consulting Activity 2016 <ul style="list-style-type: none"> • Conception and development of a transport management software for an international firm. 	
	Spotlight Paper 2022 NeurIPS 2022 Workshop on Distribution Shifts: Connecting Methods and Applications. New Orleans, USA.	
AWARDS	Best Student Paper Award 2020 Machine learning and signal processing conference (MLSP 2020). Espoo, Finland.	
	Finalist of the International Tournament of Young Mathematicians (ITYM) 2012 <i>Rank : 3rd</i> . Orsay, France.	
	Winner of the French Tournament of Young Mathematicians (TFJM) 2012 Saclay, France.	