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CHEIK TRAORÉ

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INTERESTS

Broadly speaking, I am interested in the mathematics of data science. Specifically, my interests lie at the intersection of continuous optimization and data science (machine learning, deep learning, statistical learning, sampling, signal processing, inverse problems, etc.).

ACADEMIC AND RESEARCH POSITIONS

Postdoctoral researcher MaLGa Machine Learning Genoa Center Dipartimento di Matematica (DIMA) Università degli Studi di Genova, Italy

EDUCATION

Ph.D. in Mathematics and Applications Defended on June 10, 2024 MSCA¹ Doctoral Network, TraDE-OPT Università degli Studi di Genova, Italy Worked on convex optimization for data science Thesis: Large-scale convex optimization: parallelization and variance reduction Supervisors: Silvia Villa, Saverio Salzo MSc in Mathematics, Vision, Learning École Normale Supérieure Paris-Saclay, France Relevant courses: statistical learning theory, optimization, computational optimal transport, kernel methods for machine learning, theoretical foundation of deep learning, statistical method for imaging. Thesis: Convergence of the iterates generated by AdaGrad Supervisor: Edouard Pauwels

MSc in Mathematical Sciences

African Institute for Mathematical Sciences, Senegal Relevant courses: elliptic curves in cryptography, analytic number theory, numerical problem solving.

¹Marie Skłodowska-Curie Actions

June 2024 - ...

October 2019 - September 2020

August 2016 - February 2018

Maitrise in Applied Mathematics

Université Nazi Boni, Burkina Faso

Relevant courses: functional analysis, distribution theory, convex analysis, PDEs, numerical analysis of PDEs, commutative algebra.

BSc in Fundamental Mathematics

Université Nazi Boni, Burkina Faso

Relevant courses: linear algebra, real analysis, point set topology, measure and integration, probability theory, differential calculus, ODEs, complex analysis, differential geometry, algebra.

AWARDS AND HONORS

Mastercard Foundation Scholarship	2016
Burkina Faso National Scholarship	2008

RESEARCH MOBILITIES

Research secondment Worked separately with François Glineur (UCLouvain) and Medhi Madani (N-side) Belgium	April 2023 - September 2023
Research secondment (online) Worked with Ion Necoara University Politehnica Bucharest, Romania	November 2022 - February 2023
Research intern (mostly online, Covid19) Worked with Édouard Pauwels Université Toulouse III - Paul Sabatier, France	April 2020 - October 2020

PUBLICATIONS

PREPRINTS (under review)

ARTICLES IN PEER-REVIEWED JOURNALS (accepted or published)

- [1] TRAORÉ, C., APIDOPOULOS, V., SALZO, S., AND VILLA, S. (2024). Variance reduction techniques for stochastic proximal point algorithms. *Journal of Optimization Theory and Application (accepted)*
- [2] TRAORÉ, C., SALZO, S., AND VILLA, S. (2023). Convergence of an Asynchronous Block-Coordinate Forward-Backward Algorithm for Convex Composite Optimization. Computational Optimization and Applications, 86(1), 303-344

October 2014 - September 2015

October 2013 - September 2014

[3] TRAORÉ, C., AND PAUWELS, E. (2021). Sequential convergence of AdaGrad algorithm for smooth convex optimization. *Operations Research Letters*, 49(4), 452-458

INVITED TALKS

21th EUROpt Conference on Continuous Optimization Session: Accelerated methods in modern optimization Stream: Optimization for inverse problems and machine learning Title: <i>Variance reduction techniques for stochastic proximal point algorithms</i> Lund, Sweden	June 2024
Journées annuelles 2023 du GDR MOA Title: Variance reduction techniques for stochastic proximal point algorithms Perpignan, France	October 2023
20th EUROpt Workshop on Continuous Optimization Session: Stochastic methods Stream: First-order optimization methods Title: <i>Asynchronous block coordinate Forward-Backward</i> Budapest, Hungary	August 2023
 SIAM Conference on Optimization (OP23) Mini Symposium on Randomized Methods for Linear Systems: Row-Action and Coordinate Descent Title: Asynchronous block coordinate Forward-Backward Seatle, United States 	June 2023
Second Conference of Young Applied Mathematicians Session: Machine Learning and Statistics Title: Asynchronous block coordinate Forward-Backward Arenzano, Italy	September 2022
International Conference on Optimization and Decision Science Session: Optimization for machine learning Title: <i>Asynchronous block coordinate Forward-Backward</i> Florence, Italy	August 2022
 SIAM Annual Meeting (AN22) (online) Mini Symposium on Algorithmic Advancements for Computing on Distributed Systems Title: Asynchronous block coordinate Forward-Backward Pittsburgh, United States 	July 2022

ACADEMIC AND RESEARCH ACTIVITIES

SCIENTIFIC EVENTS

 EurOpt, Lund, Sweden
 June 2024

 Organizing a stream: Optimization for inverse problems and machine learning

TraDE-OPT closing workshop, Sestri Levante, Italy Organizing committee member

REVIEWS (since 2021)

Journal of Machine Learning Research SIAM Journal on Imaging Sciences

MISCELLANEOUS

Web developer Wutiko SAS, Senegal

Graduate intern Wutiko SAS, Senegal

Tempory mathematics teacher Several High Schools in Burkina Faso February 2018 - September 2019

May 2017 - October 2017

September 2010 - June 2013

September 2024