

Sadok Jerad

Education

- January 2021 **PhD**, *ANITI, Toulouse INP, IRIT*, France
– January 2024 PhD under the supervision of Serge Gratton and Phillipe L. Toint.
2024
 - Complexity analysis of non convex adaptive methods.
 - Development and numerical testing of fast second order methods.
 - Analysis of Large Scale adaptive first order methods and implementation using the JAX framework.
- 2019 - 2020 **MVA**, *ENS Paris Saclay*, France
MSc in applied mathematics and computer science covering a wide range of topics: Optimization, Random matrix theory, Kernerl methods, Graphical models and Bayesian methods.
- 2016- 2019 **Engineering degree**, *École Polytechnique*, France
French "Grande École" with courses centred on various topics of applied mathematics : ML, Operational Research, Statics, Monte-Carlo Methods. Other courses on mechanics and CS.
- 2014 – 2016 **Esprit Classes Préparatoires**, *Tunisia*
Intensive two-year study course preparing for the competitive entrance examinations to the French 'Grandes Écoles'.

Positions

- 2021 - 2024 **PhD**, *ANITI, Toulouse INP, IRIT*, France.
- April 2020 - **Research Internship MVA**, *GIPSA Labs Grenoble*, France
August 2020 Analysis of neural network with the tools of Random Matrix Theory under the supervision of Romain Couillet.
- April 2019- **R&D Internship**, *Footovision*, France
August 2019 Analysis of Football players rating with ordinal models and extracting key features.
- June 2018 - **Summer Internship**, *IT, Air Liquide*, Japan
August 2018 Development of a python module for optimal allocation of a project's resources.

Teachings

- 2021, 2022, 2023 **Hilbert Analysis and Fourier Transform at ENSEEIHT**, Practical and tutorial sessions, Lecturer : Pascal Noble .
- 2021, 2022 **Statistics in R at ENSEEIHT**, Tutorial Sessions, Lecturer : Pascal Laveau.
- 2021, 2022 **Automatics at ENSEEIHT**, Tutorial sessions, Lecturer : Joseph Gegraud.
- 2021, 2022 **Integration and Applications at ENSEEIHT**, Tutorial Sessions, Lecturers : Olivier Cots, Martial Coulon.
- 2021, 2022 **Numerical Optimization at ENSEEIHT**, Tutorial sessions, Lecturers : Olivier Cots, Joseph Gegraud .

Competences

Programming, Python, R, Matlab, Java.

Publications

Preprints

1. Serge Gratton, Sadok Jerad, Philippe L. Toint.
Convergence properties of an Objective-Function-Free Optimization regularization algorithm, including an $\mathcal{O}(\epsilon^{-3/2})$ complexity bound. <https://arxiv.org/pdf/2203.09947.pdf>.
2. Serge Gratton, Sadok Jerad, Philippe L. Toint.
Parametric complexity analysis for a class of first-order Adagrad-like algorithms. <https://arxiv.org/pdf/2203.01647.pdf>.
3. Serge Gratton, Sadok Jerad, Philippe L. Toint.
First-Order Objective-Function-Free Optimization Algorithms and Their Complexity. <https://arxiv.org/pdf/2203.01757.pdf>.
4. Serge Gratton, Sadok Jerad, Philippe L. Toint.
Hölder Gradient Descent and Adaptive Regularization Methods in Banach Spaces for First-Order Points. <https://arxiv.org/pdf/2104.02564.pdf>.

Reviews

2022 **Reviewer**, *SIAM Journal on Optimization, Computational Optimization and Applications*

Languages

Arabic, French, *Mother Tongues*
German, *Basic*

English, *Professional working proficiency*