

Antonio SILVETI-FALLS

PERSONAL DATA

PLACE AND DATE OF BIRTH: Mexico City, Mexico | 09 October 1992
EMAIL: TonySFalls@gmail.com
LANGUAGES: English (native), French (C1)

RESEARCH INTERESTS

Nonsmooth optimization, stochastic optimization, machine learning (theory of deep learning), signal/image processing, inverse problems.

CURRENT POSITION (SEPT 2022 -)

Maître de conférences (Associate/assistant professor) at CentraleSupélec/Université de Paris-Saclay in the Centre pour la Vision Numérique (CVN) Laboratory (assoc. INRIA OPIS Team and Fédération de Mathématiques de CentraleSupélec)

PH.D. THESIS (OCT 2017 - FEB 2021)

TITLE	First-order Noneuclidean Splitting Methods for Large-scale Optimization: Deterministic and Stochastic Algorithms
UNIVERSITY	Université de Caen Normandie
ADVISORS	Jalal Fadili (UniCaen, ENSICAEN) and Gabriel Peyré (ENS Paris, CNRS)
JURY	Amir Beck, Jérôme Bolte, Antonin Chambolle, Emilie Chouzenoux, Alexandre d'Aspremont, Jalal Fadili, Gabriel Peyré, Silvia Villa

EDUCATION

AUG 2015 - JUNE 2017	M.Sc. in Applied Mathematics - Nonlinear Dynamical Systems (GPA: 3.87), San Diego State University, USA. Adviser: Jérôme Gilles. (Thesis: Empirical Gabor Frames)
AUG 2010 - JUNE 2015	B.Sc. in Mathematics, California State University - Chico, USA. Adviser: Thomas Mattman.
AUG 2010 - JUNE 2015	B.Sc. in Applied Mathematics, California State University - Chico, USA. Adviser: Vladimir Rosenhaus.
AUG 2010 - JUNE 2015	B.Sc. in Statistics, California State University - Chico, USA. Adviser: Kathy Gray.

PROFESSIONAL EXPERIENCE

- 2021 - 2022 **Postdoctoral Researcher at Toulouse School of Economics**
Development and analysis of a novel theory of nonsmooth implicit differentiation for deep learning applications under Jérôme Bolte and Edouard Pauwels.
- 2022 **Chargé de cours (Lecturer) at Toulouse School of Economics**
Leading the “travaux dirigés” associated to the course Optimization for Big Data for master’s level (M1) students using Python.
- 2021 **Chargé de cours (Lecturer) at Toulouse Business School**
Teaching 2 sections of Business Data Analysis for master’s level (M1) students using R and RStudio.
- 2017 - 2021 **Graduate Research Assistant at ENSICAEN/UNICAEN**
Development and analysis of novel optimization algorithms for applications in machine learning and image/signal processing under Jalal Fadili and Gabriel Peyré.
- 2015-2017 **Graduate Teaching Assistant at San Diego State University**
Taught 3 semesters (2 sections per semester) of introductory differential calculus.
- 2016 **Graduate Research Assistant at San Diego State University**
Studied empirical wavelet frames and nonstationary Gabor frames under Jérôme Gilles.

PUBLICATIONS

- 2022 Antonio Silveti-Falls, Cesare Molinari, Jalal Fadili, “*An Inexact Bregman Primal-Dual Splitting Algorithm for Composite Optimization*” Pure and Applied Functional Analysis 2022.
- 2021 Jérôme Bolte, Tâm Lê, Edouard Pauwels, Antonio Silveti-Falls, “*Nonsmooth Implicit Differentiation for Machine Learning and Optimization*” Proceedings of the 35th International Conference on Neural Information Processing Systems, 2021.
- 2021 Antonio Silveti-Falls, Cesare Molinari, Jalal Fadili, “*Inexact and Stochastic Generalized Conditional Gradient with Augmented Lagrangian and Proximal Step*” Journal of Nonsmooth Analysis and Optimization, Vol. 2, 2021.
- 2020 Antonio Silveti-Falls, Cesare Molinari, Jalal Fadili, “*Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization*” SIAM Journal on Optimization, Vol. 30, No. 4, pp. 2687-2725, 2020.

PUBLICATIONS (CONTINUED)

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| 2015 | Kathy Gray, Brittany Hampton, Tony Silveti-Falls, Allison McConnel, Casey Bausell, “Comparison of Bayesian Credible Intervals to Frequentist Confidence Intervals” Journal of Modern Applied Statistical Methods, Vol. 14, No. 1, pp. 43-52, 2015. |
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CONFERENCE AND SEMINAR TALKS

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| 2022 | GREYC Lab Seminar Caen, France - <i>Nonsmooth Implicit Differentiation for Machine Learning and Optimization</i> . |
| 2022 | Inauguration de la Fédération de Mathématiques de Centrale-Supélec - <i>Nonsmooth Implicit Differentiation for Machine Learning and Optimization</i> . |
| 2022 | Univeristy of Tübingen MOP Research Seminar (virtual) - <i>Nonsmooth Implicit Differentiation for Machine Learning and Optimization</i> . |
| 2022 | Curves and Surfaces Arcachon - <i>Nonsmooth Implicit Differentiation for Machine Learning</i> . |
| 2022 | University of Basel Department of Mathematics and Computer Science Seminar - <i>Nonsmooth Implicit Differentiation for Machine Learning and Optimization</i> . |
| 2022 | Centre de Vision Numérique in Gif-sur-Yvette, France - <i>Nonsmooth Implicit Differentiation for Machine Learning and Optimization</i> . |
| 2022 | Institute of Mathematics and Scientific Computing at Graz, Austria - <i>Nonsmooth Implicit Differentiation for Machine Learning</i> . |
| 2022 | Séminaire Modélisation, Optimisation, Dynamique Université de Limoges, France - <i>Différentiation Implicite Non Lisse Pour l'Apprentissage Automatique et l'Optimisation</i> . |
| 2022 | Signal & Communications Group Seminar at ENSEEIHT Toulouse, France - <i>A Stochastic Bregman Primal-Dual Splitting Algorithm for Composite Optimization</i> . |
| 2021 | Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS, virtual) - <i>Nonsmooth Implicit Differentiation for Machine Learning</i> . |
| 2021 | Journée du MADS Toulouse, France - <i>Nonsmooth Implicit Differentiation for Machine Learning</i> . |
| 2021 | University of Tübingen MOP Research Seminar (virtual) - <i>A Stochastic Bregman Primal-Dual Splitting Algorithm for Composite Optimization</i> . |
| 2020 | Journée du GREYC Caen, France - <i>Projection Free Methods for Nonsmooth Optimization in Machine Learning</i> . |
| 2019 | Cambridge Image Analysis Seminars - <i>Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization – Exact and Inexact Perspectives</i> . |

CONFERENCE AND SEMINAR TALKS (CONTINUED)

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| 2019 | Genoa Summer School on Applied Harmonic Analysis and Machine Learning - <i>Inexact and Stochastic Generalized Conditional Gradient with Augmented Lagrangian and Proximal Step.</i> |
| 2019 | GRETSI Lille - <i>Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization.</i> |
| 2019 | SPARS Toulouse - <i>Generalized Conditional Gradient with Augmented Lagrangian for Composite Optimization (Winner of Best Student Paper award).</i> |
| 2019 | Institut de Mathématiques de Bordeaux, Séminaire IOP - <i>Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization.</i> |
| 2019 | Normastic Rouen - <i>Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization.</i> |
| 2017 | San Diego State University Student Research Symposium - <i>Empirical Wavelet Frames for Signal Processing.</i> |
| 2015 | MAA Golden Section Student Poster Session - <i>Comparison of Bayesian Credible Intervals to Frequentist Confidence Intervals.</i> |
| 2015 | Northern California Undergraduate Mathematics Conference - <i>Comparison of Bayesian Credible Intervals to Frequentist Confidence Intervals.</i> |
| 2013 | Northern California Undergraduate Mathematics Conference - <i>An Application of Bayesian Inference.</i> |

EDITORIAL ACTIVITY (REVIEWING)

- SIAM Journal on Optimization (SIOPT)
- SIAM Journal on Mathematics and Data Science (SIMOD)
- Mathematical Programming
- Journal of Machine Learning Research (JMLR)
- Journal of Scientific Computing
- Conference on Neural Information Processing Systems (NeurIPS) (Highlighted reviewer in 2022)
- International Conference on Learning Representations (ICLR) (Highlighted reviewer in 2022)
- British Machine Vision Conference 2022
- Montréal AI Symposium 2022

- AISTATS 2022
- ICML 2023