Antonio José 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.

Future Position (To begin Sept. 2022)

Maître de conférences at CentraleSupélec/Université de Paris-Saclay in the Centre de Vision Numérique (CVN) Laboratory.

Current Position (Feb 2021 - Aug 2022)

Post-doc in optimization for deep learning under Jérôme Bolte and Edouard Pauwels at the Toulouse School of Economics.

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"* (Accepted to 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	Antonsio 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)

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.

Conference and Seminar Talks

2022 Institute of Mathematics and Scientific Computing at Graz, Austria - *Nonsmooth Implicit Differentiation for Machine Learning*.

2022 Signal & Communications Group Seminar at ENSEEIHT Toulouse, France - *A Stochastic Bregman Primal-Dual Splitting Algorithm for Composite Optimization*.

2021 Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS, virtual) - *Nonsmooth Implicit Differentiation for Machine Learning*.

2021 Journée du MADS Toulouse, France - *Nonsmooth Implicit Differentiation for Machine Learning*.

2021 University of Tubingen MOP Research Seminar (virtual) - *A Stochastic Bregman Primal-Dual Splitting Algorithm for Composite Optimization*.

2020 Journée du GREYC Caen, France - *Projection Free Methods for Nonsmooth Optimization in Machine Learning*.

2019 Cambridge Image Analysis Seminars - *Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization – Exact and Inexact Perspectives*.

2019 Genoa Summer School on Applied Harmonic Analysis and Machine Learning - *Inexact and Stochastic Generalized Conditional Gradient with Augmented Lagrangian and Proximal Step*.

2019 GRETSI Lille - *Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization*.

2019 SPARS Toulouse - *Generalized Conditional Gradient with Augmented Lagrangian for Composite Optimization* **(Winner of Best Student Paper award)**.

2019 Institut de Mathématiques de Bordeaux, Séminaire IOP - *Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization*.

Conference and Seminar Talks (Continued)

2019	Normastic Rouen - *Generalized Conditional Gradient with Augmented Lagrangian for Composite Minimization.*
2017	San Diego State University Student Research Symposium - *Empirical Wavelet Frames for Signal Processing.*
2015	MAA Golden Section Student Poster Session - *Comparison of Bayesian Credible Intervals to Frequentist Confidence Intervals.*
2015	Northern California Undergraduate Mathematics Conference - *Comparison of Bayesian Credible Intervals to Frequentist Confidence Intervals.*
2013	Northern California Undergraduate Mathematics Conference - *An Application of Bayesian Inference.*

Editorial Activity (Reviewing)

- SIAM Journal on Mathematics and Data Science (SIMOD)
- Mathematical Programming
- Journal of Scientific Computing
- Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Learning Representations (ICLR)