

Robert M. Gower

Curriculum Vitae

CONTACT *E-mail:* gowerrobert@gmail.com
INFORMATION *Website:* <https://gowerrobert.github.io>
NATIONALITY Brazilian and British

JOBS & 09/2017 – **Assistant Professor in Machine Learning**, [Télécom-Paristech](#), within
EDUCATION the LCTI laboratory, Paris, France

08/2016 – 09/2017 **Laureate fellowship** of the Fondation Sciences Mathématiques de Paris, [École Normale Supérieure](#) and [Inria](#).

09/2012 – 06/2016 **Ph.D.** in Math, **The University of Edinburgh**, UK

05/2011 – 07/2012 **Market Model Analyst**, [Itaú-Unibanco](#), São Paulo, Brazil

03/2009 – 05/2011 **M.Sc.** in Applied Math, **University of Campinas**, São Paulo, Brazil

03/2005 – 12/2008 **B.Sc.** in Applied Math, **University of Campinas**, São Paulo, Brazil

PAPERS **6** journal papers, **8** reviewed conference proceedings, **7** preprints and reports.

2019 **R.M.G.**, Denali Molitor, Jacob Moorman, and Deanna Needell, Adaptive sketch-and-project methods for solving linear systems, (submitted) *arXiv:1909.03604*.

O. Sebbouh, N. Gazagnadou, S. Jelassi, F. Bach, **R.M.G.**, Towards closing the gap between the theory and practice of SVRG, *Advances in Neural Information Processing Systems* (Neurips).

R.M.G., D. Kovalev, F. Lieder, P. Richtárik, RSN: Randomized Subspace Newton, *Advances in Neural Information Processing Systems* (Neurips).

N. Gazagnadou, **R.M.G.**, J. Salmon, Optimal mini-batch and step sizes for SAGA, *Proceedings of the 33rd International Conference on Machine Learning* (ICML).

R.M.G., N. Loizou, X. Qian, A. Sailanbayev, E. Shulgin, P. Richtárik, SGD: general analysis and improved rates, (long oral presentation) *Proceedings of the 33rd International Conference on Machine Learning* (ICML)

2018 A. Bibi, A. Sailanbayev, B. Ghanem, **R.M.G.** and P. Richtárik, Improving SAGA via a probabilistic interpolation with gradient descent, (submitted) *arXiv:1806.05633*

R.M.G., P. Richtárik and F. Bach, Stochastic quasi-gradient methods: variance reduction via Jacobian sketching, (submitted) *arXiv:1805.02632*

R.M.G., F. Hanzely, P. Richtárik and S. Stich, Accelerated stochastic matrix inversion: general theory and speeding up BFGS rules for faster second-order optimization, *Advances in Neural Information Processing Systems* (Neurips)

B. K. Abid and **R.M.G.**, Greedy Stochastic algorithms for entropy-regularized optimal transport problems, *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics* (AISTATS), PMLR, 84:1505-1512

R.M.G., N. Le Roux and F. Bach, Tracking the gradients using the Hessian: A new look at variance reducing stochastic methods, *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*, PMLR, 84:707-715

A. L. Gower, **R.M.G.**, J. Deakin, W. J. Parnell and I. D. Abrahams, Learning about random media from near-surface backscattering: using machine learning to measure particle size and concentration, *Europhysics Letters, Volume 122, Number 5*

2017 **R.M.G.** and P. Richtárik, Randomized quasi-Newton updates are linearly convergent matrix inversion algorithms, *SIAM Journal on Matrix Analysis and its applications*, 38(4), 1380-1409

2016 **R.M.G.** and P. Richtárik, Linearly Convergent Randomized Iterative Methods for Computing the Pseudoinverse, (*in review*) *arXiv:1612.06255*

R.M.G., Donald Goldfarb and P. Richtárik, Stochastic Block BFGS: Squeezing More Curvature out of Data, In *Proceedings of the 33rd International Conference on Machine Learning (ICML)*

2015 **R.M.G.** and P. Richtárik, Stochastic dual ascent for solving linear systems, *arXiv:1437459*

R.M.G. and P. Richtárik. Randomized iterative methods for linear systems, *SIAM Journal on Matrix Analysis and its applications* 36(4), 1660-1690.
Most Downloaded Paper from the SIMAX website (May 2017)

2014 **R.M.G.** and A. L. Gower. High order reverse automatic differentiation with emphasis on the third order, *Mathematical Programming Series A* 155(1), 81-103

R.M.G. and J. Gondzio, Action constrained quasi-Newton methods, *ERGO*14-020

R.M.G., *et. al.* Chapter: Drawing a track map In: [Train Positioning Using Video Odometry](#) *The MIIS Eprints Archive*

R.M.G. and M. P. Mello, Computing the sparsity pattern of Hessians using automatic differentiation, *ACM Transactions on Mathematical Software*, 40(2)

2012 **R.M.G.** and M. P. Mello A new framework for Hessian automatic differentiation *Optimization Methods and Software*, 27(2)

PRIZES 2019 Top 5% reviewer in ICML, awarded free registration.

2017 **2nd place** in the bi-annual [Leslie Fox best paper in numerical analysis award](#)

2014 **Best talk prize** at the Irish SIAM student meeting

Teaching Awards nominated for the 2014 Edinburgh University Students' Association Teaching Awards by student vote.

TALKS Over **30 talks** in international conferences, seminars and workshops including.

2019 Journée Statistique et Apprentissage, L'Institut des Hautes Études Scientifiques.

2018 AISTATS, **oral presentation** and two posters, Lanzarote, Canary Islands

Séminaire Parisien d'Optimisation, Institut Henri Poincaré

		Seminar for the Machine Learning and Optimization group, EPFL
	2017	18th IMA Leslie Fox Prize talk in Numerical Analysis, awarded 2nd place, University of Strathclyde, Glasgow
		France/Japan Machine Learning Workshop, École Normale Supérieure, Paris
		Probabilistic Numerics seminar, Max-Planck-Institute Tübingen
	2016	International Conference on Machine Learning (ICML), New York
		Cambridge Image Analysis group seminar, University of Cambridge <i>Randomized iterative methods for linear systems</i>
	2014	Irish Applied Mathematics Research Students' Meeting, Galway, Ireland. <i>Hunting inverses of matrix fields</i> , [Best Talk Prize]
		Postgraduate Mathematics Colloquium, Edinburgh, UK <i>The history of optimization in blood and booze</i>
		Cambridge Mathematics Society Research in the UK Afternoon, Cambridge, UK <i>Unconstrained optimization methods</i>
FUNDING	2016	€122k The Fondation Sciences Mathématiques de Paris Fellowship
	2012	£85,1k Ph.D. scholarship, University of Edinburgh, School of Mathematics
	2009 – 2015	£9k in total of undergraduate (FAPESP) and graduate (Laura Wisewell fund, CNPq) scholarships.
ACADEMIC SERVICES		Reviewer for over 10 journals/proceedings including: <i>Conference on Neural Information Processing Systems</i> (Neurips) <i>International Conference on Machine Learning</i> (ICML) <i>Journal of Machine Learning Research</i> (JMLR) <i>SIAM Journal on Scientific Computing</i> (SISC) <i>SIAM Journal on Optimization</i> (SIOPT)
TEACHING	2017 – 2019	Fall, course on “Optimization and Numerical Analysis”, Télécom ParisTech.
	2017 – 2019	Fall, course on “Optimization for Data Science”, Data Science masters, Institut Polytechnique de Paris.
	2017 – 2019	Summer school lectures on Stochastic Optimization for Machine Learning at <ul style="list-style-type: none"> • The University of Novi Sad, Serbia. • Yerevan State University, Armenia. • African Master's of Machine Intelligence at AIMS, Rwanda.
	2010 – 2015	Over 350 hours of tutorials and lectures as a graduate at University of Edinburgh including tutoring as a Junior teaching fellow, special needs tutorials for students within Autism spectrum, linear algebra, calculus, financial mathematics, operations research, optimization theory, proofs and problem solving.