

Augustin Cosse

NYU Paris,
57 Boulevard Saint-Germain,
Paris 75005, FR.
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Research Interests Convex optimization, machine learning, large scale optimization and big data, compressed sensing, numerical analysis, algorithms and complexity, inverse scattering and wave propagation.

Employment (Present) **New York University**, Paris, FR.
Lecturer, CSCI-UA 9473 - Introduction to Machine Learning,
CSCI-UA 9472 - Artificial Intelligence
CSCI-UA 9102 - Data Structures
MATH-UA 263 - Partial Differential Equations
(Sept. 2018 - present.)

Employment (Past) **Ecole Normale Supérieure**, Paris
Postdoctoral Fellow, Nov. 2017 - Nov 2020.
Département de Mathématiques et Applications (DMA).
(2019 - 2020) Postdoc CNRS.
(2017 - 2019) Fondation Sciences Mathématiques de Paris

New York University, New York, NY.
Visiting Postdoctoral Fellow, Oct. 2016 - Oct. 2017
Courant Institute of Mathematical Sciences and Center for Data Science.
Francqui Foundation Fellow

Education **The University of Chicago**, Chicago, IL.
Invited student, Sept. 2015 - Sept. 2016
Department of Statistics.

Harvard University, Cambridge, MA.
Fellow, Sept. 2014 - July 2015
Institute for Applied Computational Science, School of Engineering.

Massachusetts Institute of Technology, Cambridge, MA.
Invited graduate student, Sept. 2013 - Sept. 2014
Imaging and Computing Group, Department of Mathematics.
FNRS travel grant, MISTI grant, MITEI fund
Activities : MIT sailing club, MIT soccer, MIT rowing club, MIT MUN

Université Catholique de Louvain, Louvain-la-Neuve, Belgium
PhD in Engineering (EECS and Applied Math.), 2012 - 2016
Image and Signal Processing Group, ICTEAM Institute.
Supervisors : Laurent Demanet, Laurent Jacques

Ecole Polytechnique de Louvain, Louvain-la-Neuve, Belgium
M.Eng Mathematical Engineering, 2009 - 2011
2010 - 2011 : *Summa cum laude* (ranked first in mathematical engineering)
2009 - 2010 : *Magna cum laude*
Signal Processing, Modeling and simulation in physics

Publications	<p>A. Cosse and L. Demanet, Stable rank-one matrix completion is solved by the level-2 Lasserre relaxation, <i>Foundations of Computational Mathematics</i> (FOCM), 2018.</p> <p>A. Cosse, From blind deconvolution to blind super-resolution through convex programming, <i>under revision</i>, <i>arXiv :1709.09279</i>, 2017.</p> <p>A. Cosse, Compressed super-resolution I : Maximal rank Sum-of-Squares, <i>preprint arXiv :2001.01644</i>, 2019.</p>	
Proceedings	<p>A. Cosse, A note on the blind deconvolution of multiple sparse signals from unknown subspaces, in <i>Proc. SPIE Optical Engineering + Applications conference on Wavelets and Sparsity XVII</i>, 2017.</p> <p>A. Cosse, L. Demanet, Rank-one matrix completion is solved by the sum-of-squares relaxation of order two, in <i>Proc. IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing</i> (CAMSAP 2015)</p> <p>A. Ahmed, A. Cosse, L. Demanet, A convex approach to blind deconvolution with diverse inputs, in <i>Proc. IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing</i> (CAMSAP 2015)</p> <p>A. Cosse, S. D. Shank, L. Demanet, A short note on rank-2 relaxation for waveform inversion, in <i>Proc. of the Society of Exploration Geophysicists (SEG), annual meeting</i> 2015.</p> <p>K. Alkhalifeh, A. Cosse, C. Craeye, B. Macq, Microwave Imaging From Wheel-of-Time Data, in <i>Proc. 8th European Conference on Antennas & Propagation</i>, (EUCAP 2014).</p> <p>A. Cosse, Diffeomorphic surface-based registration for MR-US fusion in prostate brachytherapy, in <i>Proc. IEEE 20th Mediterranean Electrotechnical Conference</i> (MELECON 2012).</p>	
Awards/Grants	<p>AFOSR/EOARD Research Grant FA9550-18-1-7007, 2018-2021 “Error quantification and complexity limits in deep learning” Fondation Sciences Mathématiques de Paris (FSMP) Fellow 2017-2019. Francqui Foundation Fellow 2016-2017 Travel Award, Hausdorff Institute for Mathematics, Bonn, DE. Belgian National Science Foundation Research Fellow, 2014-2016 MISTI (MIT International Science and Technology) Grant, 2013 Belgian National Science Foundation (FNRS) Travel Grant, 2013 Belgian National Science Foundation Research Fellow, 2012-2014 IEEE Region 8 Best Paper Award (3rd place), 2012 IEEE UCL Student Chapter Best Thesis Award, 2011 FFJM, SCM and Véolia award for optimizing a public transport network, 2009</p>	
Teaching	<p>NYU Paris, 2018-22</p> <p>UChicago, 2015/16</p> <p>UCLouvain, 2011-13</p>	<p>CSCIUA 9473 - Introduction to Machine Learning CSCIUA 9472 - Artificial Intelligence CSCI-UA 9102 - Data Structures MATH-UA 263 - Partial Differential Equations STAT/MATH37760 - Modern Signal Processing STAT31100 - Numerical Methods for PDEs LLSMF2018 - Technological and Quantitative Project LEPL1502 - Projet 2</p>

Reviewing IEEE, International Conference on Sampling Theory and Applications
Journal of Fourier Analysis and Applications
IEEE Transactions on Image Processing
International Conference on Machine Learning (ICML), 2019 - present
(expert reviewer, top 33% reviewer)
Neural Information Processing Systems (NeurIPS) annual meeting
International Conference on Learning Representations (ICLR)
AIMS Mathematical Control and Related Fields (MCRF)
International Conference on Machine Learning (ICML) 2020-present.
International Conference on Learning Representations (ICLR), 2020-present
Annual Conference on Neural Information Processing Systems (Neurips),
2020-present.

Research Stays Hausdorff Research Institute for Mathematics (HIM), Bonn, Germany, ja-
nuary 2016, Trimester Program on the Mathematics of Signal Processing

Invited Talks Katholieke Universiteit Leuven, ESAT-STADIUS 2021
Université Gustave Eiffel, Laboratoire d'informatique Gaspard Monge, 2021.
ENS Lyon, FR, Machine Learning and Signal Processing Seminar 2021.
LAAS/ENSEEIH/ENAC, Toulouse FR, Optimization Seminar, 2020.
TU München, Workshop on Mathematical Signal and Image Analysis, 2019
Ecole Normale Supérieure, FR, Laplace Reading Group, 2018.
University of Delaware, DE, Inverse problems and Analysis Seminar, 2017.
SPIE Wavelets and Sparsity, San Diego, CA, 2017.
Courant Institute, NYC, Harmonic Analysis Seminar, 2017.
Université Catholique de Louvain, BE, Applied Math Seminar, 2016.

Programming Java, Python, C, Matlab, Html, CSS

Languages **French** : Native
English : Fluent
Dutch : Intermediate