

Esteban Andrés Salgado Valenzuela

Curriculum Vitae

Education

- 2019 – Present **PhD ABRO**, “*La Sapienza*” *Università di Roma*, Rome, Italy.
ESR (Early Stage Researcher) for the MINOA (Mixed-Integer Non-linear Optimisation: Algorithms & Applications) project on “Exact methods for non-linear optimisation problems on graphs” hosted by CNR-IASI with the diploma given by “La Sapienza”.
- 2016 – 2017 **Master Parisien de Recherche Opérationnelle**, *Université Paris-Saclay*, Paris, France.
Master in Operations Research as part of the 4th year of the *École Polytechnique*'s engineering program.
- 2014 – 2016 **Ingénieur Polytechnicien Program**, *École Polytechnique*, Palaiseau, France.
Admitted via a double degree program with Pontificia Universidad Católica de Chile (PUC). Currently working towards a master's degree in Applied Mathematics/Computer Science (Optimization).
- 2011 – Present **Engineer's Degree**, *Pontificia Universidad Católica de Chile*, Santiago, Chile.
Engineer degree in Applied Mathematics.

Experience

Research

- Mar 2017 – Aug 2017 **Fast relaxations for ACOPF**, *ÉCOLE POLYTECHNIQUE - LIX*, Palaiseau, France.
I studied and proposed a procedure that, through semidefinite programming (SDP) and mixed integer semidefinite programming (MISDP), allows us to derive inner and outer approximating linear programming (LP) and mixed integer linear programming (MILP) of the the Alternating Current Optimal Power Flow (ACOPF) for its classical formulation and a generators selection formulation.
- Mar 2016 – Jul 2016 **3-color conjectures on planar graphs**, *ENS*, Paris, France.
As part of the research team TALGO of the computer science department of the *ENS* I studied and helped to the implementation of different approaches in order to answer some major conjectures on coloring of planar graphs. We were able to prove that Steinberg's conjecture (major open problem in the area) was false.
- Sep 2015 – Feb 2016 **A combinatorial approach through graph theory for the preconditioning of large linear systems in geoscience.**, *IFPEN*, Palaiseau, France.
Through a recent paper the *Combinatorial Multi-Level* (CML) preconditioners have shown promising results in some academic image treatment models. My work consisted in the study of the CML preconditioners in order to conclude their pertinence in *IFPEN* geoscience problems.

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1/3

Jul 2014 – May 2015 **Collaborative and unsupervised exploration algorithms for drones and robots**, ÉCOLE POLYTECHNIQUE, Palaiseau, France.

As member of a team of École Polytechnique's Students, I researched a broad class of collaboration algorithms to enable autonomous agents, such as drones or robots, move and explore an environment. These exploration strategies are unsupervised, and very scalable when increasing the size of the graph to explore and the number of agents.

Oct 2014 – Jan 2015 **Computational Image Treatment via Dictionary Learning Methods**, ÉCOLE POLYTECHNIQUE, Palaiseau, France.

As member of a team of École Polytechnique's Students, I studied and implemented algorithms (ISTA and FISTA) in cases where the dictionary is supposed known. Secondly, I studied and implemented an algorithm for dictionary learning focused in problems of digital zoom and deblurring.

Working Experience

Mar 2019 – Jul 2019 **Lecturer**, PUC, Santiago, Chile.

- March 2019 - July 2019:
 - Optimization-honors (School of Engineering)

Jul 2012 – 2018 **Teaching Assistant**, PUC, Santiago, Chile.

Worked as teaching assistant doing exercise classes and grading exams.

- July 2012 - December 2012:
 - Introduction to programming (School of Engineering)
 - Linear Algebra (School of Civil Construction)
 - Calculus I (School of Economics and Administrative Sciences)
- March 2013 - July 2013:
 - Calculus I (School of Engineering)
 - Calculus II (School of Civil Construction)
 - Linear Algebra (School of Engineering)
- July 2013 - December 2013:
 - Calculus II (School of Engineering)
 - Discrete Mathematics (School of Engineering)
- March 2018 - July 2018:
 - Optimization-honors (School of Engineering)
 - Stochastic Optimization (School of Engineering)
- July 2018 - December 2018:
 - Optimization Methods (School of Engineering)

Awards

- 2017 Finalist of the *prix de mémoire de master en RO/AD* prize for the best master's dissertation on OR organized by the French Society on OR (ROADEF).
- 2014 Eiffel Excellence Scholarship awarded by the French Ministry of Foreign Affairs and International Development.
- 2011 Honor Scholarship awarded by the Pontifical Catholic University of Chile.
- 2010 Maximum score (850) in the Chilean university admission test (PSU), in mathematics.

Publications

- 2018 E. Salgado, C. Gentile, L. Liberti. Perspective cuts for the ACOPF, AIRO18
- 2018 E. Salgado, A. Scozzari, F. Tardella, L. Liberti. Alternating current optimal power flow with generator selection, ISCO18

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2016 V. Cohen-Addad, M. Hebdige, D. Kral, Z. Li, E. Salgado. (2016) Steinberg's Conjecture is false. *Journal of Combinatorial Theory, Series B.* 122. 10.1016/j.jctb.2016.07.006.

Conferences

ISCO 2018 E. Salgado, A. Scozzari, F. Tardella, L. Liberti. Alternating current optimal power flow with generator selection.

ROADEF 2018 E. Salgado. Fast Relaxations for Alternating Current Optimal Power Flow, accepted for *Prix du Meilleur Article Étudiant*.

Computer skills

Programming PYTHON
Engineering Software MATLAB, SCILAB, AMPL
Operating Systems LINUX, MACOS, WINDOWS

Languages

Spanish	Native speaker	
English	Effective operational proficiency	<i>C1 level, TOEIC</i>
French	Effective operational proficiency	<i>C1 level, TCF</i>
Portuguese	Basic communication skills	

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3/3