



# Patricio Reyes Valenzuela

Researcher at Barcelona Supercomputing Center. CASE Dept.

## Awards

2018 Winner, II Hackathon Big Data Analytics CEIN DXC Technology. Category “Best Value Proposition”.

2016 Winner, Hackathon Big Data Analytics CEIN HPE. Category: “Innovative Initiative”.

2005 Ph.D. Scholarship INRIA & Chilean government, France

## Education

2009 Ph.D. in Computer Science. [INRIA](#) – [Sophia Antipolis](#). Project [MASCOTTE](#), Joint Project [INRIA/I3S\(CNRS – U. Nice\)](#). Université de Nice, France.

2003 Master’s Degree in Mathematics (Mathematical Engineer) Universidad de Chile. Santiago, Chile.

2000 Bachelor in Engineering Sciences, Major in Mathematics. Universidad de Chile. Santiago, Chile.

## Languages

Spanish Native.

English Written and spoken. BULATS 62/100 – B2-C1 in 2007.

French Intermediate B2-C1 in 2008 (4 years in France).

## Research Interests

Stochastic Optimization. Approximation Algorithms. Combinatorial Optimization. Complexity. Networks: Gathering, Routing & Scheduling. Algorithms in Social Networks. Complex Networks. Graph Theory in network applications. Network Design.

## Research Visits & Collaborations

2016, 2015, 2014, 2013 [NOKIA Bell Labs](#) / [LINCS](#), Paris, France. Mathematics of Dynamic Networks and Information Dept.

2015 Dept. of Statistics and Operations Research. Faculty of Mathematics. University of Santiago de Compostela, Spain

2014, 2016 [NICLabs](#). [INRIA-Chile](#) research partner.

2014, 2011 Advanced Mining Technology Center, AMTC. Mine Planning Lab ([DELPHOS](#)), University of Chile, Chile.

**Scientific  
Publications**

- 2019  
conference  
*Maria Soledad Bucalo, Luz Calvo, Fernando Cucchietti, David García Povedano, Artur García-Sáez, Juan Felipe Gómez, Camilo Arcadio González, Guillermo Marín, Irene Meta, Patricio Reyes, Feliu Serra, and Diana Fernanda Vélez. 2019. [A Constellation of Horrors: Analysis and Visualization of the #Cuéntalo Movement](#). In Companion Proceedings of The 2019 World Wide Web Conference (WWW '19). ACM. May 2019.*
- 2017  
conference  
Rey, Susana, Patricio Reyes, and Alonso Silva. [Budget Allocation in Binary Opinion Dynamics](#). In *3rd Spring School on Networks co-located with (ChileCON 2017)*. October 2017.
- 2017  
conference  
Rey, Susana, Patricio Reyes, and Alonso Silva. [Evolution of Social Power for Opinion Dynamics Networks](#). In *55th Annual Allerton Conference on Communication, Control, and Computing*. October 2017.
- 2016  
journal  
J.-C. Bermond, C. Gomes Huiban, P. Reyes, [Round weighting problem and gathering in radio networks with symmetrical interference](#). In *DMAA, Discrete Mathematics, Algorithms and Applications 8(2)*. June 2016.
- 2016  
journal  
E. Jélvez, N. Morales, J. Peypouquet, P. Reyes. [Aggregation heuristic for the open-pit block scheduling problem](#). ([slides, preliminary version](#)). In *EJOR, European Journal of Operational Research 249(3)*. March, 2016.
- 2016  
journal  
N. Morales, P. Reyes. [Increasing the value and feasibility of open pit plans by integrating the mining system into the planning process](#). In *SAIMM, Journal of the Southern African Institute of Mining and Metallurgy 116(7)*. July, 2016.
- 2016  
conference  
I. Bachmann, P. Reyes, J. Bustos, A. Silva. [Multidimensional Network Resilience Analysis](#). In *IEEE Latin America Transactions 14(6):2912-2914*. June 2016
- 2016  
conference  
I. Bachmann, P. Reyes, J. Bustos, A. Silva. [The Hayastan Shakarian cut: measuring the impact of network disconnections](#). In *CoRR*. January 2016.
- 2015  
conference  
I. Bachmann, P. Reyes, J. Bustos, A. Silva. [Miuz: measuring the impact of disconnecting a node](#). In *SCCC, 34th International Conference of the Chilean Computer Science Society*. November 2015.

- 2015  
conference S. Torres, F. Lalanne, G. Canto, F. Morales, J. Bustos, P. Reyes. [BeCity: sensing and sensibility on urban cycling for smarter cities](#). In *SCCC, 34th International Conference of the Chilean Computer Science Society*. November 2015.
- 2014  
conference P. Reyes, A. Silva. Maximum Coverage and Maximum Connected Covering in Social Networks with Partial Topology Information. In *NetSciCom 2014: 6th IEEE INFOCOM 2014 Workshop on Network Science for Communication Networks (preliminary version)*
- 2014  
conference P. Reyes, A. Silva. Analysis of Myopic Network Covering Algorithms. In *ROADEF 2014*. Bordeaux. February, 2014.
- 2013  
journal J.-C. Bermond, R. Klasing, N. Morales, S. Pérennes, and P. Reyes. [Gathering radio messages in the path](#). In *DMAA, Discrete Mathematics, Algorithms and Applications*, 5(1), Mar. 2013. ([preliminary version here](#))
- 2009  
conference A. Silva, P. Reyes, M. Debbah. [Congestion in Randomly Deployed Wireless Ad-Hoc and Sensor Networks](#). In *International Conference on Ultra Modern Telecommunication 2009*. St Petersburg, Russia. ICUMT09, IEEE. October, 2009. ([preliminary version](#))
- 2009  
conference J.-C. Bermond, N. Nisse, P. Reyes, and H. Rivano. [Minimum Delay Data Gathering in Radio Networks](#). In *Proceedings of the 8th international conference on Ad Hoc Networks and Wireless (AdHoc-Now)*, volume 5793 of *Lecture Notes in Computer Science*, 2009. Springer.
- 2009  
thesis [Data Gathering in Radio Networks](#). INRIA/I3S(CNRS – U. Nice). Advisor: Jean-Claude Bermond. August 2009.
- 2009  
conference J.-C. Bermond, N. Nisse, P. Reyes, and H. Rivano. [Fast Data Gathering in Radio Grid Networks](#). In *11èmes Rencontres Francophones sur les Aspects Algorithmiques de Télécommunications (AlgoTel)*, June 2009.
- 2008  
conference C. Gomes, S. Pérennes, P. Reyes, and H. Rivano. [Bandwidth Allocation in Radio Grid Networks](#). In *10èmes Rencontres Francophones sur les Aspects Algorithmiques de Télécommunications (AlgoTel)*, May 2008.
- 2008  
conference C. Gomes, C. Molle, and P. Reyes. [Optimal Design of Wireless Mesh Networks](#). In *JDIR 2008*, Villeneuve d'Ascq, France, January 2008.

2007  
conference C. Gomes, C. Molle, P. Reyes, and H. Rivano. [Models for Optimal Wireless Mesh Network Design](#). In *The 22nd European Conference on Operational Research (EURO XXII)*, Prague, July 2007.

2007  
conference C. Gomes, C. Molle, P. Reyes, and H. Rivano. [Placement Optimal de points d'accès dans les réseaux radio maillés](#). In *Neuvièmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications (AlgoTel'07)*, Ile d'Oléron, France, May 2007.

2003  
journal O. Barrientos, R. Correa, P. Reyes and A. Valdebenito. [A Branch & Bound Method for Solving Integer Separable Concave Problems](#). *Computational Optimization and Applications* 26 (2): 155-171, November 2003.

**Invited Speaker in  
Conferences and  
Seminars**  
(Selected)

2016 Speaker at LINCS seminars. *Progressive Hedging for Stochastic Optimization*. Invited by Alonso Silva, researcher at NOKIA Bell Labs & LINCS. December 2016, Paris

2014 Speaker at LINCS seminars. [Towards Detecting Influential Individuals in Social Networks \(slides\)](#). April 2014, Paris, France.

<b>Relevant Teaching Experience</b>	2013	“ <a href="#">Statistics II</a> ”. University Carlos III, Madrid, Spain. Lecturer
	2013	“ <a href="#">Simulation and Optimization for Business</a> ”. University Carlos III, Madrid, Spain. Lecturer.
	2013, 2012	“ <a href="#">Statistics I</a> ”. University Carlos III, Madrid, Spain. Lecturer. Courses given in English and Spanish.
	2005	“Algebra”. Andrés Bello University, Chile. Lecturer.
	2005	“Advanced Calculus” Andrés Bello University, Chile. Lecturer.
	2001	“Optimization”. School of Engineering and Sciences. Universidad de Chile, Santiago, Chile. Teaching Assistant.
	2000	“Applied Mathematics”. School of Engineering and Sciences. Universidad de Chile. Teaching Assistant.
	1999	“Calculus I”. School of Engineering and Sciences. Universidad de Chile, Santiago, Chile. Teaching Assistant.
<b>Professional Experience</b> (Selected)	2018 – present	Researcher at Barcelona Supercomputing Center (BSC). CASE Department.
	2015 – 2018	Researcher at Joint Research Centre ITMATI–Repsol. ITMATI is a Consortium of Spanish universities <a href="#">USC</a> , <a href="#">U. Coruña</a> , <a href="#">U. Vigo</a> . Repsol is a global energy company. ( <a href="http://www.repsol.com">www.repsol.com</a> )
	2014 – 2015	Researcher at INRIA Chile – NIC Research Labs. Joint group INRIA / University of Chile
	2012 – 2014	Postdoctoral visitor at Dept. Statistics and Operations Research. University Carlos III, Madrid.
	2010 – 2011	Research Engineer at Centre for Mathematical Modelling, <a href="#">CMM</a> . UMI 2807 CNRS/France-University of Chile.

- 2006 – 2009 [INRIA](#) – [Sophia Antipolis](#). Project [MASCOTTE](#), Joint Project [INRIA/13S\(CNRS – U. Nice\)](#). Université de Nice, France. *During Ph.D. in Computer Science.*
- 2004 Project Tutorias. (<http://www.tutorias.cl>). *Research Engineer*. Dept. of Mathematics and Centre for Mathematical Modelling, CMM (<http://www.cmm.uchile.cl>).
- 2003 *Research consultant* for IM2 and CMM. Copper Refinement.  
- IM2, Research Division of CODELCO (<http://www.im2.cl>)  
(<http://www.codelco.cl>)  
- CMM, Centre for Mathematical Modeling  
(<http://www.cmm.uchile.cl>).
- 2002 *Research consultant*. Traffic Analysis for Chilean telecommunication company ENTEL.

## Computational Skills

Programming Languages and related Projects

**Python:** Scripting, data analysis, optimization tools for combinatorial optimization. Used for simulations in the publication:

- E. Jélvez, N. Morales, J. Peypouquet, P. Reyes. Heuristics for the open-pit block scheduling problem. EJOR 2016

**R:** Statistical analysis and visualization. Used in publications:

- P. Reyes, A. Silva. Maximum Coverage and Maximum Connected Covering in Social Networks with Partial Topology Information. NetSciCom 2014
- A. Silva, P. Reyes, M. Debbah. [\*Congestion in Randomly Deployed Wireless Ad-Hoc and Sensor Networks\*](#). In *International Conference on Ultra Modern Telecommunication 2009. St Petersburg, Russia. ICUMT09, IEEE. October, 2009. (preliminary version)*

**C++:** Optimization algorithms. Used in publications:

- O. Barrientos, R. Correa, P. Reyes and A. Valdebenito. [A Branch & Bound Method for Solving Integer Separable Concave Problems](#). *Computational Optimization and Applications 26 (2): 155-171, November 2003.*

Some knowledge of Java, Julia

Mathematical, Optimization Software

**CPLEX:** Optimization toolbox. Used in publication:

- O. Barrientos, R. Correa, P. Reyes and A. Valdebenito. [A Branch & Bound Method for Solving Integer Separable Concave Problems](#). *Computational Optimization and Applications 26 (2): 155-171, November 2003.*

**Gurobi:** Optimization toolbox. Used in publication:

- E. Jélvez, N. Morales, J. Peypouquet, P. Reyes. Heuristics for the open-pit block scheduling problem. EJOR 2015

Optimization Modeling Languages: AMPL, Pyomo & PySP (Pyomo's toolbox for Stochastic Programming).

Optimization solvers: CPLEX (AMPL, C libraries), Gurobi. Non-linear solvers: KNITRO, IPOPT, MINOS, Baron

General Math Software	<b>Matlab</b> : Development of a package for optimization over symmetric cones. Some experience of Maple, Mathematica
Statistical software	R Language. Some experience of SPSS, Statistica, Statgraphics.
OS user	Linux, Windows, MacOS.