

Guido R. Lagos

<https://guidolagos.github.io> — guido.lagos.barrios@gmail.com — +56 9 8367 8158

REFERENCES

- Antonius (Ton) Dieker ton.dieker@ieor.columbia.edu
Columbia University <http://www.columbia.edu/~ad3217>
Associate Professor, Industrial Engineering and Operations Research Department
- Tito Homem-de-Mello tito.hmello@uai.cl
Universidad Adolfo Ibáñez <http://mansci-web.uai.cl/~thmello/>
Professor, School of Business
- Javiera Barrera javiera.barrera@uai.cl
Universidad Adolfo Ibáñez <http://jbarrera.uai.cl>
Associate Professor, School of Engineering

RESEARCH INTERESTS

- * Simulation optimization * Methodology of simulation * Rare-event analysis
- * Network reliability * Adaptive multistage stochastic programming
- * Data Sciences * Optimization Under Uncertainty * Computational probability

EDUCATION

- GEORGIA INSTITUTE OF TECHNOLOGY Atlanta, GA
Ph.D. in Operations Research Spring 2017
School of Industrial & Systems Engineering 3.91 cumulative GPA
- UNIVERSIDAD DE CHILE Santiago, Chile
M.Sc. in Operations Management 2011
Department of Industrial Engineering GPA 6.5 (1.0-7.0 scale)
Mathematical Civil Engineer (M.Sc. in Applied Math equivalent) 2011
Department of Mathematical Engineering GPA 7.0 (1.0-7.0 scale)
B.Sc. in Engineering Sciences, major in Mathematics 2009
Department of Mathematical Engineering GPA 5.5 (1.0-7.0 scale)
- *Primary & Secondary School* 1991–2003
British School of Costa Rica, Costa Rica; Colegio Santa Cruz Santiago, Chile.

RESEARCH EXPERIENCE

- *Postdoctoral Researcher, Universidad Adolfo Ibáñez* 01/2017 to date
- *Assistant Researcher, Universidad de Santiago de Chile* 10/2018 to 03/2020
- *Postdoctoral Associate, Center for Math Modeling* 01/2017 to 02/2018
Universidad de Chile
- *Research Staff, Columbia University* 01/2016 to 12/2016
Data Sciences Institute and Department of Industrial Engineering and Operations Research
- *Graduate Research Assistant, Georgia Tech* 08/2011 to 12/2016
Research topics: * Sensitivity analysis of stochastic networks. * Exact simulation methods for rare events of heavy-tailed stochastic processes. * Weak convergence limits of discretized diffusion processes.
Advisor: Ton Dieker.
- *Visiting researcher: University of Pittsburgh* 03–04/2011
Research topic: Restricted risk measures and robust optimization.
Host: Juan Pablo Vielma.

- *Research Assistant, Universidad Adolfo Ibáñez* 08/2010 to 08/2011
Research topic: stochastic optimization of multi-period inventory planning.
Advisor: Bernardo K. Pagnoncelli.
- *Graduate Research Assistant, Universidad de Chile* 08/2009 to 08/2011
Research topic: robust and stochastic planning for large scale open-pit mining problems.
Advisors: Daniel Espinoza, Eduardo Moreno.

FUNDED RESEARCH PROJECTS

- Co-investigator of MATH AMSUD Project *RareDep Project 2019-2020: Rare events analysis in multi-component systems with dependent components* awarded by *Regional Math-AmSud 2018* fund and CONICYT.
- Principal Investigator, *FONDECYT de Postdoctorado 2018*, with project # 3180767. Awarded by *CONICYT–Ministerio de Educación del Gobierno de Chile* on June 2018.

PUBLICATIONS — IN PREPARATION

- M. Armstrong, X. Emery, A. Galli, G. Lagos, J. Valencia. “On the power of scenario reduction and learning in pre-processed scenario trees for production optimization in mining”.
- F. Jara, G. Lagos, D. Machado, B. Saavedra, T. Torres. “Scheduling healthcare professionals in Chile: a simulation-based adaptive optimization scheme”.
- B. Pagnoncelli, T. Homem-de-Mello, G. Lagos. “Solving Constrained Consumption-Investment Problems by Decomposition Algorithms”
- J. Barrera, G. Lagos, P. Romero. “Mean-field asymptotics of general monotone reliability systems under the LFMO shocks model”

PUBLICATIONS — SUBMITTED & IN JOURNAL

- M. Armstrong, X. Emery, T. Homem-de-Melo, G. Lagos, T. Lagos, D. Saure (2020). “Adaptive Open-pit Mining Planning under Geological Uncertainty” Submitted.
- M. Armstrong, T. Homem-de-Melo, G. Lagos, T. Lagos, D. Saure (2020). “A framework for adaptive open-pit mining planning under geological uncertainty”. Accepted to *Optimization and Engineering*.
- J. Barrera, G. Lagos (2020). “Limit distributions of the upper order statistics for the conditionally-iid Marshall-Olkin distribution”. Accepted to *Extremes*.
- A.B. Dieker, G. Lagos (2017). “On the Euler discretization error of Brownian motion about random times”. Submitted, see arXiv:1708.04356. **1st place of the 2017 INFORMS Applied Probability Society Student Paper Competition.**
- A.B. Dieker, G. Lagos (2017). “A Dichotomy for Sampling Barrier-Crossing Events of Random Walks with Regularly Varying Tails”. In *Journal of Applied Probability* vol. 54, 4, pp. 1213–1232.
- D. Espinoza, G. Lagos, E. Moreno, J.P. Vielma (2015). “Restricted risk measures and robust optimization”. In *European Journal of Operations Research*, vol. 241, 3, pp. 771–782.

PUBLICATIONS
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**CONFERENCE
PROCEEDINGS**

- J. Barrera, G. Lagos (2020). “Approximating the Lévy-frailty Marshall-Olkin model for failure times” Accepted to the Winter Simulation Conference 2020; December 13-16 Orlando, FL, USA.
- G. Lagos, P. Romero (2020). “On the Reliability of Dynamic Stochastic Binary Systems” Accepted to the 6th International Conference on Machine Learning, Optimization, and Data Science (LOD 2020); July 19-23, 2020, Tuscany, Italy.
- D. Espinoza, G. Lagos, E. Moreno, J.P. Vielma (2013). “Risk averse approaches in open-pit production planning under ore grade uncertainty: a Ultimate Pit study”. In *Proceedings of APCOM 2013 - Applications of Computers and Operations Research in the Mineral Industry*, pp. 492-501.
- J. Amaya, D. Espinoza, G. Lagos, E. Moreno, J.P. Vielma (2011). “Robust Planning for an Open-Pit Mining Problem under Ore-Grade Uncertainty”. In *Proceedings of LAGOS 2011: VI Latin-American Algorithms, Graphs and Optimization Symposium, Electronic Notes on Discrete Mathematics*, 37, pp. 15–20.

**DISTINCTIONS
& GRANTS**

- **Grant “FONDECYT de Postdoctorado 2018”, with project # 3180767.** Awarded by CONICYT–Ministerio de Educación del Gobierno de Chile on June 2018.
- **1st place of INFORMS Applied Probability Society Student Paper Competition, October 2017.** The authors of the three other finalist papers were: Zhengyuan Zhou (Stanford), Andrew Li (MIT), and Thodoris Lykouris and Daniel Freund (Cornell).
- *Algorithms & Randomness Center Student Fellowship*, Georgia Tech, Fall 2014.
- *Kiplinger Fellowship*, Georgia Tech, August 2011 and August 2012.
- *Becas Chile-CONICYT Ph.D. abroad scholarship*, Chile, November 2010.
- *Outstanding Student Award*, School of Engineering Sciences, Universidad de Chile, 2004–2005.

**CONFERENCES,
WORKSHOPS &
SEMINARS**

- *Winter Simulation Conference 202*, (online conference) Dec 2020
- *Workshop Mathematical and Computational Modelling of Rare Events in Complex Systems*, Recife, PN, Brasil Nov 2019
- *INFORMS Annual Meeting 2019*, Seattle, WA, EEUU Oct 2019
- *INFORMS 20th Applied Probability Society Conference*, Brisbane, QLD, Australia Jul 2019
- *Applied² Probability Workshop*, Brisbane, QLD, Australia Jul 2019
- “*Reliability in Networks*” *Workshop*, Santiago, Chile Jan 2019
- *Winter Simulation Conference 2018*, Gothemburg, Sweden Dec 2018
- *Science Park Informal Probability Meetings*, Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands Dec 2018
- *Depto. de Ingeniería Industrial*, Universidad de Santiago, Chile Nov 2018
- *INFORMS Annual Meeting 2018*, Phoenix, AZ, EEUU Nov 2018
- *Instituto de Ingeniería Matemática y Computacional*, Pontificia Universidad Católica de Chile, Chile Aug 2018
- *Facultad de Ingeniería y Ciencias*, Universidad Adolfo Ibáñez, Chile Jul 2018
- *Instituto de Sistemas Complejos de Ingeniería*, Universidad de Chile Jul 2018

- Depto. de Matemática, Universidad Técnica Federico Santa María, Valparaíso, Chile May 2018
- Depto. de Ingeniería Industrial, Universidad de Concepción, Chile Dec 2017
- *OPTIMA 2017*, Universidad Adolfo Ibáñez, Viña del Mar, Chile Nov 2017
- *Science Park Informal Probability Meetings*, Nov 2017
Centrum Wiskunde & Informatica (CWI), Amsterdam, The Netherlands
- *INFORMS Annual Meeting 2017*, Houston, TX, USA Oct 2017
- *INFORMS 19th Applied Probability Society Conference*, Jul 2017
Northwestern University, Chicago, IL, USA.
- School of Engineering, Universidad Adolfo Ibáñez, Chile Apr 2017
- Center for Mathematical Modeling, Universidad de Chile Mar 2017
- *INFORMS Annual Meeting 2016*, Nashville, TN, USA Nov 2016
- *Winter Simulation Conference 2014*, Savannah, GA, USA Dec 2014
- *INFORMS Annual Meeting 2014*, San Francisco, CA, USA Nov 2014
- *INFORMS Annual Meeting 2012*, Phoenix, AZ, USA Oct 2012
- *ICCOPT 2010*, Santiago, Chile Jul 2010
- *ALIO-INFORMS Meeting 2010*, Buenos Aires, Argentina Jul 2010
- *1st Winter School on Discrete Mathematics*, Codegua, Chile Jul 2010

TEACHING EXPERIENCE

- *Instructor, Universidad de Santiago de Chile*
Course: *Stochastic Models* (4th year undergrad course; terms 2019-1, 2019-2, 2020-1, 2020-2).
- *Instructor, Universidad Adolfo Ibáñez*
Course: *Advanced Simulation* (PhD course; Spring 2017).
- *Instructor, Georgia Institute of Technology*
Course: *Stochastic Manufacturing & Service Systems* (4th year undergrad course; Spring 2015).
- *Participant of the INSPIRE² Workshop at Georgia Tech (Summer 2014)*
Two-day workshop organized by the *American Society of Engineering Education* (ASEE) jointly with Georgia Tech's *Center for Enhancing of Teaching and Learning* (CETL). Workshop on teaching techniques in STEM disciplines that promote an effective learning environment. Emphasis was put on techniques for active, collaborative and inductive learning.
- *Graduate Teaching Assistant, Georgia Tech*
Courses: *Engineering Optimization* (Summer 2012), *Probabilistic Models* (Fall 2012) and *Stochastic Manufacturing & Service Systems* (Summer 2014).
- *Undergraduate Teaching Assistant, Universidad de Chile*
Courses: *Linear Algebra* (2007–2008), *Numerical Calculus* (2006–2007) and *Statistics* (2007–2009).

SERVICE

- Co-chair (with Pierre L'Ecuyer, Université de Montréal) of the session "Networks, Reliability & Extremes" in the *Applied Probability Society* track of the upcoming conference *INFORMS Annual Meeting 2018*, to take place on November 2018 in Phoenix, AZ, USA.
- Co-organizer (with Javiera Barrera, Universidad Adolfo Ibáñez) of the workshop *Reliability in Networks: Simulation, Optimization and Analysis*, that took place at Universidad Adolfo Ibáñez, Santiago, Chile, in January 2019.
- Co-organizer (together with Francisco Jara-Moroni) of the *Industrial & Systems Engineering Seminar* of the Industrial Engineering Department at Universidad de Santiago de Chile; from Nov 2018 to Jun 2019.
- Organizer of the *Data Sciences* reading group for the *Industrial Engineering and Operations Research Group* at Universidad Adolfo Ibáñez (2017–2018).
- Peer reviewed journal reviewer for: *Operations Research*, *Journal of Applied Probability*, *Stochastic Models*
- Member of the *Institute for Operations Research & Management Sciences* (INFORMS), INFORMS Applied Probability Society, and INFORMS Optimization Society.
- Founder and organizer of the *Student Applied Probability & Simulation (SAPS) Seminar*, School of Industrial & Systems Engineering, Georgia Tech, 05/2014 to 12/2015.

INDUSTRY EXPERIENCE

- *Consulting Expert*, Real Solutions S.A.; Chile 5/2019 to 8/2019
Designed a model that analyzes and optimizes admissions of first year undergraduate students of the Universidad de Santiago de Chile
- *Consulting Engineer*, JRI Ingeniería S.A.; Chile 11/2010 to 12/2010
Designed an optimal resource allocation method for wagon service pits. Used data analysis tools and queueing models.
- *Intern, Institute for Cell Dynamics and Biotechnology, Chile* Summer 2009
Programmed several data clustering techniques for use in functional genomics.
- *Intern, Sistemas Integrales Ltda., Chile* Summer 2008
Programmed a graphical calculation method for error estimation in sampling.
- *Intern, Institute for Mining and Metallurgy (IM2), Chile* Summer 2007
Developed and programmed a model for freezing prediction in mining pipelines.

PROGRAMMING SKILLS

- Python, Julia, JAVA, UNIX Bash shell scripting, PBS scripting for High Performance Computing (HPC) in clusters, Visual Basic.
- *Mathematical software*: MATLAB, Octave, SCILAB, Mathematica, AMPL, OPL.

EXTRA-CURRICULAR ACTIVITIES

- *Bicycling* since 2007
Founder of the institutional student group *Pedalea! Beauchef* at Universidad de Chile. *Pedalea! Beauchef* has more than 200 affiliated students, and since 2008 provides approx. 10 weekly hours of free bike repair services and tutoring.
- *Swimming* since 2009
Participation in the swimming team of the *Faculty of Physical Sciences and Mathematics* of Universidad de Chile, 2009–2011.
- *Bassoon performing* 1999--2002
Studies of bassoon performing, harmony and musical theory. Winner of the grant *Fundación de Orquestas Infantiles y Juveniles de Chile* in its 2001 edition.

- *African and afro-latin percussion*, autodidactic hobby.

since 2005

Last update: October 26, 2020