Guido R. Lagos

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Nationality: Chilean / RUT 19.203.084-6 / Birth date: April 13th, 1985

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 Ibéñez — 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 Universidad de Chile* — 01/2017 to 02/2018
- *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, 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 — 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

- 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
- *Applied^2 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 Probabiilty 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* (4$^{\text{th}}$ year undegrad course; terms 2019-1, 2019-2, 2020-1).
- *Instructor, Universidad Adolfo Ibáñez*
  Course: *Advanced Simulation* (PhD course; Spring 2017).
- *Instructor, Georgia Tech*
  Course: *Stochastic Manufacturing & Service Systems* (4$^{\text{th}}$ year undergrad course; Spring 2015).
- *Participant of the INSPIRE^2 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 Dinamycs 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`

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