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- Education** **Georgia Institute of Technology** Atlanta, GA
Ph.D. in Operations Research, March 2006
Thesis Title: *On Linear Programming, Integer Programming and Cutting Planes*
Advisor: William Cook, ISyE
- Universidad de Chile** Santiago, Chile
Mathematical Engineering, July 2001.
Thesis Title: *Un Problema de Transporte Multiproducto y Multiperíodo*
Advisor: Andrés Weintraub, Department of Industrial Engineering
- Experience**
- March 2006-
August 2013** **Universidad de Chile** Santiago, Chile
Assistant professor, Department of Industrial Engineering
Associate professor, Department of Industrial Engineering
- September
2013-
Teaching** **Universidad de Chile** Santiago, Chile
Network Flows (Spring 2013).
Optimization I (Spring 2014, Spring 2013, Spring 2012, Fall 2011, Fall 2010,
Fall 2009, Fall 2008, Fall 2007).
Operations Research II (Spring 2014, Spring 2013, Spring 2012, Fall 2008, Fall
2007, Fall 2006).
Stochastic and Robust Optimization (Fall 2012, Fall 2010).
Linear and Integer Optimization (Fall 2011, Fall 2010, Fall 2009, Fall 2008).
Logistics (Fall 2010, Fall 2009, Fall 2008, Fall 2006).
Topics in Discrete Optimization (Spring 2007).
- Student
Advising** Giorgiogiulio Parra de Blasi, M.S. Operations Management, June 2013-Present.
Gabriela Sandoval, Ph.D. Chemical Engineering, June 2013-Present.
Renaud Chicoisne, Ph.D. Systems Engineering, March 2010-Present.
Alejandro Angulo, Ph.D. Systems Engineering, March 2009-Present (Part-time
professor at Universidad Técnica Federico Santa María).
Jaime Miranda, Ph.D. Systems Engineering, March 2011-December 2014 (Now
a professor at Universidad de Chile, School of Administration and Economics).
Felipe Lagos, M.S. Operations Management, March 2013-December 2014.
Alvaro Echeverria, M.S. Operations Management, March 2012-June 2013.

Gonzalo Muñoz, Project. Intern, June 2011-June 2012 (Now pursuing a Ph.D. at Columbia University).

Felipe Serrano, M.S. Operations Management, March 2011-March 2012 (Now pursuing a Ph.D. at TU Berlin).

Adrián Díaz, M.S. Operations Management, June 2008-June 2011.

Rodrigo Sepúlveda, M.S. Electrical Engineering, March 2010-June 2011.

Guido Lagos, M.S. Operations Management, June 2010-June 2011 (Now pursuing a Ph.D. at Georgia Institute of Technology).

Camila Baeza, M.S. Operations Management, August 2007-April 2010.

Gustavo Angulo, Project. Intern, August 2009-August 2010 (Now a Post-doc at CORE, Belgium, and a Professor at Pontificia Universidad Católica de Chile).

Rodrigo López, Project. Intern, August 2009-August 2010.

Diego Morán, Project. Intern, August 2009-August 2010 (Now a Professor at Virginia Tech).

Lorenzo Reus, Project. Intern, December 2008-August 2009 (Now holds a Ph.D. in Financial Engineering, from Princeton University).

Thesis Committees

Sebastian Perez, Industrial Engineering, U. de Chile, 2014; Alfredo Torrico, Mathematical Engineering, U. de Chile, 2013; Omar Larré, M.S. Operations Management, U. de Chile, 2012; Consuelo Pinto, Industrial Engineering, U. de Chile, 2012; Gonzalo Muñoz, Mathematical Engineering, U. de Chile, 2012; Rodrigo López, M.S. Operations Management, U. de Chile, 2012; Pedro Inostroza, Industrial Engineering, U. de Chile, 2011; Fernando Peirano, M.S. Mining, U. de Chile, 2011; Daniel Andrade, Industrial Engineering, U. de Chile, 2010; Andrés Solar, M.S. Mining, U. de Chile, 2010; Ian Guiloff, M.S. Operations Management, U. de Chile, 2010; Felipe Riquelme, Industrial Engineering, U. de Chile, 2009; Gustavo Angulo, M.S. Operations Management, U. de Chile, 2009; Diego Moran, M.S. Operations Management, U. de Chile, 2009; Carlos Benavides, M.S. Electrical Engineering, U. de Chile, 2008; Priscila Molina, M.S. Operations Management, U. de Chile, 2008; Mario Recabal, M.S. Operations Management, U. de Chile, 2008; Rodrigo Hernández, M.S. Operations Management, U. de Chile, 2008;

Publications in Journals

Angulo, A., Mancilla, D. F., Palma, R., and Espinoza, D. (2015a). A polyhedral-based approach applied to quadratic cost curves in the unit commitment problem. *IEEE Transactions on Power Systems*, **Accepted, to appear**, –

Sandoval, G., Espinoza, D. G., Figueroa, N., and Asenjo, J. A. (2016). MILP reformulations for the design of biotechnological multi-product batch plants using continuous equipment sizes and discrete host selection. *Computers & Chemical Engineering*, **84**, 1–11

Espinoza, D. G., Goycoolea, M., and Moreno, E. (2015). The precedence constrained knapsack problem: Separating maximally violated inequalities. *Discrete Applied Mathematics*, **194**, 65–80

- Angulo, A., Espinoza, D. G., and Palma, R. (2015b). Sequence independent lifting for mixed knapsack problems with gub constraints. *Mathematical Programming*, pages 1–26
- Espinoza, D. and Moreno, E. (2014). A primal-dual aggregation algorithm for minimizing conditional value-at-risk in linear programs. *Computational Optimization and Applications*, **59**(3), 617–638
- Lagos, G., Espinoza, D., Moreno, E., and Vielma, J. P. (2015). Restricted risk measures and robust optimization. *European Journal of Operational Research*, **241**(3), 771–782
- Chvátal, V., Cook, W., and Espinoza, D. G. (2013). Local cuts for mixed-integer programming. *Mathematical Programming Computations*, **5**, 171–200
- Chicoisne, R., Espinoza, D. G., Goycoolea, M., Moreno, E., and Rubio, E. (2012). A new algorithm for the open-pit mine scheduling problem. *Operations Research*, **60**(3), 517–528
- Espinoza, D., Goycoolea, M., Moreno, E., and Newman, A. (2013a). Minelib: a library of open pit mining problems. *Annals of Operations Research*, **206**(1), 93–114
- Espinoza, D., Fukasawa, R., and Goycoolea, M. (2010). Lifting, tilting and fractional programming revisited. *Operations Research Letters*, **38**(6), 559–563
- Cook, W. J., Espinoza, D. G., and Goycoolea, M. (2010). Generalized domino-parity inequalities for the symmetric traveling salesman problem. *Math. Oper. Res.*, **35**(2), 479–493
- Espinoza, D. G. (2010). Computing with multi-row gomory cuts. *Operations Research Letters*, **38**(2), 115–120
- Applegate, D. L., Bixby, R. E., Chvátal, V., Cook, W., Espinoza, D. G., Goycoolea, M., and Helsgaun, K. (2009). Certification of an optimal TSP tour through 85,900 cities. *Operations Research Letters*, **37**(1), 11 – 15
- Espinoza, D., Garcia, R., Goycoolea, M., Nemhauser, G. L., and Savelsbergh, M. W. P. (2008a). Per-Seat, On-Demand Air Transportation Part I: Problem Description and an Integer Multicommodity Flow Model. *Transportation Science*, **42**(3), 263–278
- Espinoza, D., Garcia, R., Goycoolea, M., Nemhauser, G. L., and Savelsbergh, M. W. P. (2008b). Per-Seat, On-Demand Air Transportation Part II: Parallel Local Search. *Transportation Science*, **42**(3), 279–291
- Applegate, D., Cook, W., Dash, S., and Espinoza, D. (2007). Exact solutions to linear programming problems. *Operations Research Letters*, **35**, 693–699
- Cook, W., Espinoza, D. G., and Goycoolea, M. (2007). Computing with domino-parity inequalities for the TSP. *INFORMS Journal on Computing*, **19**(3), 356–365

Conference Proceedings

Several conference publications are preliminary versions of the journal articles above.

- Angulo, A., Espinoza, D. G., and Palma, R. (2014). Sequence independent, simultaneous and multidimensional lifting of generalized flow covers for the semi-continuous knapsack problem with generalized upper bounds constraints. In *Integer Programming and Combinatorial Optimization (IPCO)*, Lecture Notes in Computer Science, pages 64–75. Springer
- Espinoza, D. G., Lagos, G., Moreno, E., and Vielma, J. P. (2013c). Risk averse approaches in open-pit production planning under ore grade uncertainty: a ultimate pit study. *Proceedings of APCOM 2013 - Applications of Computers and Operations Research in the Mineral Industry*, pages 492–501
- Espinoza, D. G., Goycoolea, M., Moreno, E., Muñoz, G., and Queyranne, M. (2013b). Open pit mine scheduling under uncertainty: a robust approach. *Proceedings of APCOM 2013 - Applications of Computers and Operations Research in the Mineral Industry*, pages 433–444
- Lagos, G., Espinoza, D., Moreno, E., and Amaya, J. (2011). Robust planning for an open-pit mining problem under ore-grade uncertainty. *Electronic Notes in Discrete Mathematics*, **37**(0), 15 – 20. LAGOS 11: VI Latin-American Algorithms, Graphs and Optimization Symposium
- Moreno, E., Espinoza, D., and Goycoolea, M. (2010). Large-scale multi-period precedence constrained knapsack problem: a mining application. *Electronic notes in discrete mathematics*, **36**, 407–414
- Amaya, J., Espinoza, D. G., Goycoolea, M., Moreno, E., Prevost, T., and Rubio, E. (2009). A scalable approach to optimal block scheduling. In *Proceedings of APCOM 2009 - Applications of Computers and Operations Research in the Mineral Industry*, pages 567–575. The Canadian Institute of Mining, Metallurgy and Petroleum
- Espinoza, D. G., Moreno, E., and Vielma, J. P. (2009). Risk control in ultimate pits using conditional simulations. In *Proceedings of APCOM 2009 - Applications of Computers and Operations Research in the Mineral Industry*, pages 567–575. The Canadian Institute of Mining, Metallurgy and Petroleum
- Espinoza, D. G. (2008). Computing with multi-row gomory cuts. In A. Lodi, A. Panconesi, and G. Rinaldi, editors, *IPCO 2008*, volume 5035 of *Lecture Notes in Computer Science*, pages 214–224
- Cook, W. J., Espinoza, D. G., and Goycoolea, M. (2005). A study of domino-parity and k-parity constraints for the TSP. In M. Jünger and V. Kaibel, editors, *IPCO*, volume 3509 of *Lecture Notes in Computer Science*, pages 452–467. Springer

Invited Talks Integer Programming Down Under, Newcastle, NSW, Australia, July 2011; Mixed Integer Programming Workshop, Georgia Institute of Technology, Atlanta, GA, July 2010; Konrad-Zuse-Zentrum Für Informationstechnik Berlin (ZIB), Berlin, Germany, September 2008; Mixed Integer Programming Workshop, Columbia University, New York, NY, August 2008;

Research Grants	<p>“<i>Tecnología avanzada para ciudades del futuro</i>”, 2011-2014, Co-PI, FONDEF D10I1002.</p> <p>“<i>Núcleo Milenio Información y Coordinación en Redes</i>”, 2011-2014, Young Researcher, ICM/FIC P10-024-F.</p> <p>“<i>Algorithmic and computational aspects of mixed integer programming</i>”, 2011-2014, PI, FONDECYT 1110024.</p> <p>“<i>Proximal cutting planes for mixed integer programming and applications to the traveling salesman problem and mixed integer second order cone programming</i>”, 2011-2014, Co-PI, FONDECYT 1110674.</p> <p>“<i>Instituto Milenio Sistemas Complejos de Ingeniería</i>”, 2008-2013, Young Researcher, FBO-16.</p> <p>“<i>Cuts which do not conform to the template paradigm for General Mixed Integer Problems</i>”, 2007-2010, PI, FONDECYT 1070749.</p> <p>“<i>Sistemas Complejos, computación evolutiva y aplicaciones a la planificación minera.</i>”, 2007 - 2010. PI, FONDEF D06I1031.</p> <p>“<i>Instituto Milenio Sistemas Complejos de Ingeniería</i>”, 2007 - 2011, Young Researcher, ICM P05-004F.</p>
Industry Projects	<p>Santiago Fire Fighters (Cuerpo de Bomberos de Santiago), Co-PI, June 2010 - June 2011: Effective response system for emergencies.</p> <p>Lafarge Chile, Co-PI, Dec 2008 - Jul 2009: Vehicle routing for dry products.</p> <p>Quintec, PI, July 2007 - July 2008: System assessment and improving for <i>on-site</i> services.</p> <p>Viña San Pedro, Apr 2007 - Jun 2008: Production Scheduling.</p>
Duties	<p>Director, Master in Operations Management, U. de Chile, 2011-August 2013.</p> <p>Local Organizer of IPCO 2013.</p> <p>Academic Committee, Ph.D. Engineering Systems, U. de Chile, 2011-August 2013.</p> <p>Technical Editor, Mathematical Programming Computations, 2009-Present.</p>
Languages	Native Spanish speaker, fluent in English.
Citizenship	Citizen of Chile.