SEBASTIAN PEREZ-SALAZAR

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RESEARCH INTERESTS

Operations Research, Optimization, Decision-Making Under Uncertainty, Cloud Computing

EDUCATION

2017 - *Present*	**Georgia Institute of Technology**, Atlanta, GA, United States *Ph.D. in Algorithms, Combinatorics and Optimization* (ACO), GPA: 4.0/4.0 *Minor in Foundations of Machine Learning* Advisors: Mohit Singh & Alejandro Toriello
2015 - 2016	**Universidad de Chile**, Santiago, Chile *Master in Applied Mathematics* *Graduated with Highest Honors* Advisor: Ivan Rapaport
2015 - 2016	**Universidad de Chile**, Santiago, Chile *Mathematical Engineering* *Graduated with Highest Honors*
2010 - 2015	**Universidad de Chile**, Santiago, Chile *Bachelor of Engineering Science in Mathematics* *Graduated with High Honors*

PAPERS

- **A Secretary Problem with Uncertain Offer Acceptance**. S. Perez-Salazar, M. Singh & A. Toriello. Submitted 2021.

- **Preserving Diversity when Partitioning: A Geometric Approach**. S. Perez-Salazar, A. Torrico & V. Verdugo. To appear in the Proceedings of ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2021).

- **Adaptive Bin Packing with Overflow**. S. Perez-Salazar, M. Singh & A. Toriello. arXiv:2007.11532. Submitted to *Mathematics of Operations Research*.

- **Dynamic Resource Allocation in the Cloud with Near-Optimal Efficiency**. S. Perez-Salazar, I. Menache, M. Singh & A. Toriello. To appear in *Operations Research* (2021).

  Work selected as runner-up for the 2019 INFORMS Computing Society Student Paper Prize.

- **Differentially Private Online Submodular Maximization**. S. Perez-Salazar & R. Cummings. Proceedings of the 24th International Conference on Artificial Intelligence and Statistics (AISTATS 2021).

- **Graph reconstruction in the congested clique**. P. Montealegre, S. Perez-Salazar, I. Rapaport, I. Todinca. Journal of Computer and System Sciences (2020).

- **Two rounds are enough for reconstructing any graph (class) in the congested clique model**. P. Montealegre, S. Perez-Salazar, I. Rapaport and I. Todinca. Proceedings of the 25th International Colloquium on Structural Information and Communication Complexity (SIROCCO 2018).

PRESENTATIONS

Talks

- INFORMS Annual Meeting 2021, Anaheim, CA, Oct., 2021. Adaptive bin packing with overflow.
- MOPTA 2021, Lehigh University, Aug. 4, 2021. A Secretary Problem with Uncertain Offer Acceptance.

- Bin Packing Seminar Series, (Virtual), Jun. 16, 2021. Adaptive bin packing with overflow.
- AGCO seminar (Virtual), Mar. 24, 2021. Adaptive bin packing with overflow.
- ACO student seminar, GaTech (Virtual), Mar. 19, 2021. Adaptive bin packing with overflow.
- INFORMS Annual Meeting 2020 (Virtual), Nov. 11. Online Bin Packing With Unpredictable Sizes.
- INFORMS Annual Meeting 2019, Seattle, WA, Oct. 21. Dynamic Resource Allocation with Near-Optimal Efficiency.
- Microsoft Research, Redmond, Oct. 24, 2018. Dynamic Resource Allocation with Near-Optimal Efficiency.
- DOS seminar, GaTech, Oct. 19, 2018. Dynamic Resource Allocation with Near-Optimal Efficiency.
- ISyE student seminar, GaTech, Oct. 12, 2018. A multiplicative weights algorithm for resource allocation.
- XII Summer School in Discrete Mathematics Jan. 3 - 6, 2017, ISCV. An introduction to the Congested Clique.
- SUMA 2016, Dec. 14 - 17, 2016. UV, USM, PUCV. Presenting my Master's thesis.
- AGCO seminar, Discrete Mathematics Group at Universidad de Chile, Dec. 7, 2016.

Posters

- Mixed Integer Programming Workshop 2021, May 24, 2021 (Virtual). Adaptive bin packing with overflow.
- AISTATS (Virtual), April 13, 2021. Differentially Private Online Submodular Maximization.
- Mixed Integer Programming Workshop 2019, July 15, 2019, at MIT, Boston. Dynamic Resource Allocation in Cloud Computing.

PROFESSIONAL EXPERIENCE

- **Georgia Institute of Technology**, Graduate Research Assistant, Aug. 2017 - Present. *Working on bridging the gap between optimization and decision-making under uncertainty. Modeling online and dynamic problems, inspired by application in cloud computing and resource allocation and presenting efficient solutions with strong guarantees.*
- **Facebook, Inc.**, Software Engineer Intern, Systems and Infrastructure (PhD), May. - Aug. 2020. *Worked with the Network Modeling team under the guidance of Satyajeet Singh Ahuja. Project involved identification of essential groups of links needed to update Facebook network. Used Mixed-Integer Programming (MIP) to detect optimal groups.*
- **Center for Mathematical Modeling, Universidad de Chile**, Engineering Internship III, Jan. - Feb. 2016. *Python implementation of a chemical reactions model using directed hypergraphs. Implementation of backtracking algorithm to find all possible destiny-source chemical reactions.*
- **Fundación Ciencia & Vida, dlab**, Engineering Internship I & II, Jan. - Feb. 2014 & Dec. 2014 - Jan. 2015. *Study and simulation of chemical reactions model with multiple compartments in parallel machines. Weak convergence guarantees of the stochastic process.*

TEACHING EXPERIENCE

Georgia Institute of Technology

- ISyE2027, Probabilities with Applications (TA, Undergraduate course, Fall 2017).
- ISyE6663, Nonlinear Optimization (TA, Graduate course, Spring 2020).
- ISyE6662, Discrete Optimization (TA, Graduate course, Spring 2021).

Universidad de Chile

- Two Clocks Workshop (Taller Los Dos Relojes in Spanish, Tutor, 2016 - 2017).
- MA2001 Multivariable Calculus (TA, Undergraduate course, Spring 2014).
- MA2002 Advanced Calculus (TA, Undergraduate course, Spring 2015).
- MA3705 Combinatorial Algorithms (TA, Undergraduate course, Spring 2016).
- MA5201 Calculability and Complexity (TA, Graduate course, Fall 2015, Fall 2016, Fall 2017).
- MA5505 Graph Theory (TA, Graduate course, Fall 2015).

Honors & Awards

- *Shabbir Ahmed Fellowship*, Industrial & Systems Engineer Fellowship For Excellence in Research, 2021.
- *Runner-up for the 2019 INFORMS Computing Society Student Paper Prize.*
- *Algorithm and Randomness Center* (ARC) and *Transdisciplinary Research Institute for Advancing Data Science* (TRIAD) fellowship, Georgia Institute of Technology 2019.
- *Tennenbaum Fellowship*, Georgia Institute of Technology 2017 - 2019.
- *Graduated with Highest Honors*, MS in Applied Mathematics, Final GPA 6.6/7.0, 2016.
- *Graduated with Highest Honors*, Mathematical Engineering, Final GPA 7.0/7.0, Major GPA 5.9/7.0.
- *São Paulo School of Advanced Science on Algorithms, Combinatorics and Optimization*, FAPESP Fellowship, University of São Paulo 2016.
- *Faculty of Physical and Mathematical Sciences Outstanding Student Award*, 2010, 2011 & 2015.
- *Beca de Equidad*, Complementary Scholarship for Undergraduate Program, Universidad de Chile 2010 - 2015.
- *Beca Bicentenario*, Government Scholarship for Undergraduate Program, Universidad de Chile 2010 - 2015.

Workshops & Conferences Attended

- MOPTA 2021, Aug. 2-4, 2021, Lehigh University, Bethlehem, PA.
- Mixed Integer Programming Workshop 2021, (Virtual) May 24-27, 2021.
- 24th International Conference on Artificial Intelligence and Statistics (AISTATS) (Virtual), April 13-15, 2021.
- XVI Summer School in Discrete Mathematics (Virtual), January 18 - 23, 2021. TA of Differential Privacy.
- SODA 2021 (Virtual), January 10 - 13, 2021.
- NeurIPS 2020 (Virtual), December 6 - 12, 2020.
- INFORMS Annual Meeting 2020 (Virtual), November 8 - 13, 2020.
- XV Summer School in Discrete Mathematics, January 6 - 10, 2020, Valparaiso, Chile. TA of the s-t TSP class.
- INFORMS Annual Meeting 2019, October 20 - 23, 2019, Seattle, WA.
- Mixed Integer Programming Workshop 2019, July 15 - 18, 2019, at MIT, Boston.
- Mixed Integer Programming Workshop 2018, June 18 - 21, 2018 at Clemson University, SC.
- XII Summer School in Discrete Mathematics, January 3 - 6, 2017, (ISCV).
- SUMA 2016, December 14 - 17, 2016. UV, USM, PUCV.
- São Paulo School of Advanced Science on ACO, July 18 - 29, 2016, University of São Paulo.
- XI Summer School in Discrete Mathematics, January 4 - 8, 2016, *Instituto de Sistemas Complejos de Valparaiso*.
- Workshop in Graph Theory, San Esteban, Chile, December 7 - 11, 2015.
- X Summer School in Discrete Mathematics, January 5 - 9, 2015, *Instituto de Sistemas Complejos de Valparaiso*.

Professional Service

- **INFORMS session chair**: Topics in cloud computing (2019). Advances in resource allocation under uncertainty (2021).
- **Journal Referee**: SIDMA (2018), Mathematical Programming (2020), SIOPT (2021)
- **Conference Reviewer**: AISTATS (2021), STOC (2021).
- **TA in Workshops**: Summer School in Discrete Mathematics Valparaiso, Chile: TA of the s-t TSP class, taught by Anke Van Zuylen (2020); TA of Introduction to Differential Privacy, taught by Katrina Ligett (2021).

References

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Georgia Institute of Technology.
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Alejandro Toriello,
Associate Professor at ISyE,
Georgia Institute of Technology.
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OTHER SKILLS

- **Programming skills:** Python: Gurobi/Xpress, NetworkX, Numpy, Scipy (Advanced); Java (Intermediate); MATLAB/Octave (Intermediate).
- **Languages:** Spanish (Native), English (Advanced).

Last updated September 3, 2021