

Juan José Miranda Bront

Curriculum Vitae (April 2022)

School of Business, Univ. Torcuato Di Tella
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Current Position

- 08/2016 – **Assistant Professor**, School of Business, Universidad Torcuato Di Tella, Argentina.
current
- 04/2015 – **Full-time Research Staff Member**, CONICET, Argentina.
current Category: Associate Researcher.
- 02/2022 – **Area advisor**, Accenture Applied Intelligence, Argentina.
current SME on Optimization and Analytics

Education

- 04/2007 – **Ph.D., Computer Science**, University of Buenos Aires, Argentina, Thesis: *Integer programming approaches to the Time Dependent Travelling Salesman Problem*. Advisors: Dra. Isabel Méndez-Díaz, Dra. Paula Zabala.
03/2012 Evaluation committee: Dr. Nicolás Stier, Dr. Cid Carvalho Da Souza, Dr. Daniele Vigo.
- 06/2001 – **Licenciado en Ciencias de la Computación (equiv. M.Sc. Computer Science)**, Department of Computer Science, School of Sciences, University of Buenos Aires, Argentina, Thesis: *A column generation algorithm for choice-based network revenue management*, Advisors: Dra. Isabel Méndez-Díaz, Dr. Gustavo Vulcano.
03/2007 Evaluation committee: Dra. Isabel Méndez-Díaz, Dra. Paula Zabala, Dr. Esteban Feuerstein

Research

Published Papers

- 2021 G. Lera-Romero, J. J. Miranda Bront, *A branch and cut algorithm for the time-dependent profitable tour problem with resource constraints*, European Journal of Operational Research 289(3), 879–896, 2021.
[\[doi:10.1016/j.ejor.2019.07.014\]](https://doi.org/10.1016/j.ejor.2019.07.014)
- 2020 G. Lera-Romero, J. J. Miranda Bront, F. Soulignac, *Linear edge costs and labeling algorithms: The case of the time-dependent vehicle routing problem with time windows*, Networks 76(1), 879–896, 2020.
[\[doi.org/10.1002/net.21937\]](https://doi.org/10.1002/net.21937)
- 2017 A. Montero, I. Méndez-Díaz, J. J. Miranda Bront, *An Integer Programming approach for the Time-Dependent Traveling Salesman Problem with Time Windows.*, Computers & Operations Research 88, 280–289, 2017.
[\[doi:10.1016/j.cor.2017.06.026\]](https://doi.org/10.1016/j.cor.2017.06.026)
- 2017 A. Montero, I. Méndez-Díaz, J. J. Miranda Bront, *An ILP-based local search for the VRP with pickup and deliveries*, Annals of Operations Research, 259(1-2): 327–350, 2017.
[\[doi:10.1007/s10479-017-2520-5\]](https://doi.org/10.1007/s10479-017-2520-5)
- 2017 M. Kulich, J. J. Miranda Bront, L. Preucil, *A Meta-heuristic based Goal-Selection Strategy for Mobile Robot Search in an Unknown Environment*, Computers & Operations Research 84, 178–187, 2017.
[\[doi:10.1016/j.cor.2016.04.029\]](https://doi.org/10.1016/j.cor.2016.04.029)

- 2017 J. J. Miranda Bront, B. Curcio, A. Montero, I. Méndez-Díaz, F. Pousa, P. Zabala *A cluster-first route-second approach for the Swap Body Vehicle Routing Problem*, *Annals of Operations Research*, 253(2): 935–956, 2017.
[doi:10.1007/s10479-016-2233-1]
- 2016 I. Méndez-Díaz, P. Zabala, J. J. Miranda Bront, *An ILP based heuristic for a generalization of the post-enrollment course timetabling problem*, *Computers & Operations Research* 76, 195–207, 2016.
[doi:10.1016/j.cor.2016.06.018]
- 2015 E. Malaguti, I. Méndez-Díaz, J.J. Miranda Bront, P. Zabala, *A branch-and-price algorithm for the (k, c) -coloring problem*, *Networks* 65(4), 353–366, 2015.
[doi:10.1002/net.21579]
- 2014 J. J. Miranda Bront, I. Méndez-Díaz, P. Zabala, *Facets and valid inequalities for the time-dependent travelling salesman problem*, *European Journal of Operational Research*, Vol. 236(3), 891–902, 2014.
[doi:10.1016/j.ejor.2013.05.022]
- 2014 I. Méndez-Díaz, J. J. Miranda Bront, G. Vulcano, P. Zabala, *A Branch-and-Cut Algorithm for the Latent-Class Logit Assortment Problem*, *Discrete Applied Mathematics*, Vol. 164(1), 246–263, 2014.
[doi:10.1016/j.dam.2012.03.003]
- 2009 J. J. Miranda Bront, I. Méndez-Díaz, G. Vulcano, *A column generation algorithm for choice-based network revenue management*, *Operations Research*, Vol. 57(3), 769–784, 2009.
[doi:10.1287/opre.1080.0567]

Proceedings of refereed conferences

- 2021 N. García Aramouni, J. J. Miranda Bront, *Sports scheduling and managerial aspects: insights for Argentina's National Basketball League*, *Proceedings of the MathSport International 8 Conference (virtual)*.
[link to proceedings]
- 2018 G. Lera Romero, J. J. Miranda Bront, *Integer programming formulations for the time-dependent elementary shortest path problem with resource constraints*, *Electronic Notes on Discrete Mathematics*, *Proceedings of the EUROALIO 2018*.
[doi:10.1016/j.endm.2018.07.008]
- 2017 A. Montero, I. Méndez-Díaz, J. J. Miranda Bront, *An Integer Programming approach for the Time-Dependent Traveling Salesman Problem with Time Windows*, *First Triennial Conference of the INFORMS Transportation Science and Logistics Society, Chicago, United States, July 2017*, Extended Abstract.
- 2014 I. Méndez-Díaz, J. J. Miranda Bront, P. Toth, P. Zabala, *A Branch-and-Cut algorithm for the time-depenent travelling salesman problem with time windows*, *ALIO/EURO 2014*, Montevideo, Uruguay, December 2014, Extended Abstract.
- 2014 I. Méndez-Díaz, P. Zabala, J. J. Miranda Bront, *An ILP based heuristic for a generalization of the post-enrollment course timetabling problem*, *ALIO/EURO 2014*, Montevideo, Uruguay, December 2014, Extended Abstract.
- 2014 M. Kulich, L. Preucil, J. J. Miranda Bront, *Single Robot Search for a Stationary Object in an Unknown Environment*, *2014 IEEE International Conference on Robotics and Automation (ICRA 2014)*, Hong Kong, China, January 2014.
[doi:10.1109/ICRA.2014.6907716]
- 2013 E. Malaguti, I. Méndez-Díaz, J.J. Miranda Bront, P. Zabala, *(k, c) -coloring problem via column generation*, *Electronic Notes on Discrete Mathematics*, 2013, Vol. 41, 447–454.
[doi:10.1016/j.endm.2013.05.124]

- 2011 I. Méndez-Díaz, J. J. Miranda Bront, P. Toth, P. Zabala, *Infeasible path formulations for the time-dependent TSP with time windows*, Proceedings of the 10-th Cologne-Twente Workshop on graphs and combinatorial optimization, 198-203, Italia, 2011, Extended Abstract. [\[link\]](#)
- 2010 J. J. Miranda Bront, I. Méndez-Díaz, P. Zabala, *An integer programming approach for the Time-Dependent Travelling Salesman Problem*, Electronic Notes on Discrete Mathematics, 2010, Vol. 36, 351-358. [\[doi:10.1016/j.endm.2010.05.045\]](#)
- 2010 I. Méndez-Díaz, J. J. Miranda Bront, G. Vulcano, P. Zabala, *A Branch-and-Cut Algorithm for the Latent Class Logit Assortment Problem*, Electronic Notes on Discrete Mathematics, 2010, Vol. 36, 383-390. [\[doi:10.1016/j.endm.2010.05.049\]](#)
- 2008 J. J. Miranda Bront, I. Méndez-Díaz, *A Cut and Branch algorithm for the Time-Dependent Travelling Salesman Problem*, VI ALIO/EURO Workshop on Applied Combinatorial Optimization, Buenos Aires, Argentina, 2008, Extended Abstract.

Working Papers

- 2020 G. Lera-Romero, J. J. Miranda Bront, F. Soullignac, *Dynamic programming for the time-dependent traveling salesman problem with time windows*. Minor revision, INFORMS Journal of Computing. [\[draft\]](#)
History: Submitted: 01/2020; Revised: 09/2020; Second review received: 09/2021; Revised 01/2022; Minor revision 04/2022.
- 2021 G. Lera-Romero, J. J. Miranda Bront, F. Soullignac, *A Branch-Cut-and-Price Algorithm for the Time-Dependent Electric Vehicle Routing Problem with Time Windows*. To be submitted to the European Journal of Operational Research on 05/2022. [\[draft\]](#)
- 2021 A. Montero, I. Méndez-Díaz, J. J. Miranda Bront, *Solving the Traveling Salesman Problem with release dates via branch-and-cut*. Submitted to the EURO Journal on Transportation and Logistics. [\[draft\]](#)

Ongoing Research

- 2022 N. García Aramouni, J. J. Miranda Bront, *Sports scheduling and managerial aspects: insights for Argetina's National Basketball League*. Target journal: EJOR, JORS. Expected by 05/2022.
- 2022 J. J. Zunino Montes, J. J. Miranda Bront, *Estimating travel time functions via Mixed Integer Linear Programming*.
- 2022 G. Lera-Romero, J. J. Miranda Bront, L. Veelenturf, *Integrating routing and assignment problems to handld long tail long-tail customers in first mile logistics*.

Presentations

- 2021 G. Lera-Romero, J. J. Miranda Bront, F. Soullignac, *A Branch-Cut-and-Price Algorithm for the Time-Dependent Electric Vehicle Routing Problem with Time Windows*, 9th INFORMS Transportation Science and Logistics Society Workshop (Virtual), Indian Institute of Management Ahmedabad, India. [\[link to conference schedule\]](#)
- 2020 A. Montero, I. Méndez-Díaz, J. J. Miranda Bront, *An Integer Programming approach for the Traveling Salesman Problem with release dates and completion time minimization.*, International Conference on Computational Logistics 2020 (ICCL 2020), virtual.

- 2020 G. Lera-Romero, J. J. Miranda Bront, F. Soullignac, *Dynamic programming for the time-dependent traveling salesman problem with time windows.*, International Conference on Computational Logistics 2020 (ICCL 2020), virtual.
- 2019 G. Lera-Romero, J. J. Miranda Bront, F. Soullignac, *An Enhanced Branch and Price Algorithm for the Time-Dependent Vehicle Routing Problem with Time Windows*, VeRoLog 2019, Seville, Spain.
- 2018 I. Méndez-Díaz, J. J. Miranda Bront, G. Vulcano, P. Zabala, *CDLP-based bid prices for network revenue management*, INFORMS Annual Meeting 2018, Phoenix, United States.
- 2018 J. J. Miranda Bront, G. Lera Romero, *Integer programming formulations for the time-dependent elementary shortest path problem with resource constraints*, EUROALIO 2018, Bologna, Italy.
- 2016 A. Mosteiro, J. J. Miranda Bront, F. Pousa, *ILP formulations for the railway rescheduling problem under large disruptions*, ISCO 2016, Salerno, Italy.
- 2014 I. Méndez-Díaz, J. J. Miranda Bront, P. Toth, P. Zabala, *A Branch-and-Cut algorithm for the time-dependent travelling salesman problem with time windows*, ALIO/EURO 2014, Montevideo, Uruguay.
- 2014 I. Méndez-Díaz, P. Zabala, J. J. Miranda Bront, *An ILP based heuristic for a generalization of the post-enrollment course timetabling problem*, ALIO/EURO 2014, Montevideo, Uruguay.
- 2014 A. Montero, I. Méndez-Díaz, J. J. Miranda Bront, *An ILP-based heuristic for the VRP with pickups and deliveries*, 3rd International Symposium on Combinatorial Optimization (ISCO 2014), Lisbon, Portugal.
- 2011 I. Méndez-Díaz, J. J. Miranda Bront, P. Toth, P. Zabala, *Infeasible path formulations for the time-dependent TSP with time windows*, 10-th Cologne-Twente Workshop on graphs and combinatorial optimization, Frascati, Italy.
- 2010 J. J. Miranda Bront, I. Méndez-Díaz, P. Zabala, *An integer programming approach for the Time-Dependent Travelling Salesman Problem*, International Symposium on Combinatorial Optimization (ISCO 2010), Hammamet, Tunisia.
- 2010 I. Méndez-Díaz, J. J. Miranda Bront, G. Vulcano, P. Zabala, *A Branch-and-Cut Algorithm for the Latent Class Logit Assortment Problem*, International Symposium on Combinatorial Optimization (ISCO 2010), Hammamet, Tunisia.
- 2010 J. J. Miranda Bront, Isabel Méndez-Díaz, Paula Zabala, *An Integer Programming Approach for the Time-dependent TSP*, ALIO-INFORMS 2010, Buenos Aires, Argentina.
- 2009 J. J. Miranda Bront, I. Méndez-Díaz, P. Zabala, *An integer programming approach for the time dependent travelling salesman problem*, 23rd European Conference on Operational Research, Bonn, Germany.
- 2009 I. Méndez-Díaz, J. J. Miranda Bront, G. Vulcano, P. Zabala, *A branch and cut algorithm for the product assortment problem under customer choice behavior*, 23rd European Conference on Operational Research, Bonn, Germany.
- 2008 J. J. Miranda Bront, I. Méndez-Díaz, G. Vulcano, *Un algoritmo de generación de columnas para la gestión de ingresos bajo preferencias de clientes*, XIV CLAIO, Cartagena de Indias, Colombia.
- 2008 I. Méndez-Díaz, J. J. Miranda Bront, G. Vulcano, P. Zabala, *Product Assortment Under Choice Behaviour*, INFORMS Annual Meeting 2008, Washington D.C., United States.
- 2006 J. J. Miranda Bront, I. Méndez-Díaz, G. Vulcano, *A column generation algorithm for the choice-based linear programming model for network revenue management*, 19th International Symposium on Mathematical Programming, Rio de Janeiro, Brazil.

Invited Seminars

- 2021 *A Branch-Cut-and-Price Algorithm for the Time-Dependent Electric Vehicle Routing Problem with Time Windows*, Supply Chain & Optimization Technologies (SOT) group, Mercado Libre
- 2018 *Optimization techniques applied to distribution problems under congestion*, Eindhoven University of Technology, Netherlands
- 2015 *Traveling Deliveryman Problem applied to single-robot search in an unknown environment*, Faculty of Engineering, University of Bologna, Italy
- 2011 *Infeasible path formulations for the time-dependent TSP with time windows*, Faculty of Engineering, University of Bologna, Italy
- 2011 *An integer programming approach for the time-dependent TSP*, Faculty of Engineering, University of Reggio-Emilia, Italy.
- 2007 *A column generation algorithm for the choice-based network revenue management*, AGIFORS Annual Symposium, Bangkok, Thailand.

Honors and Awards

Research

- 2020 **Google Latin American Research Award 2020 (renewal)**, *Joint project with Gonzalo Lera-Romero and Francisco Soullignac.*
Award: Unrestricted gift of USD 14400 for the PhD student and USD 7500 for the faculty
- 2019 **Google Latin American Research Award 2019**, *Joint project with Gonzalo Lera-Romero and Francisco Soullignac.*
Award: Unrestricted gift of USD 14400 for the PhD student and USD 7500 for the faculty
- 2017 **Runner-up JAIIO EST 2017 - 20th National Thesis Contest**, *Agustín Mosteiro, Department of Computer Science, School of Sciences, University of Buenos Aires*, Thesis: ILP applied to the timetable rescheduling problem in railway disruption management. Advisors: J.J. Miranda-Bront, F. Pousa.
[\[link\]](#)
- 2014 **Runner-up VeRoLog Solver Challenge 2014**, *organized by VeRoLog (Working Group on Vehicle Routing and Logistics Optimization within EURO, the Association of the European Operational Research Societies) and PTV Group (www.ptv.de)*, Problem: develop a solution method for the *Swap Body Vehicle Routing Problem*, considering a time limit of ten minutes to solve medium and large real-world instances, Team Leader: J. J. Miranda Bront, Members: Brian Curcio, Isabel Méndez-Díaz, Agustín Montero, Federico Pousa, Paula Zabala.
[\[link\]](#)
- 2007 **Anna Valicek Medal 2007**, *Innovative Research in the area of Airline Operations Research. AGIFORS Annual Symposium 2007 - Bangkok, Thailand.*, J. J. Miranda Bront, I. Méndez-Díaz, G. Vulcano, *A column generation algorithm for choice-based network revenue management.*
[\[link\]](#)
- 2007 **Honorable mention, Sadosky Awards 2007, category CS research project**, Paper: J. J. Miranda Bront, I. Méndez-Díaz, G. Vulcano, *A column generation algorithm for choice-based network revenue management.*
[\[link\]](#)

Teaching

- 2020 **Runner-up Best Professors of the Master in Management + Analytics, School of Busines, Universidad Torcuato Di Tella.**
- 2019 **Runner-up Best Professors of the Master in Management + Analytics, School of Busines, Universidad Torcuato Di Tella.**
- 2018 **Alfredo Canavese Distinguished Teaching Award, Universidad Torcuato Di Tella, First place among all undergraduate courses during the first semester, 2018.**
[\[link\]](#)
- 2018 **Runner-up Best Professors of the Master in Management + Analytics, School of Busines, Universidad Torcuato Di Tella.**
- 2017 **Finalist of the Alfredo Canavese Distinguished Teaching Award, Universidad Torcuato Di Tella, Teaching evaluation among the top ten for the second semester of 2017.**
- 2016 **Finalist of the Alfredo Canavese Distinguished Teaching Award, Universidad Torcuato Di Tella, Teaching evaluation among the top ten for the second semester of 2016.**
- 2016 **Runner-up Best Undergraduate Professors 2016, School of Busines, Universidad Torcuato Di Tella.**

Research Stays

- 06/2018 Operations Planning Accounting and Control, Eindhoven University of Technology. Joint research with Prof. Lucas Veelenturf on real-time railway rescheduling strategies.
- 06/2015 Intelligent Mobile Robotics Group, Czech Technical University in Prague. Joint interdisciplinary project with Dr. Miroslav Kulich on applying optimization techniques in the context of Autonomous Mobile Robotics.
- 09/2010 – DEIS, University of Bologna. Research stay under the supervision of Prof. Paolo Toth. The topic of the project involved the study of exact algorithms for Time-Dependent Vehicle Routing Problems.
- 03/2011

Teaching Experience

- 08/2016 – **Assistant Professor**, *School of Business, Universidad Torcuato Di Tella, Argentina*, Courses: Computer Science Fundamentals, Introduction to Data Analysis, Decision Models (graduate).
- 03/2011 – **Head Teaching Assistant**, *Department of Computer Science, School of Sciences, University of Buenos Aires, Argentina*, Courses: Numerical Analysis, Operations Research.
- 07/2016
- 03/2005 – **Teaching Assistant**, *Department of Computer Science, School of Sciences, University of Buenos Aires, Argentina*, Courses: Numerical Analysis, Operations Research.
- 02/2011

Consulting Experience

- 2020 – 2021 **Accenture Argentina**, *Vehicle routing for fuel distribution.*
Roles: Subject-Matter Expert (SME)

Summary: Large scale optimization project for the fleet management and the planning of daily operations for a top Oil& Gas industry with 2500+ vehicles. The project required initially the immersion of a local team into an ongoing project, including the takeover of the project and of the first release of a complex optimization module (combining Integer Programming and heuristics). Then, the solution was tailored based on new requirements from the client and deployed to cover operations nationwide. My responsibilities included the design of the immersion strategy, including the assessment and the survey on the existing solution. After the takeover, I worked on the modelling and the re-design of some components due to consider new requirements. I also supervised the deployment of the solution and provided support and QA for issues arising in the production environment.

Managerial contribution: improvement in the decision making process; insights regarding fleet usage on specific locations

Technical contribution: implementation and adaptations of a complex routing solution tailored to the client needs

2020 **Accenture Argentina**, *Tactical planning for large scale supply chain network optimization in online retailing.*

Roles: Subject-Matter Expert (SME)

Summary: Consulting project for a top Latinamerican marketplace to reshape and automate the decision making process of the logistic network at a tactical level. The project involved the development of an optimization module to tackle a multiperiod planning problem having an extremely large number of SKUs, with the decisions focusing on the distribution, the storage and the overall management of the network capacity with a mid-term horizon, that was integrated with a forecasting module to provide an end-to-end solution. Due to the large scale of the problem, the solution consisted in a hybrid approach. My responsibilities included the design of the overall strategy, including the mathematical modelling (Integer Programming) and the algorithmic decisions, as well as validating and challenging business constraints and assessing the QA of the solution.

Managerial contribution: improvement in the internal decision making process; some specific points in the network were overstocked to fulfill delivery requirements.

Technical contribution: a scalable tailored optimization module successfully integrated in an end-to-end solution

Estimated impact: significant reductions in distribution and holding costs

2019 **Accenture Argentina**, *Analytics for Scheduling Commercials on Broadcast Television.*

Roles: Subject-Matter Expert (SME)

Summary: Consulting project for a top national broadcast television network. The main objective involved the development of a Decision Support Module based on analytics and optimization techniques to maximize revenue collected by scheduling advertising during commercial breaks. The project was formulated as a PoC with data, ratings and forecasts based on real metrics to conduct a backtesting and assess regarding the improvements generated by the new approach. My responsibilities included the mathematical modeling (Integer Programming), the design of the solution approach, validating and challenging business constraints, proposing actions and experiments for QA, the evaluation of results and the management of the project from a methodological and algorithmic standpoint.

Managerial contribution: current manual process is highly ineffective and requires human-intensive activities to construct a feasible schedule; solutions missing business key constraints

Technical contribution: prototype based on analytics for scheduling advertisings; mathematical model; solution based on mathematical modelling and integer programming

Estimated impact: increase of 6-10% in revenue; opportunities to improve the business process with potential leading to further gains

- 2018 **Accenture Argentina**, *Analytics for Supply Chain Optimization in the energy industry*.
Roles: Subject-Matter Expert (SME)
Summary: Consulting project for a global manufacturer and supplier of steel pipes for the energy industry to redesign the decision making process focusing on the logistics. The main objective involved the development of an integrated, multi-period, Decision Support Module based on analytics and optimization techniques that can be integrated with their current supply planning tools. In addition, we conducted a PoC with data and forecasts from real operations to provide evidence and support regarding the benefits of the new process. I was in charge of the mathematical modeling, design of the solution approach, validate and challenge business constraints, propose actions and experiments for QA, evaluate results from the PoC.
Managerial contribution: current decentralized process incurs in excessive transportation costs and requires overstocking policies to meet demand
Technical contribution: analytics module for tactical and operational planning; mathematical model of the supply chain; solution based on mathematical modelling and integer programming
Estimated impact: reduction of 20% of direct and indirect logistics costs
- 2017 **Gire S.A. (Rapipago)**, *Analytics techniques applied to cash management logistics: operations and data analysis*.
Roles: Project Leader, consultant, analyst.
Summary: We evaluated the efficiency of the operations behind the problem of moving physical cash collected at the agencies to their final destinations (e.g., banks) through the underlying logistic network. As a result, we proposed to implement a Decision Support System (DSS) built upon machine learning and advanced optimization techniques to generate end-to-end tactical and operational plans. Activities:
Managerial contribution: current process has a myopic, non-integrated view of the logistic network, under utilizes the network storage capacity and incurs in excessive transportation costs
Technical proposal: improve the process by accounting for network effects on local decision; plan in advance and align costs with investments possibilities; incorporate ML for forecasting and analytics for decision making
Estimated impact: reduction of 10-15% of direct and indirect logistics costs; significant improvements in QoS; improved and traceable process.
- 2015 **Belgrano Cargas y Logística**, *Capacity estimation for strategic decisions in freight railway systems*.
Role: Project Leader, Analyst.
Summary: Devise a Decision Support System (DSS) to better assess the impact of strategic decision and long-term infrastructure investments, capturing the nature of BCyL business model and the operational constraints.
Managerial contribution: real impact of infrastructure investments are better evaluated by accounting for detailed operations and business rules than more general, aggregated approaches
Technical proposal: implement an analytics-based module to generate tactical planning; evaluate strategic decisions by generating detailed what-if scenarios based on projected data; adapt current manual planning process
- 2012 **University of San Andrés**, *Feasibility analysis of an optimization tool for a real-world university timetabling problem*.
Role: Analyst.

Summary: Requirements analysis and feasibility study to develop an optimization module for the automatic generation of the timetable for the semester.

Managerial contribution: inefficient use of resources due to manual process; key element within the organization depends exclusively on one person

2012 **Univeristy of San Andrés**, *Development of an optimization tool for a university timetabling problem.*

Role: Analyst, developer.

Summary: Implementation of an automated timetable generator based on optimization techniques.

Managerial contribution: process does not depend on one stakeholder

Impact: timetable construction process time reduced from 2 months to 48 hours; complains by students reduced aprox. 80%

Specialized Courses

2016 **Harvard Business School**, *Global Colloquium on Participant-Centered Learning.*

2010 **ISCO 2010 Spring School**, *Cutting plane methods for integer and combinatorial optimization*, Andrea Lodi, Gerard Cornéjous and Pierre Bonamin.

Science Popularization

08/2014 – 12/2015 Head of Popularization Activities, Department of Computer Science, School of Sciences, University of Buenos Aires. Coordinator of a group of 10+ participants in charge of popularization activities, including graduate and undergraduate students.

2012 – 2013 Coordinator of *Computer Science Tutorials*, consisting of eight-week courses focused on teaching programming basics to high school students.

2005 Member of the Organizing Committee of the *Escuela de Ciencias Informáticas 2005*, Department of Computer Science, Schol of Sciences, University of Buenos Aires.

Mentoring Activities

Ph.D.

2018 – 2022 **Advisor**, *Gonzalo Lera Romero, Ph.D. Candidate, Computer Science, University of Buenos Aires*, Thesis: Vehicle Routing Problems with Time-Dependent Travel Speeds.

2015 – 2022 **Co-advisor**, *Agustín Montero, Ph.D. Candidate, Computer Science, University of Buenos Aires*, Advisor: Dr. Isabel Méndez-Díaz, Thesis: Enhanced integer linear programming techniques for vehicle routing problems.

Thesis defended on 03/2022. Grade: Sobresaliente (Outstanding)

M.Sc.

2021 – 2022 (expected) **Co-advisor**, *Marcos Blufstein, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: Dr. Francisco Soullignac, Thesis: An enhanced algorithm for the TSP with drones.

2021 – 2022 (expected) **Advisor**, *Juan José Zunino, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: On the estimation of travel time functions using Mixed Integer Linear Programming.

2020 – 2022 (expected) **Advisor**, *Matías Albinati, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: Solving the Exam Timetabling Problem with clustering preferences at UTDT vía Integer Programming.

2020 – 2022 (expected) **Advisor**, *Marco Gonzalez Prieto, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: Designing last-mile logistic networks with roaming delivery centers.

- 2020 – 2021 **Advisor**, *Pablo Piccoli-Bornia, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: Assessing the impact of jurisdictional constraints in police operations vía Analytics.
Grade: Approved
- 2019 – 2021 **Advisor**, *Jonás Levy, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: M.Sc. Gonzalo Lera-Romero, Thesis: An enhanced Branch-and-Price algorithm for the VRP over road networks.
Grade: 10/10
- 2019 – 2021 **Advisor**, *Brian Bohe, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: M.Sc. Gonzalo Lera-Romero, Thesis: A Branch-and-Price algorithm for the VRP with locker boxes and variable capacity.
Grade: 10/10
- 2017 – 2021 **Advisor**, *Gastón Requeni, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: Dr. Isabel Méndez-Díaz, Thesis: Methods for the integrated timetable and crew rescheduling problem in railway disruption management.
Grade: 10/10
- 2019 – 2020 **Advisor**, *Diego Voulimnot, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: Optimization algorithms applied to sustainable waste collection.
Grade: Approved
- 2019 – 2020 **Advisor**, *Juan Pablo Santos, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: Large scale General Assignment Problems applied to logistic network design for e-commerce operations.
Grade: Approved
- 2019 – 2020 **Advisor**, *Nicolás García Aramouni, MiM + Analytics, Universidad Torcuato Di Tella*, Thesis: Designing context-aware schedules for the LNB via Integer Linear Programming.
Grade: Approved
- 2019 – 2020 **Advisor**, *Gustavo Hurovich, Department of Mathematics, School of Sciences, University of Buenos Aires*, Co-advisor: Dr. Isabel Méndez-Díaz, Thesis: Computational methods for Pricing Equilibria in Auction Markets.
Grade: 10/10.
- 2016 – 2018 **Advisor**, *Federico Canay, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: Dr. Isabel Méndez-Díaz, Dr. Paula Zabala, Thesis: Train network design problem.
Grade: 10/10.
- 2016 – 2018 **Advisor**, *Santiago Aboy Solanes, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: M.Sc. Agustín Montero, Thesis: Inventory Routing Problem.
Grade:10/10.
- 2016 – 2017 **Advisor**, *Gonzalo Lera Romero, Department of Computer Science, School of Sciences, University of Buenos Aires*, Thesis: Integer programming formulations for the time-dependent elementary shortest path problem with resource constraints.
Grade: 10/10.
- 2015 – 2017 **Advisor**, *Agustín Mosteiro, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: M.Sc. Federico Pousa, Thesis: ILP applied to the timetable rescheduling problem in railway disruption management.
Grade: 10/10.
- 2013 – 2014 **Advisor**, *Agustín Montero, Department of Computer Science, School of Sciences, University of Buenos Aires*, Co-advisor: Dr. Isabel Méndez-Díaz, Thesis: An ILP-based local search for the VRP with pickup and deliveries.
Grade: 10/10.

Funding

- 2019 – 2021 Logistic planning under congestion: models, algorithms and implementations, PICT 2018-2961, funded by the Ministry of Science, Argentina. Role: Principal Investigator.
- 2018 – 2020 Time-Dependent Vehicle Routing Problems, PICT 2016-2677, funded by the Ministry of Science, Argentina. Role: Co-director.
- 2014 – 2016 ILP-based algorithms for Vehicle Routing Problems, PICT Joven 2013-2460, funded by the Ministry of Science, Argentina. Role: Principal Investigator.
- 2012 – 2015 Time-Dependent Vehicle Routing Problems, PICT 2011-0817, funded by the Ministry of Science, Argentina. Role: Member.
- 2011 – 2014 Generalization of the Traveling Salesman Problem, UBACyT 20020100100666, funded by the University of Buenos Aires. Role: Member.
- 2007 – 2010 Revenue Management under Customer Choice Behavior, PICT RAICES, funded by the Ministry of Science, Argentina. Role: Member.
- 2008 – 2010 Optimization Problems in Transportation and Communication Networks, UBACYT X143 2008-2010, funded by the University of Buenos Aires. Role: Member.
- 2007 – 2010 Optimization Problems in Transportation and Communication Networks, PICT 1600, funded by the Ministry of Science, Argentina. Role: Member.
- 2005 – 2007 Models and Techniques for Combinatorial Optimization Problems, UBACYT X212 2004-2007, funded by the University of Buenos Aires. Role: Member.

Other information

Fellowships

- 04/2012 – Postdoctoral Fellowship, CONICET. Advisors: Dr. Paolo Toth (DEIS, University of Bologna),
03/2015 Dra. Paula Zabala (DC, FCEyN-UBA). Department of Computer Science, School of Sciences, University of Buenos Aires.
- 09/2010 – Phd. Sandwich Scholarship, ERASMUS Mundus External Cooperation Window Lot 16.
02/2011 Advisor: Dr. Paolo Toth (DEIS, University of Bologna). Operations Research Group, University of Bologna.
- 04/2010 – Ph.D. Fellowship, CONICET. Advisor: Dra. Isabel Méndez-Díaz (DC, FCEyN - UBA).
03/2012 Department of Computer Science, School of Sciences, University of Buenos Aires.
- 04/2007 – Ph.D. Fellowship, University of Buenos Aires. Advisor: Dra. Isabel Méndez-Díaz (DC,
03/2010 FCEyN - UBA). Department of Computer Science, School of Sciences, University of Buenos Aires.
- 04/2005 – Undergraduate Research Fellowship, University of Buenos Aires. Advisor: Dra. Isabel
09/2006 Méndez-Díaz (DC, FCEyN - UBA). Department of Computer Science, School of Sciences, University of Buenos Aires.
- 04/2005 – Research Assistant, Universidad Torcuato Di Tella. Advisor: Dr. Gustavo Vulcano. Project:
12/2006 Estimation of Customer Choice Behavior.

Scientific Evaluation Activities

- 2021 **Member of the Programme Committee of the Joint ALIO/EURO International Conference 2021.**
- 2017 **Member of the Programme Committee of the Argentinean Symposium of Operational Research, 45 JAIIO.**
- 2016 **Chair of the Argentinean Symposium of Operational Research, 45 JAIIO.**

2013 **Member of the Programme Committee of OPTIMA 2013.**

2008 **Member of the Organizing Committee of the Joint ALIO/EURO International Conference 2008.**

Journals, Transportation Science (*INFORMS*, 2011-2012, 2020-), Expert Systems with Applications (*Elsevier*, 2014), RAIRO-Operations Research (*Cambridge University Press*, 2014-), Transportation Research Part E (*Elsevier*, 2014-2018), European Journal of Operational Research (*Elsevier*, 2015-), Computers and Operations Research (*Elsevier*, 2017-), International Transactions on Operations Research (*Wiley*, 2017-), Operations Research (*INFORMS*, 2018), MSOM (*INFORMS*, 2018), *Annals of Operations Research* (*Springer*, 2019-), *Discrete Optimization* (*Elsevier*, 2020-), *Journal of Scheduling* (*Springer*, 2020-), *Omega* (*Elsevier*, 2021-).

Conferences and Workshops, SBPO 2011, 2013, 2014, 2015, 2016 (*Simposio Brasileño de Investigación Operativa*); LAGOS'11 - VI Latin-American Algorithms, Graphs and Optimization Symposium;.

Personal Information

Born in Buenos Aires, September 30th, 1981. Married, father of two.