Lizeth Carolina Riascos-Álvarez
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Ph.D. candidate in Industrial Engineering
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Education

University of Toronto, Canada *2018-2023*
Ph.D. in Industrial Engineering, Advisors: Dionne Aleman and Merve Bodur

Universidad de Nuevo León, Mexico *2015-2017*
Masters in Systems Engineering, Advisor: Roger Ríos-Mercado

Universidad Nacional, Colombia *2008-2013*
Bachelor in Industrial Engineering

Publications

A Branch-and-Price Algorithm Enhanced by Decision Diagrams for the Kidney Exchange Problem *2020*
Lizeth Carolina Riascos-Álvarez, Merve Bodur and Dionne M. Aleman
Available at [arXiv]. To appear in [MSOM]

A Feasibility-Seeking Approach to Two-stage Robust Optimization in Kidney Exchange *2022*
Lizeth Carolina Riascos-Álvarez, Dionne M. Aleman and Merve Bodur
Available at [arXiv]

Works in Progress

Planning for the Worst-Case Transplant Cancellations in Kidney Exchange *2023*
Lizeth Carolina Riascos-Álvarez, Merve Bodur and Dionne M. Aleman

Conference Presentations

A Defender-Attacker-Defender Approach To Robust Optimization for The Kidney Exchange Problem With Non-Homogeneous Uncertainty *2022/Canada*
CORS Annual Conference

A Lagrangian-based Branch and Bound for the Kidney Exchange Problem *2021/Canada*
CORS Annual Conference

A Branch-and-Price Algorithm Enhanced by Decision Diagrams for the Kidney Exchange Problem *2020 / USA*
INFORMS Annual Meeting

Logic-based Benders Decomposition for the Kidney Exchange Problem *2019 / USA*
INFORMS annual meeting

Posters

A Lagrangian-based Branch-and-bound Algorithm Enhanced by Multi-valued Decision Diagrams for the Kidney Exchange Problem *2020/USA*
Mixed Integer Programming Workshop (Online)

Research Experience

Researcher at Medical Operations Research Laboratory *2018-Present*
University of Toronto. Director: Dionne Aleman

Visiting Scholar *2016*
The University of Texas at Austin. Director: Jonathan F. Bard

Professional Experience

Business Intelligence Analyst at IDATA S.A.S. *April-December, 2014 / Colombia*

• Designed algorithmic models based on structured data for determining optimal payment policies and marketing strategies.
• Conducted SQL queries and data cleansing to provide stakeholders with reports and updated statistics.

Logistics Division Intern at AUTECO S.A *June-December, 2013 / Colombia*
• Based on historic data, I created dispatch policies of automotive parts so as to minimize transport costs and assure timely delivery service.

Teaching Assistanships

Business Process Engineering *Fall, 2021*
University of Toronto

Mathematical Programming *Winter, 2020/2021*
University of Toronto

Statistics II *Winter, 2011/2012*
Universidad Nacional de Colombia

Awards

Peri Family Graduate Scholarship in Healthcare Engineering *2020*
University of Toronto

MIP Workshop Travel Grant *USA, 2020*
MIP Workshop

MIE Graduate Student Conference Grant *2019/2020*
University of Toronto

Fulbright Scholarship *2017*
Fulbright Colombia-USA

Best Undergraduate Thesis in Industrial Engineering *2014*
Universidad Nacional de Colombia

Software Development

Project Name	*Description*	*Languages*	
State-of-the-art Branch-and-Price Algorithm	Large-scale optimization, customizable solution, 2000+ vertices	C++, Python	[arXiv]
State-of-the-art Two-Stage Robust Optimization	Best response under worst-case network disruption/plan deviation, 100+ vertices	C++, Python	[arXiv]

Productized Works

In [arXiv], I designed and implemented the first branch-and-price algorithm, a large-scale optimization methodology, to assign donors to recipients considering long human-donation chains. In KidneyExchange.jl, a new version based on our algorithm was proposed and it is now publicly available as a Julia package.

Programming

Languages: C++, Python, Java, Matlab, R, VBA
Optimization: Gurobi, IBM CPLEX
Other: Latex, Git, Linux

Extracurricular

President of the student club The Operations Research Challenge (TORCH) *2019 - Present*
University of Toronto. Website: orchallenge.org

Session Chair of Optimization in Healthcare - II *June, 2021*
Canadian Operations Research Society Annual Conference