Jorge A. Huertas

☎ +1(628) 946 9274 • ✉ huertas.ja@gatech.edu • in /jorgehuertas • Google Scholar • Website

▬▬▬ Profile

Ph.D. student with research interests in combining data analysis, mathematical modeling, computational simulation, and artificial intelligence to tackle problems in manufacturing, transportation, logistics, and communications systems.

▬▬▬ Education

Aug, 2020 – Present	**Ph.D. student in Operations Research. Georgia Institute of Technology** – Atlanta, GA.
Jun, 2024	M.Sc. in Operations Research. Georgia Institute of Technology – Atlanta, GA, USA.
Oct, 2016	M.Sc. in Industrial Engineering. Universidad de los Andes – Bogotá, Colombia.
Jan, 2016	Six Sigma (6σ) Black Belt. Arizona State University – Tempe, AZ, USA.
Mar, 2015	B.Sc. in Industrial Engineering. Universidad de los Andes – Bogotá, Colombia.
Mar, 2015	B.Sc. in Systems and Computing Engineering. Universidad de los Andes – Bogotá, Colombia.

▬▬▬ Publications by Research Streams

▬ Semiconductor Manufacturing

- [Journal] Constraint programming models for serial batch scheduling with minimum batch size. **Jorge A. Huertas** and Pascal Van Hentenryck. ***Operations Research Perspectives***. Sep, 2025. doi: [10.1016/j.orp.2025.100352](10.1016/j.orp.2025.100352)

- [Journal] Parallel batch scheduling with incompatible job families via constraint programming. **Jorge A. Huertas** and Pascal Van Hentenryck. ***IEEE Transactions on Semiconductor Manufacturing***. Aug, 2025. doi: [10.1109/TSM.2025.3601510](10.1109/TSM.2025.3601510)

▬ Transportation and Mobility

- [Preprint] MARTA Reach: pilot of an on-demand multimodal transit system in Atlanta. Pascal Van Hentenryck, Connor Riley, Anthony Trasatti, Hongzhao Guan, Tejas Santanam, **Jorge A. Huertas**, Kevin Dalmeijer, Kari Watkins, Juwon Drake, Samson Baskin. Oct, 2023. ***Under review on INFORMS Journal on Applied Analytics*** doi: 10.48550/arXiv.2308.02681

- [Journal] Level of traffic stress-based classification: a clustering approach for Bogotá, Colombia. **Jorge A. Huertas**, Alejandro Palacio, Marcelo Botero, Germán A. Carvajal, Thomas Van Laake, Diana Higuera-Mendieta, Sergio Cabrales, Luis A. Guzmán, Olga L. Sarmiento, and Andrés L. Medaglia. ***Transportation Research Part D: Transport and Environment***. Volume 85, 2020, p. 102420. doi: [10.1016/j.trd.2020.102420](10.1016/j.trd.2020.102420)

▬ Evacuation Planning

- [Conference] Large-scale zone-based evacuation planning: generating convergent and non-preemptive evacuation plans via column generation. **Jorge A. Huertas** and Pascal Van Hentenryck. *In the Proceedings of the 55th* ***Hawaii International Conference on System Sciences***. Jan, 2022. doi: 10.24251/HICSS.2022.307

- [Journal] Pedestrian evacuation planning: unveiling evacuation routes via column generation. Nicolás Cabrera, **Jorge A. Huertas,** and Andrés L. Medaglia. ***EURO Journal on Transportation and Logistics***. Volume 11, 2022, 100089. doi: 10.1016/j.ejtl.2022.100089

- [Journal] Time estimation and hotspot detection in the evacuation of a complex of buildings: a mesoscopic approach and case study. Jony A. Zambrano, **Jorge A. Huertas**, Ethel Segura-Durán, and Andrés L. Medaglia. ***IEEE Transactions on Engineering Management***. Volume 67, Issue 3, 2020, p. 641 - 658. doi: [10.1109/TEM.2019.2960354](10.1109/TEM.2019.2960354)

- [Journal] Evacuation dynamics: a modeling and visualization framework. **Jorge A. Huertas**, Daniel Duque, Ethel Segura-Durán, Raha Akhavan-Tabatabaei, and Andrés L. Medaglia. ***OR Spectrum***. Volume 42, 2020, p. 661691. doi: [10.1007/s00291-019-00548-x](10.1007/s00291-019-00548-x)

▬ Telecommunication Networks

- [Journal] Addressing cooperation between mobile operators in telecommunication networks via optimization: a lexicographic approach and case study in Colombia. Francisco J. MacAllister, Laura Maya, **Jorge A. Huertas**, Carlos Lozano-Garzón, and Yezid Donoso. ***International Journal of Computers Communications & Control***. Volume 15, Issue 6, 2020, p. 1-16. doi: 10.15837/ijccc.2020.6.3975

- [Journal] Multi-objective tabu search to balance multihoming loads in heterogeneous wireless networks. **Jorge A. Huertas**, and Yezid Donoso. ***International Journal of Computers Communications & Control***. Volume 13, Issue 6, 2018, p. 956-971. doi: 10.15837/ijccc.2018.6.3360

▬ Health Care

- [Journal] The role of engineering in the COVID-19 pandemic (in Spanish). Paola Betancourt Ruiz, Marcela Guevara Suárez, Marylin Hidalgo, Silvia Restrepo, Erik Potdevin, **Jorge A. Huertas**, Andrés Medaglia, Juan Pedraza, Martha Cepeda, Pablo Arbeláez. *Revista de Ingeniería.* Volume 50, 2020, p. 8-13. doi: 10.16924/revinge.50.1

▬ Technical reports

- [Report] Two-stage analytics framework for warehouse location for Rappi: a case study in Ciudad de Mexico (Mexico). Ana María Quintero-Ossa, **Jorge A. Huertas**, Carlos Lozano-Garzón, Alejandro Correa-Bahnsen, Yezid Donoso, and Andrés L. Medaglia. *Technical report, COPA-2021-02.* Universidad de los Andes, 2021. url: http://hdl.handle.net/1992/50594

- [Report] Solving the time-ahead pricing of energy supply problem with nonlinear utility function for consumers via a bilevel optimization approach. **Jorge A. Huertas**, Daniel M. Eslava, Andrés F. Pardo, and Jaime E. González. *Technical report, COPA-2014-12.* Universidad de los Andes, 2015. url: http://hdl.handle.net/1992/31241

Awards

Advisor of the **best** Latin American undergraduate thesis	XV IISE Latin American Congress (Mar, 2018) – **San José, Costa Rica**. • Thesis: A Column Generation Approach for Evacuation Planning. • Authors: Nicolás Cabrera and **Jorge A. Huertas**
Winner COPPTA TEAM (Uniandes)	2014 AIMMS–MOPTA Optimization Modeling Competition. – **Lehigh University, PA, USA.** • Proposed a cut-based heuristic to solve the *time-ahead pricing of energy supply* bilevel optimization problem for the Borough of Madison, NJ, USA. • Competed against graduate teams from 22 international top universities.

Experience

Aug, 2020 – Present	**Graduate Research Assistant.** – Georgia Institute of Technology (Atlanta, GA). • Advisor: Dr. Pascal Van Hentenryck. • Research at AI4OPT combining **optimization** and **machine learning** to improve the supply chains for **semiconductor manufacturing**. • Worked at the Socially-Aware Mobility (SAM) lab developing and deploying MARTA Reach: Pilot of an on-demand multi-modal transit system in Atlanta, GA. • Plan large-scale evacuations at a strategic level using **optimization** algorithms (Column Generation, Benders Decomposition) and validate them using traffic **simulation**. • Teaching Assistant of the Seth Bonder Summer Camp on Computational and **Data Science**.
May – Aug, 2025	**Student Researcher**. **Google** – Planning Sciences Group - Global Networking – Google Cloud. • Plan the future of Google's core network. • Implemented a module in the main planning system that reduced up to 30% the number of iterations between optimization and traffic engineering models required for planning.
May, 2022 – May, 2024	Operations Research Engineering Intern – **Intel Corporation**, CPLG - Supply Chain Management and Decisions Science (SMDS) Team. • Developed a parameter tuning tool that improved the solve time performance of the master production scheduler up to 50%. • Developed tools that automated conflict analyses tasks for the master production scheduler, reducing time required to troubleshoot production issues. • Developed a Column-Generation decomposition for the production planning model that reduced the solve time performance of large-scale instances up to 40%. • Developed a machine learning-based discrete-event simulation model to improve the cycle time prediction in wafer fabs.
Aug, 2016 – Dec, 2020	**Researcher**. Center for Optimization and Applied Probability (COPA) – Industrial Engineering Department, Universidad de los Andes – Bogotá, Colombia. • Simulated the Gen-Core laboratory at Uniandes to optimize Covid-19 testing procedures. • Developed and implemented a **data-informed framework** to calculate the *Level of Traffic Stress* (LTS) of cyclists in Bogotá's urban road network using a multidisciplinary approach. • Supported infrastructure decisions of the Campus Management Department using analytics. ○ Improved evacuation dynamics in the historic city center with key infrastructure adequacy interventions, obtained and evaluated combining **optimization and simulation** models. ○ Improved vertical flow of people in large buildings inside the campus by evaluating elevator configurations and new flow patterns using simulation models.

Aug, 2016 – Dec, 2020	**Instructor**. Industrial Engineering Department, Universidad de los Andes – Bogotá, Colombia.

- Taught master lectures to approximately 200 students per semester:
  - Undergraduate courses on **optimization**, **simulation**, and data science.
  - Invited modules at graduate-level courses: **large-scale optimization** under uncertainty, **networks flows**, and **simulation**.
  - Youtube channel (Spanish): www.youtube.com/@jorge_huertas.
- Advised and co-advised academic and industry projects using *Analytics*, OR, and Six Sigma.

Mar, 2019 – Sep, 2019	**Analytics consultant**. Bogotá's Planning Department – Bogotá, Colombia

- Conceived, developed, and implemented a **data-driven methodology** (using machine learning and GIS data) to classify Bogotá's urban road network for the city's new Territory Plan.

Feb, 2018 – Jul, 2018	**Analytics Short-Term Consultant**. **The World Bank Group** – Bogotá, Colombia

- Worked with Bogotá's Mobility Department and *Despacio* foundation enhancing Bogotá's data infrastructure to monitor and promote non-motorized modes of transportation.

Conference talks

Jun, 2025	Parallel batch scheduling with incompatible job families via Constraint Programming. **Jorge A. Huertas** and Pascal Van Hentenryck. IISE Annual Meeting – **Atlanta**, GA, USA.
Oct, 2023	A column-generation approach for wafer fab scheduling. **Jorge A. Huertas**, Ashish Nemani, Zhenying Zhao, and Pascal Van Hentenryck. INFORMS Annual Meeting – **Phoenix**, AZ, USA.
Oct, 2021	Large-scale zone-based evacuation planning: Generating convergent and non-preemptive evacuation plans via column generation. **Jorge A. Huertas** and Pascal Van Hentenryck. INFORMS Annual Meeting – **Anaheim**, CA, USA.
Oct, 2019	Data-driven origin-destination matrix estimation in large-scale integrated public transport systems. Alejandro Palacio, Marcelo Botero, **Jorge A. Huertas**, Carolina Osorio, Andrés L. Medaglia, and Sergio Cabrales. INFORMS Annual Meeting – **Seattle**, WA, USA.
Oct, 2019	Analytics framework to improve building flow dynamics. **Jorge A. Huertas**, Valeria Puyo, Liseth Daniela Grosso, Daniel Cifuentes, Diego Monroy, Maurix Suárez, Andres L. Medaglia. INFORMS Annual Meeting – **Seattle**, WA, USA.
Jul, 2019	Multi-objective tabu search to balance multihoming loads in heterogeneous wireless networks. **Jorge A. Huertas** and Yezid Donoso. Metaheuristics International Conference (MIC) – **Cartagena**, Colombia.
Jul, 2018	Modeling evacuation dynamics. **Jorge A. Huertas**, Jony A. Zambrano, Nicolás Cabrera, Daniel Duque, Ethel Segura-Durán, Raha Akhavan-Tabatabaei,and Andrés L. Medaglia. EURO Annual Meeting – **Valencia**, España.
Oct, 2017	A mesoscopic model to evaluate the evacuation dynamics in a university campus. **Jorge A. Huertas**, Jony A. Zambrano, and Andrés L. Medaglia. INFORMS Annual Meeting – **Houston**, TX, USA.
Nov, 2016	Supporting evacuation decisions via network optimization. **Jorge A. Huertas**, Daniel Duque, Ethel Segura-Durán, Raha Akhavan-Tabatabaei, and Andrés L. Medaglia. INFORMS Annual Meeting – **Nashville**, TN, USA.

Software and Programming skills

Advanced	Java, Python, Visual Basic, Xpress-IVE, Simio, Gurobi, Meteor, HTML.
Intermediate	C++, R, ArcGIS, AIMMS, Ruby on Rails, SQL, React Native, OPL,LATEX.
Basic	CSS, JavaScript, C#

Languages and affiliations

Languages	• **Native:** Spanish	• **Fluent:** English
Affiliations	INFORMS, IISE, ASOCIO.	

Hobbies and more

2005 – Present	Basketball, Snowboarding & Surfing.
2020 – Present	Dj in Atlanta (GA) and Santa Cruz (CA).

- Soundcloud profile: www.soundcloud.com/jorge_huertas.
- Youtube channel: www.youtube.com/@jorge-huertas.

Jorge A. Huertas

📞 +1(628) 946 9274 • ✉ huertas.ja@gatech.edu • in/jorgehuertas • 🎓 Google Scholar • 🏠 Website