

Daniela Andrea Hurtado Lange

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EDUCATIONAL BACKGROUND

Ph.D. in Operations Research Georgia Institute of Technology – Atlanta, Georgia Advisor: Prof. Siva Theja Maguluri	<i>Expected July 2021</i>
Master of Science in Industrial Engineering Pontificia Universidad Católica de Chile – Santiago, Chile Advisor: Prof. Pedro Gazmuri	<i>July 2016</i>
Industrial Engineer with Diploma in Math Engineering Pontificia Universidad Católica de Chile – Santiago, Chile <i>Conferred with maximum distinction</i>	<i>July 2016</i>
Bachelor in Engineering Pontificia Universidad Católica de Chile – Santiago, Chile <i>Conferred with distinction</i>	<i>December 2013</i>

RESEARCH INTERESTS

Stochastic Processing Networks; Data center networks; Queuing theory; Drift method; Heavy-traffic analysis; Many-server heavy-traffic analysis

SCHOLARSHIPS AND AWARDS

Honorable mention at the Alice and John Jarvis research award Industrial and Systems Engineering Department Georgia Institute of Technology – Atlanta, Georgia	<i>Spring 2020</i>
ARC-TRIAD Student Fellowship Georgia Institute of Technology – Atlanta, Georgia	<i>Spring 2019</i>
Scholarship for graduate students in Chile and abroad, BECAS CHILE Conferred by Chilean government	<i>June 2018 to date</i>
Tennenbaum fellowship Industrial and Systems Engineering Department Georgia Institute of Technology – Atlanta, Georgia	<i>Fall 2016 to Fall 2018</i>

PUBLICATIONS

PUBLISHED IN JOURNALS

- [1] **Daniela Hurtado-Lange**, Siva Theja Maguluri (2020) “Transform methods for heavy-traffic analysis.” *Stochastic Systems*. ISSN 1946-5238 (online)

CONFERENCE PAPERS

- [1] **Daniela Hurtado-Lange**, Siva Theja Maguluri. “Heavy-traffic Analysis of the Generalized Switch under Multidimensional State Space Collapse,” *ACM SIGMETRICS 2020*. Abstract in *ACM SIGMETRICS Performance Evaluation Review 2019, Vol 47, No.2, Pages 36-38*.
Acceptance rate: 15%
* A preliminary version of this paper was presented in MAMA workshop at ACM SIGMETRICS 2019. Abstract available [here](#).

UNDER REVIEW

- [4] **Daniela Hurtado-Lange**, Siva Theja Maguluri. “Load balancing system under Join the Shortest Queue: Many-Server-Heavy-Traffic Asymptotics.” (*Working paper*)
- [3] **Daniela Hurtado-Lange**, Sushil Varma, Siva Theja Maguluri. “Logarithmic Heavy Traffic Error Bounds in Generalized Switch and Load Balancing Systems.” (*First round of major revision in Journal of Applied Probability*)
- [2] **Daniela Hurtado-Lange**, Siva Theja Maguluri. “Throughput and Delay Optimality of Power-of- d Choices in Inhomogeneous Load Balancing Systems.” (*Resubmitted after first round of major revision in Operations Research Letters*)
- [1] **Daniela Hurtado-Lange**, Siva Theja Maguluri. “Heavy-traffic Analysis of Queueing Systems with no Complete Resource Pooling.” (*Journal version of Conference paper [1]. Submitted to Stochastic Systems*)
* This paper is finalist for the 2020 Junior Faculty Interest Group (JFIG) Paper Competition

PRESENTATIONS

The slides, posters and video (when recorded) are available on my [website](#).

POSTER PRESENTATIONS

- **A Novel View of the Drift Method for Heavy Traffic Limits of Queueing Systems**
June 2018 – ACM SIGMETRICS 2018 – Irvine, California
- **A Unified View of the Drift Method and the MGF Method for Heavy-traffic Analysis**
July 2018 – International Workshop on Recent Progress in Data, Models and Decisions 2018
Held by iDDA at The Chinese University of Hong Kong, Shenzhen.
- **Performance Analysis for Data Centers: A Novel Heavy-Traffic Approach**
March 2018 – DCL Student Spring Symposium, Poster Session 2018
Held by Decision and Control Laboratory at Georgia Institute of Technology

WORKSHOPS AND CONFERENCE PRESENTATIONS

- **Heavy-Traffic Analysis of the Generalized Switch under Multidimensional State Space Collapse**
June 2020 – SIGMETRICS 2020 – Held online

- **Heavy-Traffic Analysis of the Generalized Switch under Multidimensional State Space Collapse**
October 2019 – INFORMS 2019 – Seattle, Washington
- **Transform Methods for Heavy-Traffic Analysis**
June 2019 – INFORMS-APS 2019 – Brisbane, Australia
- **Heavy-Traffic Analysis of the Generalized Switch under Multidimensional State Space Collapse**
June 2019 – MAMA Workshop at ACM SIGMETRICS 2019 – Phoenix, Arizona

SEMINAR PRESENTATIONS

- **Heavy-Traffic Analysis of the Generalized Switch with no Complete Resource Pooling**
July 2020 – Online seminar organized by Anton Braverman
- **Mathematical Models to Analyze Queueing Systems: Minimizing Delay in Data Centers**
January 2020 – Industrial and Systems Engineering Department at Pontificia Universidad Católica de Chile – Santiago, Chile
- **Optimal Resource Allocation in Data Center Networks: Drift Method and Transform Techniques**
September 2019 – Computer Science Department at Amherst College – Amherst, Massachusetts
- **Mathematical Models for Queueing Systems: Asymptotics and New Approximations**
January 2019 – Industrial and Systems Engineering Department at Universidad de Santiago de Chile (USACH) – Santiago, Chile
- **Transform Methods for Heavy-Traffic Analysis**
December 2018 – Industrial and Systems Engineering Department at Universidad Adolfo Ibáñez – Santiago, Chile
- **Tutorial on Queueing Theory**
September 2018 – Students seminar, Industrial and Systems Engineering Department at Georgia Institute of Technology – Atlanta, Georgia
- **Performance Analysis in Data Center Networks**
May 2018 – Industrial and Systems Engineering Department at Pontificia Universidad Católica de Chile – Santiago, Chile

TEACHING EXPERIENCE

- Inclusive and engaging instructor with extensive experience as a mentor, teaching assistant, and instructor of record.
- Participating in the Tech to Teaching program, a teaching certificate program to prepare future faculty for college teaching positions. More information is available [here](#).

INSTRUCTOR OF RECORD

Engineering optimization (ISYE 3133)

Fall 2020

Undergraduate level

Industrial and Systems Engineering Department

Georgia Institute of Technology – Atlanta, Georgia

- Facilitated weekly interactive problem-solving sessions to reinforce students' learning
- Taught in “hy-flex” format, allowing students to participate in person or remotely
- Developed lesson plans that were accessible in both modalities and successfully leveraged technology to engage participation from all students
- Two sections of 25 students

Pre-academic physics training for engineering freshmen*August 2020*

Undergraduate level

Engineering School

Pontificia Universidad Católica de Chile – Santiago, Chile

- One-week long mini-course
- Taught online using the flipped environment approach
- Facilitated daily live problem-solving sessions online, using technology to increase students' engagement in the class
- 150 students

Stochastic Models (ICS 2123)*March to July 2016*

Undergraduate level

Industrial and Systems Engineering Department

Pontificia Universidad Católica de Chile – Santiago, Chile

- Students' evaluation: 3.9/4.0 with 60% response rate
- Prepared and delivered student-centered lectures, putting emphasis on students' participation and engagement
- Prepared weekly formative quizzes to gauge students' learning process
- 57 students

TEACHING ASSISTANT

Role: Supported students' learning process with weekly office hours and interactive review sessions before exams. Provided developmental feedback as part of grading responsibilities.

- Industrial and Systems Engineering Department, Georgia Institute of Technology – Atlanta, Georgia
Fall 2016 to Summer 2020

Statistics and Applications (ISYE 6739) – Master's level*Summer 2020*

- Course held completely online
- Service course for non-ISYE majors
- Instructor of record: General Ron Johnson
- 48 students

Special topics: Math of OR (ISYE 8813) – Ph.D. level*Fall 2018*

- Overall effectiveness: 4.98/5.00, with 80% response rate
- Instructors of record: Siva Theja Maguluri and Mohit Singh
- 35 students

Probabilistic Models and Their Applications (ISYE 6650) - Master's level *Fall 2017*

- Overall effectiveness: 4.83/5.00, with 75% response rate
- Instructor of record: Sigrún Andradóttir
- 56 students

Simulation, Analysis and Design (ISYE 3044) – Undergraduate level*Fall 2016*

- Overall effectiveness: 4.5/5.0, with 50% response rate
- Instructor of record: David Goldsman
- 68 students

- Industrial and Systems Engineering Department, Pontificia Universidad Católica de Chile – Santiago, Chile (2012–2015)

- Advanced Stochastic Models (ICS 3222) – Master's level (2014–2015)
- Marketing (ICS 3313) – Master's level (2013–2014)

- Stochastic Models (ICS 2123) – Undergraduate level (2012–2014)
- Department of Mathematics, Pontificia Universidad Católica de Chile – Santiago, Chile (2010–2015)
 - Probability and Statistics (EYP 1113) – Undergraduate level (2015)
 - Linear algebra (MAT 1203) – Undergraduate level (2011–2013)
 - Introduction to Calculus (MAT 1600) – Undergraduate level (2012)

MENTORING EXPERIENCE

SURE

Summer 2018 and 2019

Georgia Institute of Technology – Atlanta, Georgia

Role: Research mentor

- Goal: Introduce undergraduate students to research.
- Students from different schools in the US visit Atlanta for 10 weeks, and join a research project
- Students:
 - Milton Pagan, Computer Science student from University of Puerto Rico–Mayaguez (*Summer 2019*)
 - Anabel Rivera, Electrical Engineering student from University of Illinois at Urbana-Champaign (*Summer 2018*)
- Click [here](#) for more information about the program.

Talent + Inclusion

2014–2015

School of Engineering

Pontificia Universidad Católica de Chile – Santiago, Chile

Role: Mentor

- Talent + Inclusion gives a scholarship to students from public schools
- Frequently students in this program are from low-income economic backgrounds
- The mentor supports the students in their adjustment to college during their first year
- Each mentor works with two students per year
- Click [here](#) for more information about the program (website in Spanish)

CARA UC

2013–2015

Pontificia Universidad Católica de Chile – Santiago, Chile

Role: Mentor and coordinator of Math mentors

- CARA UC is the center for academic performance and vocational exploration
- Mentors provide academic support for specific classes where students tend to struggle
- The academic support consists of one session per week, with a maximum of 6 students and the support of a mentor
- As coordinator of math mentors, I observed other mentors' sessions and gave feedback
- Click [here](#) for more information about the program (website in Spanish)

PROFESSIONAL SERVICE

- Reviewer of Stochastic Systems – *Since July 2020* – Per request
- SIGMETRICS Webmaster – *Since December 2019*
- ISyE Student Seminars Organization Committee – *Since October 2018*
Industrial and Systems Engineering Department at Georgia Institute of Technology – Atlanta, Georgia
- Reviewer IEEE/ACM Transactions on Networking – *Since September 2018* – Per request (Per request)

PROFESSIONAL ASSOCIATIONS

- INFORMS
- SIGMETRICS

LANGUAGES

- Spanish: Native speaker
- English: Full professional proficiency