

# Thiago Serra

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Cambridge, MA 02139

Website: ThiagoSerra.com

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## EDUCATION

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Ph.D.	<i>Operations Research</i>	<b>Carnegie Mellon University</b>	2018	Advisor: J. Hooker
	♦	Gerald L. Thompson Dissertation Award in Management Sciences		
M.S.	<i>Operations Research</i>	<b>Carnegie Mellon University</b>	2015	
M.S.	<i>Computer Science</i>	<b>University of Sao Paulo</b>	2012	Advisor: Y. Wakabayashi
B.S.	<i>Computer Engineering</i>	<b>University of Campinas</b>	2008	Advisor: A. V. Moura
	♦	SBC Outstanding Student Award, IE Award, CREA Honorable Mention		
Certificate of Studies Abroad		<b>IST, University of Lisbon</b>	2007	

## WORK EXPERIENCE

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2018–2019	<i>Visiting Research Scientist</i>	<b>Mitsubishi Electric Research Labs, USA</b>
2017	<i>Summer Intern</i>	<b>Mitsubishi Electric Research Labs, USA</b>
2016	<i>Summer Intern</i>	<b>Mitsubishi Electric Research Labs, USA</b>
2009–2013	<i>Operations Research Analyst</i>	<b>PETROBRAS, Brazil</b>
2008–2009	<i>Operations Research Analyst</i>	<b>Neolog Consulting, Brazil</b>
2008	<i>Software Engineer</i>	<b>Metacortex Consulting, Brazil</b>
2007	<i>Software Engineering Intern</i>	<b>Daitan Labs, Brazil</b>
2003–2004	<i>R&amp;D Intern</i>	<b>Fiberwork Optical Communications, Brazil</b>

## PUBLICATIONS

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- T. Serra, C. Tjandraatmadja, and S. Ramalingam  
“*Bounding and Counting Linear Regions of Deep Neural Networks*”  
ICML 2018  
♦ Princeton Day of Optimization Best Poster Award: Optimization and Machine Learning
- A. Raghunathan, D. Bergman, J. Hooker, T. Serra, and S. Kobori  
“*The Integrated Last-Mile Transportation Problem (ILMTP)*”  
ICAPS 2018

T. Serra, C. Tjandraatmadja, and S. Ramalingam  
“How Could Polyhedral Theory Harness Deep Learning?”  
Scientific Machine Learning Workshop, U.S. Department of Energy, 2018

T. Serra, G. Nishioka, and F. Marcellino  
“The Offshore Resources Scheduling Problem: Detailing a Constraint Programming Approach”  
CP 2012

S. Barcelos, T. Serra, R. Rando, E. Rigon, N. Sasaki, W. Arellano, A. Alkschbirs, and D. Lima  
“Polarization Mode Dispersion (PMD) Field Measurements: Audit of Newly Installed Fiber Plants”  
NFOEC 2005

### **Under Review**

T. Serra and J. Hooker  
“Compact Representation of Near-Optimal Integer Programming Solutions”  
Submitted to Mathematical Programming; third round (in preparation)

E. Balas and T. Serra  
“When Lift-and-Project Cuts are Different”  
Submitted to INFORMS Journal on Computing; second round (in preparation)

T. Serra  
“Reformulating the Disjunctive Cut Generating Linear Program”  
Submitted to Annals of Operations Research; first round  
♦ INFORMS 2016 Annual Meeting Interactive Presentation Award First Place Winner

T. Serra  
“Branching with Less Repetition”  
Submitted to IPCO 2019

### **Working Papers**

T. Serra and S. Ramalingam  
“Empirical Bounds on Linear Regions of Deep Rectifier Networks”

A. Raghunathan, D. Bergman, J. Hooker, T. Serra, and S. Kobori  
“Seamless Multimodal Transportation Scheduling”

### **Patents**

A. Raghunathan, D. Bergman, and T. Serra  
“Systems and Methods for Joint Control of Multi-Modal Transportation Networks”  
U.S. Patent Application 15/785,540, filed October 2017 (pending)

## **AWARDS AND HONORS**

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2018 Carnegie Mellon Univ. Gerald L. Thompson Doctoral Dissertation Award in Management Science  
2018 Princeton Day of Optimization Best Poster Award: Optimization and Machine Learning  
2016 INFORMS Judith Liebman Award  
2016 INFORMS Annual Meeting Interactive Presentation Award First Place Winner  
2012 Brazilian Symposium on Operations Research Best Paper Finalist

### **Undergraduate**

2009 Brazilian Computing Society (SBC) Outstanding Student Award  
2009 Sao Paulo Institute of Engineering (IE) Award  
2009 Sao Paulo Reg. Board of Engineering, Architecture, and Agronomy (CREA) Honorable Mention  
2007 ACM International Collegiate Programming Contest South America Bronze Medal  
2006 Portuguese National Programming Contest (MIUP) Third Place  
2005 ACM International Collegiate Programming Contest South America Bronze Medal  
2004 ACM International Collegiate Programming Contest South America Bronze Medal  
2003 Brazilian Olympiad in Informatics Gold Medal

## **FELLOWSHIPS, GRANTS, AND SCHOLARSHIPS**

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2018	MIP Workshop Travel Support
2018	Carnegie Mellon Graduate Student Conference Funding
2017	MIP Workshop Travel Support
2017	Carnegie Mellon Graduate Student Conference Funding
2015	Tepper School of Business Dean's Fund
2013–2017	William Larimer Mellon Fellowship
2006–2007	Luso-American Development Foundation Scholarship
2004–2005	Sao Paulo Res. Fndn. Undergraduate Res. Grant
2003–2004	Sao Paulo Res. Fndn. Innovative Res. in Small Business Grant

## **INVITED PRESENTATIONS**

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May 2019      UCLA, Institute for Pure and Applied Mathematics

### **Past**

Dec 2018      Rensselaer Polytechnic Institute  
Dec 2018      Bucknell University, Freeman College of Management  
Oct 2018      The University of Utah, School of Computer Science  
Oct 2018      Colby College, Mathematics and Statistics Department

Jun 2018	Mitsubishi Electric Research Laboratories
Mar 2018	Carnegie Mellon University, Process Systems Engineering
Feb 2018	Brookhaven National Laboratory, Computational Science Initiative
Jun 2017	Northeastern University, INFORMS Student Chapter
May 2013	University of Campinas, IEEE Computational Intelligence Society Student Chapter

## CONFERENCE PRESENTATIONS

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### Talks

- Scientific Machine Learning Workshop, DOE, 2018
- INFORMS Annual Meeting 2012, 2015, 2016, 2017, 2018
- INFORMS Optimization Society Conference 2016, 2018
- INFORMS Computing Society Conference 2017
- MOPTA 2016
- CP 2012
- SPARK and COPLAS workshops, ICAPS 2012
- CPAIOR 2011

### Posters

- Princeton Day of Optimization, 2018
- Fundamentals of Data Analysis Summer School, IFDS Madison, 2018
- MIP 2016, 2017, 2018
- NemFest 2017
- INFORMS Annual Meeting 2016

## TEACHING EXPERIENCE

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### Instructor

Fall 2016	<i>Mathematical Models for Consulting</i>	<b>Carnegie Mellon University, Undergraduate</b>
	Registered: 25	Overall Teaching: 4.67/5.00    Overall Evaluation: 4.50/5.00

### Recitation Leader

Spring 2017	<i>Optimization</i>	<b>Carnegie Mellon University, MBA</b>
Spring 2016	<i>Optimization</i>	<b>Carnegie Mellon University, MBA</b>

### Office Hours and Grading

Spring 2016	<i>Disjunctive Programming</i>	<b>Carnegie Mellon University, PhD</b>
Fall 2015	<i>Optimization</i>	<b>Carnegie Mellon University, MBA</b>
Fall 2015	<i>Applications of Operations Research</i>	<b>Carnegie Mellon University, MBA</b>
Fall 2006	<i>File Structures</i>	<b>University of Campinas, Undergraduate</b>

## TEACHING-RELATED TRAINING

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<i>Future Faculty Program</i>	<b>Eberly Center, Carnegie Mellon University</b>	2014–2017
<i>Teaching Effectiveness Colloquium</i>	<b>INFORMS</b>	2017
<i>Teaching Effectiveness Colloquium</i>	<b>INFORMS</b>	2016
<i>Acting for Non-Majors</i>	<b>School of Drama, Carnegie Mellon University</b>	2015
<i>Language and Culture for Teaching</i>	<b>ICC, Carnegie Mellon University</b>	2013

## ACADEMIC SERVICE

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### Session Chair

“*Machine Learning and Discrete Optimization*”

- 2018 INFORMS Annual Meeting

“*New Paradigms for Cut Generation*”

- 2018 INFORMS Optimization Society Conference
- 2017 INFORMS Computing Society Conference
- 2016 INFORMS Optimization Society Conference

“*Decision Diagrams for Optimization*”

- 2017 INFORMS Annual Meeting

“*Applications in the Energy Sector of Emerging Countries*”

- 2012 INFORMS Annual Meeting

### Journal Peer Review

- Annals of Operations Research
- Constraints
- International Transactions in Operations Research
- Transportation Research B: Methodological

### Proceedings Peer Review

- AAAI-17
- CP 2016, 2017
- CPAIOR 2017, 2018, 2019

### Volunteering and Leadership

2018–	<i>Committee Member</i>	<b>INFORMS Undergrad. Operations Research Prize</b>
2017–	<i>Member</i>	<b>INFORMS Education Strategy Committee</b>
2017–2018	<i>Consulting Board Member</i>	<b>CMU INFORMS</b>
2015–2017	<i>President</i>	<b>CMU INFORMS</b>
		◆ 2017 INFORMS Student Chapter Award: Magna Cum Laude
		◆ 2016 INFORMS Student Chapter Award: Summa Cum Laude

◆ 2016 INFORMS Judith Liebman Award

2014–2015	<i>Co-Founder; Secretary</i>	<b>CMU INFORMS</b>
2015	<i>Twitter Curator</i>	<b>ISMP</b>
2012–	<i>Contributor</i>	<b>INFORMS Annual Meeting Blog</b>

## **LANGUAGES**

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Portuguese (native)  
English (fluent)

## **PROFESSIONAL MEMBERSHIPS**

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2012– INFORMS  
2015– SIAM

## **REFERENCES**

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Available upon request.