



Professional Appointments

- Assistant Professor, Department of Management Science, University of Miami, 8/2006 – present.
- Instructor, Department of Management Science, University of Miami, 8/2005 – 7/2006.

Education

- Ph.D., Operations Research, Carnegie Mellon University, 5/2006 (advisor: John N. Hooker).
- M.S., Operations Research, Carnegie Mellon University, 5/2002.
- M.S., Computer Science, State University of Campinas (UNICAMP), Brazil, 4/2000 (advisors: Arnaldo V. Moura and Cid C. de Souza).
- B.S., Computer Engineering, State University of Campinas (UNICAMP), Brazil, 11/1997.

Research Interests

- *Theoretical and empirical*: integer programming, constraint programming, metaheuristics, large neighborhood search, and the integration of optimization techniques.
- *Application areas*: scheduling (sports, crews, machines), product line simplification, transportation, location, political districting, call center operations, and data display on maps.

Awards and Honors

- Excellence in Teaching Award (best core course), School of Business Administration, University of Miami, selected by the MBA class of May 2012.
- Air Force Office of Scientific Research grant to support “*A Unified Approach to Optimization*” (co-PI with John Hooker from CMU), 7/2011 – 6/2014. University of Miami share: \$93,665.
- Honorable mention, INFORMS Railway Applications Section (RAS) Problem Solving Competition, 2010 (joint work with Michael Trick).
- Gerald L. Thompson Doctoral Dissertation Award in Management Science, Tepper School of Business, Carnegie Mellon University, 2006.
- James W. McLamore Summer Research Award in Business and Social Sciences, University of Miami, 2006 (\$9,300), 2007 (\$9,300), and 2010 (\$10,500).
- William L. Mellon Fellowship, Tepper School of Business, Carnegie Mellon, 9/2000 – 8/2003.
- First prize, VIII UNESCO Latin American Master’s thesis contest, Mérida, Venezuela, 9/2001.
- State of São Paulo Institute of Engineering Award for ranking first among 70 Computer Engineering graduates, State University of Campinas (UNICAMP), Brazil, 11/1997.

Refereed Publications (*click on blue titles to download papers*)

1. G. Kunigami, P. J. de Rezende, C. C. de Souza, and T. Yunes, Generating Optimal Drawings of Physically Realizable Symbol Maps with Integer Programming, *The Visual Computer*, 2012 (forthcoming). DOI: [10.1007/s00371-012-0727-7](https://doi.org/10.1007/s00371-012-0727-7).
2. G. Kunigami, P. J. de Rezende, C. C. de Souza, and T. Yunes, [Determining an Optimal Visualization of Physically Realizable Symbol Maps](#). Proceedings of the *24th Conference on Graphics, Patterns and Images (SIBGRAPI)*, Maceió, AL, Brazil, August 28-31, 2011. Published by IEEE Computer Society.
3. G. Kunigami, P. J. de Rezende, C. C. de Souza, and T. Yunes, [Optimizing the Layout of Proportional Symbol Maps](#), *Lecture Notes in Computer Science* 6784, 1-16. Proceedings of the *11th International Workshop on Computational Geometry and Applications (CGA)*, Santander, Spain, June 20-23, 2011.
4. T. Yunes, [Software Tools Supporting Integration](#), book chapter in *Hybrid Optimization — The Ten Years of CPAIOR*, M. Milano and P. Van Hentenryck (eds.), 393-424, Springer, 2011. ISBN: 978-1-4419-1643-3.
5. M. A. Trick, H. Yildiz and T. Yunes, [Scheduling Major League Baseball Umpires and the Traveling Umpire Problem](#), *Interfaces* (forthcoming special issue on Analytics in Sports), 2011. Published online before print (INFORMS Articles in Advance), DOI: [10.1287/inte.1100.0514](https://doi.org/10.1287/inte.1100.0514).
6. J. N. Hooker and T. Yunes, [An Integrated Approach for Truss Structure Design](#), Workshop on Hybrid Methods for Nonlinear Combinatorial Problems. Co-located with the *7th International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CPAIOR)*, Bologna, Italy, June 14-18, 2010.
7. T. Yunes, I. D. Aron and J. N. Hooker, [An Integrated Solver for Optimization Problems](#), *Operations Research* 58(2), 342-356, 2010.
8. T. H. Yunes, D. Napolitano, A. Scheller-Wolf and S. Tayur, [Building Efficient Product Portfolios at John Deere and Company](#), *Operations Research* 55(4), 615-629, 2007.
9. T. H. Yunes, A. V. Moura and C. C. de Souza, [Hybrid Column Generation Approaches for Urban Transit Crew Management Problems](#), *Transportation Science* 39(2), 273-288, 2005.
10. I. D. Aron, J. N. Hooker and T. H. Yunes, [SIMPL: A System for Integrating Optimization Techniques](#), *Lecture Notes in Computer Science* 3011, 21-36. Proceedings of the *International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CPAIOR)*, Nice, France, April 20-22, 2004.
11. T. H. Yunes, [On The Sum Constraint: Relaxation and Applications](#), *Lecture Notes in Computer Science* 2470, 80-92. Proceedings of the *8th International Conference on Principles and Practice of Constraint Programming (CP)*, Ithaca, NY, USA, September 8-13, 2002.
12. T. H. Yunes, A. V. Moura and C. C. de Souza, [Solving Very Large Crew Scheduling Problems to Optimality](#), Proceedings of the *15th ACM Symposium on Applied Computing (SAC)*, Como, Italy, March 19-21, 2000.
13. T. H. Yunes, A. V. Moura and C. C. de Souza, [A Hybrid Approach for Solving Large Scale Crew Scheduling Problems](#), *Lecture Notes in Computer Science* 1753, 293-307. Proceedings of the *2nd International Workshop on Practical Aspects of Declarative Languages (PADL)*, Boston, MA, USA, January 17-18, 2000.

Working Papers and Work in Progress

14. Implementing a Bundling, Lane and Price Sheet Strategy for Caterpillar's Building Construction Products Division (with G. Fenu, A. Scheller-Wolf, M. Shunko, V. Tardif, and S. Tayur). *Under revision (to start second round)*.
15. Optimizing the Layout of Proportional Symbol Maps: Polyhedra and Computation (with G. Kunigami, P. J. de Rezende, and C. C. de Souza). *Under review (first round)*. *Significantly improved and expanded version of paper #3*.
16. Semantic Typing of Variables (with A. Ciré and J. N. Hooker). *In progress*.
17. New Inequalities for the Piecewise-Linear Optimization Polytope with Knapsack and Cardinality Constraints (with I. R. de Farias Jr.). *In progress*.
18. Resource-Constrained Scheduling with Uniform Resource Requirements: Polyhedra and Computation (with D. Magos and I. Mourtos). *In progress*.

Selected Talks (talks were given by me, unless noted otherwise)

1. Optimizing the Layout of Proportional Symbol Maps (joint work with G. Kunigami, P. J. de Rezende and C. C. de Souza), *INFORMS Annual Meeting*, Phoenix, AZ, October 14-17, 2012.
2. Semantic Typing of Variables (joint work with A. Ciré and J. N. Hooker), *INFORMS Annual Meeting*, Charlotte, NC, November 13-16, 2011.
3. Valid Inequalities for the Cumulative Constraint and the Cumulative Job Shop Scheduling Problem (joint work with D. Magos and I. Mourtos), *19th Conference of the International Federation of Operational Research Societies (IFORS)*, Melbourne, Australia, July 10-15, 2011. Also presented at: *INFORMS Annual Meeting*, Charlotte, NC, November 13-16, 2011; *Operations Research Seminar*, Tepper School of Business, Carnegie Mellon University, March 25, 2011.
6. A Polyhedral Study of the Cumulative Constraint (joint work with D. Magos and I. Mourtos). *INFORMS Annual Meeting*, Austin, TX, November 7-10, 2010.
7. Valid Inequalities for the Cumulative Constraint (joint work with D. Magos and I. Mourtos). *11th International Symposium on AI and Mathematics (ISAIM)*, Fort Lauderdale, FL, January 6-8, 2010.
8. Valid Inequalities for a Piecewise-Linear Objective with Knapsack and Cardinality Constraints (joint work with I. R. de Farias Jr.). *20th International Symposium on Mathematical Programming (ISMP)*, Chicago, IL, August 23-28, 2009.
9. Keep it SIMPL: Latest Developments in a General Purpose Modeling and Solution System for Integrated Optimization (joint work with I. D. Aron and J. N. Hooker). Presented by me at: *CORS-INFORMS International Meeting*, Toronto, Canada, June 14-17, 2009; *11th INFORMS Computing Society Conference*, Charleston, SC, January 11-13, 2009. Presented by John Hooker at the *20th International Symposium on Mathematical Programming (ISMP)*, Chicago, IL, August 23-28, 2009.
12. Supporting a Bundling, Lane and Price Sheet Strategy for a Fortune 500 Industrial Manufacturer (joint work with A. Scheller-Wolf, M. Shunko, V. Tardif, S. Tayur and N. Trapp), *INFORMS Annual Meeting*, Washington D.C., October 12-15, 2008. Invited talk given by Sridhar Tayur.
13. Complexity Reduction and Price Optimization at Caterpillar Inc. (joint work with A. Scheller-Wolf, M. Shunko, V. Tardif, S. Tayur and N. Trapp), *INFORMS Annual Meeting*, Seattle, WA, November 4-7, 2007.
14. Scheduling Umpires (joint work with M. Trick and H. Yildiz), *European Conference on Operational Research (EURO)*, Prague, July 8-11, 2007. Invited talk given by Michael Trick.

15. Scheduling Major League Baseball Umpires (joint work with H. Barringer, J. Levine and M. Trick), *INFORMS Annual Meeting*, Pittsburgh, PA, November 5-8, 2006.
16. An Integrated Solver for Optimization Problems (joint work with I. D. Aron and J. N. Hooker). Invited to the *Third Workshop on Mixed Integer Programming (MIP 2006)*, University of Miami, Coral Gables, FL, June 5-8, 2006. Also presented at: *Institute of Computing*, State University of Campinas (UNICAMP), Campinas, SP, Brazil, June 27, 2007; *10th INFORMS Computing Society Conference*, Coral Gables, FL, January 3-5, 2007; *INFORMS Annual Meeting*, San Francisco, CA, November 13-16, 2005.
20. SIMPL: A System for Integrating Optimization Techniques (joint work with I. D. Aron and J. N. Hooker), *INFORMS Annual Meeting*, Denver, CO, October 24-27, 2004. Also invited to be presented at: Department of Management Science, University of Miami, January 26, 2005; Department of Mechanical Engineering, University of Minnesota, February 1, 2005; Department of Industrial and Manufacturing Engineering, University of Wisconsin-Milwaukee, February 4, 2005; Department of Operations and Decision Technologies, University of California Irvine, February 7, 2005; Department of Combinatorics and Optimization, University of Waterloo, Canada, February 10, 2005.
26. Building Efficient Product Portfolios at John Deere (joint work with D. Napolitano, A. Scheller-Wolf and S. Tayur), *INFORMS Annual Meeting*, Denver, CO, October 24-27, 2004.
27. Solving a Real World Crew Rostering Problem with Integer Programming and Constraint Logic Programming Models (joint work with A. V. Moura and C. C. de Souza), *17th International Symposium on Mathematical Programming*, Atlanta, GA, August 7-11, 2000.
28. Exact Solutions for Real World Crew Scheduling Problems (joint work with A. V. Moura and C. C. de Souza), *INFORMS Annual Meeting*, Philadelphia, PA, November 7-10, 1999.

Teaching Experience

COURSES TAUGHT AT THE UNIVERSITY OF MIAMI (instructor ratings out of 5.00)

- *Management Science Models for Decision Making*, MBA core, School of Business Administration, University of Miami, Fall 2005 (4.58), Spring 2006 (4.19), Spring 2007 (4.76, 4.67), Spring 2008 (4.65, 4.57), Spring 2009 (4.69, 4.67), Spring 2010 (4.89, 4.91, 4.83), Spring 2011 (4.71, 4.81, 4.87); Spring 2012 (4.94, 5.00, 4.88);
- *Deterministic Models in Operations Research*, undergraduate, School of Business Administration, University of Miami, Fall 2007 (business: 4.75), Fall 2008 (business: 5.00, industrial engineering: 4.36), Fall 2009 (business: 4.67);
- *Computer Simulation Modeling*, undergraduate, School of Business Administration, University of Miami, Fall 2005 (4.00), Fall 2006 (4.75), Fall 2007 (4.83);
- *Introduction to Business Statistics*, undergraduate, School of Business Administration, University of Miami, Fall 2006 (4.44);

COURSES TAUGHT AT OTHER UNIVERSITIES (instructor ratings out of 5.00)

- *Introduction to Constraint Programming*, one-week mini-course (9 hours), Industrial Engineering Department, Universidad de los Andes, Colombia, October 31 – November 4, 2011;
- *Sequencing and Scheduling*, MBA elective, Tepper School of Business, Carnegie Mellon University, Fall 2004 (4.27);
- *Quantitative Skills Review Program* (30-hour math review for incoming MBA students), Tepper School of Business, Carnegie Mellon University, Summer 2004 (4.62, 4.24).

OTHER TEACHING-RELATED ACTIVITIES

- *Teaching Fellow*, Eberly Center for Teaching Excellence, Carnegie Mellon University, 6/2003 – 5/2005.
- Invited member of the selection committee of Carnegie Mellon University's *Graduate Student Teaching Award*, 2001 – 2003.
- Teaching Assistant at both MBA and PhD levels (23 times), Tepper School of Business, Carnegie Mellon University, 2001 – 2005.
- Attended 18 teaching seminars offered by the Eberly Center for Teaching Excellence at Carnegie Mellon. Topics covered include: overview of student cognition; the role of external representations in the active construction of knowledge; writing in the disciplines; communicating across cultures; course and syllabus design; assessing student learning and providing helpful feedback; collaboration and peer-critique during teaching and learning; what makes a comfortable classroom climate; overview of student motivation; planning effective lectures; conducting productive discussions; strategies to increase active learning; teaching first-year students; working well one-on-one; teaching from the heart; and using case studies to actively engage students.

Consulting and Practical Experience

- Consulting with Caterpillar, Inc. (through SmartOps Corp.) on product line simplification, 4/2006 – 11/2007. Joint work with A. Scheller-Wolf, M. Shunko, V. Tardif, and S. Tayur;
- Consulting with John Deere & Co. (through SmartOps Corp.) on product line simplification, 5/2003 – 11/2004. Joint work with D. Napolitano, A. Scheller-Wolf and S. Tayur;
- Consulting with Major League Baseball (through the Sports Scheduling Group) on the scheduling of umpires. Joint work with H. Barringer, J. Levine and M. Trick, 1/2005 – 5/2005; joint work with M. Trick, 1/2006 – 3/2006.
- Informal consulting with a brazilian urban transit company on the scheduling of bus drivers, 3/1998 – 5/2000. Joint work with A. V. Moura and C. C. de Souza;
- Member of the GEOTEC project in Brazil (National Research Council). Projected and implemented part of an environment for modeling complex computer-human interfaces (Xchart Project), 4/1995 – 2/1997. Joint work with C. Neves Jr. and F. N. de Lucena.

Ph.D. Student Activity

- Research collaboration with Jonas Bækklund, visiting Ph.D. student from Aarhus University, Denmark, 1/2011 – 6/2011. Project title: *Nurse Rostering in a Danish Hospital*.
- Dissertation committee member for Hakan Yildiz, Operations Research, Carnegie Mellon University (chair: Michael Trick), defended 8/2008. Thesis title: *Methodologies and Applications for Scheduling, Routing and Related Problems*.

Undergraduate Student Activity

- Directed research study with Juan Carlos Villegas, University of Miami, Fall 2010 (course MAS 499). Project title: *Coverage Optimization with Visual Interference: A Case Study of the Blue-Light Phones on the University of Miami Campus*.

Service to the Academic Community

- INFORMS Public Information Committee (PIC) member, 8/2011 – 12/2013.
- *Organizing Committee Member*: INFORMS Optimization Society Conference, 2012.
- *Program Committee Member*: International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CPAIOR) (2008 – 2012), International Conference on Principles and Practice of Constraint Programming (CP) (2012), INFORMS Optimization Society Conference (2012).
- *Session Organizer/Chair*: INFORMS Annual Meeting (2004, 2007, 2008, 2010, 2011); INFORMS Computing Society Conference (2007), CORS-INFORMS International Meeting (2009).
- *Ad hoc Reviewer*: *Operations Research*, *INFORMS Journal on Computing*, *Mathematical Programming Computation*, *Discrete Applied Mathematics*, *Naval Research Logistics*, *Annals of Operations Research*, *Journal of Heuristics*, *Journal of Scheduling*, *Interfaces*, *Computers and Operations Research*, *Constraints*, *Information Processing Letters*, International Conference on Principles and Practice of Constraint Programming (CP), International Conference on Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CPAIOR), ACM Symposium on Applied Computing (SAC), Workshop on Experimental Algorithms (WEA), Brazilian Symposium on Operations Research (SBPO).

Service to the School of Business and the University of Miami

- Singer Scholarship interviewer, 2010 and 2011.
- Member of the School of Business Graduate Curriculum Taskforce, 8/2007 – 5/2008.
- Organizer of the Management Science Department seminar series, 8/2006 – present.
- Member of the stage party at the Spring Commencement Ceremony, 2007, 2008, 2011, and 2012.

Service to the South Florida Community

- *Volunteer work for United Way of Broward County*: Project Lifeline Food Drive (6/27/09): distributed flyers; Department of Technology Management (12/31/08): wrote random password generator; Mayor's charity gala (11/14/08): guest check-in, auction spotter; United Way 5K Series (11/2/08): race track set-up, T-shirt distribution, prize distribution.
- *Volunteer work for the American Lung Association of Florida*: Las Olas Wine and Food Festival (5/15/10): VIP guest check-in.

Other Skills and Activities

- Fluent in English; beginner in French and Spanish; native speaker of Portuguese.
- Programming languages and modeling software: C, C++, Pascal, Lisp, Prolog, Assembly 8086, Perl, HTML (basics), OPL, Mosel, ECLiPSe, Arena, AMPL, Comet.