

Tallys Yunes

September 1, 2009

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Professional Experience

- 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.
Dissertation: *On the Integration of Optimization Techniques*. 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.
Dissertation: *Scheduling Problems in Mass Transportation: Constraint Programming and Other Techniques*.
Advisors: Arnaldo V. Moura and Cid C. de Souza.
- B.S., Computer Engineering, State University of Campinas (UNICAMP), Brazil, 11/1997.

Research Interests

- Operations Research and Combinatorial Optimization.
- Integer Programming and Constraint Programming.
- Metaheuristics and Large Neighborhood Search.
- Integration of optimization techniques.
- Applications in: scheduling (sports, crews, machines), product line simplification, computational geometry, transportation, location, and operations management in general.

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

JOURNAL PAPERS

- T. Yunes, I. D. Aron and J. N. Hooker, [An Integrated Solver for Optimization Problems](#). To appear in *Operations Research* (accepted in May 2009).
- 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.
- 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.

BOOK CHAPTER

- T. Yunes, [Software Tools Supporting Integration](#). To appear in *Hybrid Optimization: the 10 years of CP-AI-OR*, M. Milano and P. Van Hentenryck (eds.), Springer, 2010.

PAPERS IN REFEREED CONFERENCE PROCEEDINGS

- 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 (CP-AI-OR)*, Nice, France, April 20-22, 2004.
- 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.
- 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.
- 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

- M. Trick, H. Yildiz and T. Yunes, Scheduling Major League Baseball Umpires and the Traveling Umpire Problem. *Submitted for publication*.
- Complexity Reduction and Price Optimization at Caterpillar Inc. (with A. Scheller-Wolf, M. Shunko, V. Tardif, S. Tayur and N. Trapp). *In progress*.
- Integer Programming Formulations to Optimize the Layout of Proportional Symbol Maps (with C. C. de Souza). *In progress*.
- Strong Valid Inequalities for a Continuous Piecewise Linear Objective in the Presence of Cardinality Constraints (with I. R. de Farias Jr.). *In progress*.
- A Polyhedral Study of the Cumulative Constraint (with D. Magos and I. Mourtos). *In progress*.

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

- Valid Inequalities for the Cumulative Constraint (joint work with D. Magos and I. Mourtos). 11th *International Symposium on Artificial Intelligence and Mathematics (ISAIM)*, Fort Lauderdale, FL, January 6-8, 2010.
- 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.
- 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.
- 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.
- 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. Invited by Prof. Georgia Perakis, Sloan School of Management, Massachusetts Institute of Technology.

- 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.
- Scheduling Major League Baseball Umpires (joint work with H. Barringer, J. Levine and M. Trick), *INFORMS Annual Meeting*, Pittsburgh, PA, November 5-8, 2006.
- 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.
- 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.
- 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. Invited by Prof. Sharon Novak, Kellogg School of Business, Northwestern University.
- 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. Invited by Prof. Raymond Kwan, University of Leeds.
- 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. Invited by Dr. Mark Wallace, Imperial College, London.

Teaching Experience

COURSES TAUGHT (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);
- *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;
- *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);
- *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 reducing product line complexity, 4/2006 – 11/2007. Joint work with A. Scheller-Wolf, M. Shunko, V. Tardif, S. Tayur and N. Trapp;
- Consulting with John Deere & Co. (through SmartOps Corp.) on reducing product line complexity, 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.

Awards and Honors

- Gerald L. Thompson Doctoral Dissertation Award in Management Science, Tepper School of Business, Carnegie Mellon University, 2006.
- James W. McLamore Summer Award in Business and Social Sciences, School of Business Administration, University of Miami, 2006 and 2007.
- William Larimer Mellon Fellowship, Tepper School of Business, Carnegie Mellon University, 9/2000 – 8/2003.
- First prize in the VIII UNESCO Latin American Master's dissertation 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.

Ph.D. Student Activity

- *Committee Member for:* Hakan Yildiz (Operations Research, Carnegie Mellon, 2008).

Service to the Academic Community

- *Program Committee Member:* CP-AI-OR (2008, 2009 and 2010).
- *Session Organizer and Chair:* INFORMS Annual Meeting (2004, 2007, 2008); INFORMS Computing Society Conference (2007), CORS-INFORMS International Meeting (2009).
- *Ad hoc Reviewer:* *Operations Research*, *INFORMS Journal on Computing*, *Discrete Applied Mathematics*, *Annals of Operations Research*, *Journal of Heuristics*, *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 (CP-AI-OR), ACM Symposium on Applied Computing (SAC), Workshop on Experimental Algorithms (WEA).

Service to the School of Business

- *Committee Member:* Graduate Curriculum Taskforce (8/2007 – 5/2008).
- *Organizer:* Management Science Department seminar series (8/2006 – present).

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.

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.
- Basketball, horseback riding, and weight training.