

Fernando Ordóñez

Industrial and Systems Engineering
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Education

2002 Ph.D. in Operations Research, *Massachusetts Institute of Technology, Cambridge, MA*

1997 Mathematical Civil Engineer, *University of Chile, Santiago, Chile*

1996 B.S. in Engineering Sciences, *University of Chile, Santiago, Chile*

Professional Experience

5/08-Present *Associate Professor*

Daniel J. Epstein Department of Industrial and Systems Engineering
University of Southern California; Los Angeles CA

9/02-5/08 *Assistant Professor*

Daniel J. Epstein Department of Industrial and Systems Engineering
University of Southern California; Los Angeles CA

9/05-Present *Assistant Professor (Courtesy)*

Computer Science Department
University of Southern California; Los Angeles CA

3/96-8/97 *Engineer*

ENDESA; Santiago, Chile

Model and simulate electric power systems in Latin American. Evaluate investment projects in electric power systems. Develop short-term operational models of electric power systems.

3/95-3/96 *Research Assistant*

Pehuenche S.A.; Santiago, Chile

Model electric power systems with uncertainties, in particular the Chilean electric power system. Develop optimization models for investment decisions in the electric power sector.

Research Interests

Optimization theory, modeling and its use in engineering and management science applications. Including, the efficiency of interior point algorithms and computation, sensitivity analysis of convex optimization, condition number theory, and robust optimization. Application of optimization to logistics and transportation systems, homeland security, and artificial intelligence.

Research Articles

(names listed in order of authorship)

Refereed Journal Articles in Print or Accepted

- J1 "Computational Experience and the Explanatory Value of Condition Measures for Linear Optimization," F. Ordóñez and R.M. Freund. *SIAM Journal on Optimization*, 14(2); pp 307–333, 2003.
- J2 "Optimal Information Extraction in Energy-Limited Wireless Sensor Networks," F. Ordóñez and B. Krishnamachari. *IEEE Journal on Selected Areas in Communications*, 22(6); pp 1121–1129, 2004. Issue on Fundamental Performance Limits of Wireless Sensor Networks.
- J3 "Scaling Laws from Statistical Data and Dimensional Analysis," P. Mendez and F. Ordóñez. *ASME Journal of Applied Mechanics*, 72(5); pp 648–657, 2005.
- J4 "On an Extension of Condition Number Theory to Non-Conic Convex Optimization," R.M. Freund and F. Ordóñez. *Mathematics of Operations Research*, 30(1); pp 173–194, 2005.
- J5 "A Modeling Framework for Facility Location of Medical Services for Large-Scale Emergencies," H. Jia, F. Ordóñez, and M.M. Dessouky. *IIE Transactions*, 39(1); pp 41–55, 2007.
- J6 "Behavioral measures and their correlation with IPM iteration counts on Semi-Definite Programming Problems," R.M. Freund, F. Ordóñez, and K.C. Toh. *Mathematical Programming B*, 109(2-3); pp 445–475, 2007.
- J7 "Solution Approaches for Facility Location of Medical Supplies for Large-Scale Emergencies," H. Jia, F. Ordóñez, and M.M. Dessouky. *Computers & Industrial Engineering*, 52(2); pp 257–276, 2007.
- J8 "Robust Capacity Expansion of Network Flows," F. Ordóñez and J. Zhao. *Networks*, 50(2); pp 136–145, 2007.
- J9 "Robust Solutions for Network Design under Transportation Cost and Demand Uncertainty," S. Mudchanatongsuk, F. Ordóñez, and J. Liu. *Journal of the Operational Research Society* 59; pp 652–662, 2008.
- J10 "Mobility Allowance Shuttle Transit (MAST) Services: MIP formulation and strengthening with logic constraints," L. Quadrifoglio, M.M. Dessouky, and F. Ordóñez. *European Journal of Operational Research*, 185; pp 481–494, 2008.
- J11 "A priori performance measures for arc-based formulations of Vehicle Routing Problem," F. Ordóñez, I. Sungur, and M. M. Dessouky. *Transportation Research Record: Journal of the Transportation Research Board*. 2032; pp 53–62, 2007.
- J12 "A Robust Optimization Approach for the Capacitated Vehicle Routing Problem with Demand Uncertainty," I. Sungur, F. Ordóñez, and M.M. Dessouky. *IIE Transactions*, 40(5); pp 509–523, 2008.

- J13 "A Simulation Study of Demand Responsive Transit System Design," L. Quadrifoglio, M. M. Dessouky, and F. Ordóñez. *Transportation Research-A* 42(4); pp 718–737, 2008.
- J14 "Robust Optimization Models for Energy-limited Wireless Sensor Networks under Distance Uncertainty," W. Ye, and F. Ordóñez. *IEEE Transactions on WirelessCom* 7(6); pp 2161–2169, 2008.
- J15 "The Stochastic Vehicle Routing Problem for Minimum Unmet Demand," Z. Shen, F. Ordóñez, and M.M. Dessouky. *Optimization and Logistics Challenges in the Enterprise*, Springer Series on Optimization and its Applications, 2009.
- J16 "A Two-stage Stochastic Programming Model for Transportation Network Protection," C. Liu, Y. Fan, and F. Ordóñez, *Computers & Operations Research* 36(5); pp 1582–1590, 2009.
- J17 "Heuristic Approach for the Integrated Inventory-Distribution Problem," T.F. Abdelmaguid, M.M. Dessouky, and F. Ordóñez. *Computers and Industrial Engineering* 56; pp 1519–1534, 2009
- J18 "A Two-stage Vehicle Routing Problem for Large-scale Bioterrorism Emergencies," Z. Shen, M. M. Dessouky, and F. Ordóñez. To appear in *Networks*.
- J19 "Coordinating randomized policies for increasing security of agent systems," P. Paruchuri, J. P. Pearce, J. Marecki, M. Tambe, F. Ordóñez, and S. Kraus. *Journal of Information Technology and Management*, 10(1), pp 67–79, 2009.
- J20 "Wardrop Equilibria with Risk-Averse Users," F. Ordóñez, and N.E. Stier-Moses. To appear in *Transportation Science*.
- J21 "A Model and Algorithm for the Courier Delivery Problem with Uncertainty," I. Sungur, Y. Ren, F. Ordóñez, M. M. Dessouky, and H. Zhong. To appear in *Transportation Science*.
- J22 "A Delay Estimation Technique for Single and Double-track Railroads," P. Murali, M. M. Dessouky, F. Ordóñez, and K. Palmer. To appear in *Transportation Research, Part E: Logistics and Transportation Review*.

Highly Selective Refereed Conference Papers

- J23 "Toward a Formalization of Teamwork with Resource Constraints," P. Paruchuri, M. Tambe, F. Ordóñez, and S. Kraus. Proceedings of the AAMAS-2004 conference, New York, July 2004. Acceptance rate 24%
- J24 "Security in multiagent systems by policy randomization," P. Paruchuri, M. Tambe, F. Ordóñez, S. Kraus. Proceedings of the AAMAS-2006 conference. Hakodate, Japan, May 2006. Acceptance rate 23%
- J25 "An Efficient Heuristic Approach for Security Against Multiple Adversaries," P. Paruchuri, J. Pearce, M. Tambe, F. Ordóñez, S. Kraus. Proceedings of the AAMAS-2007 conference. Honolulu, May 2007. Acceptance rate 23%

- J26 "Playing Games for Security: An Efficient Exact Algorithm for Solving Bayesian Stackelberg Games," P. Paruchuri, J. Pearce, J. Marecki, M. Tambe, F. Ordóñez, and S. Kraus. Proceedings of the AAMAS-2008 conference. Estoril, Portugal, May 2008. Acceptance rate 22%
- J27 "Computing Optimal Randomized Resource Allocations for Massive Security Games," C. KieKintveld, M. Jain, J. Tsai, J. Pita, M. Tambe, F. Ordóñez. Proceedings of the AAMAS-2009 conference. Budapest, Hungary, May 2009. Acceptance rate 22%
- J28 "Effective Solutions for Real-World Stackelberg Games: When Agents Must Deal with Human Uncertainties," J. Pita, M. Jain, M. Tambe, F. Ordóñez, S. Kraus, R. Magori-Cohen. Proceedings of the AAMAS-2009 conference. Budapest, Hungary, May 2009. Acceptance rate 22%

Refereed Journal Articles Submitted for Publication

- S1 "Emergency Logistics Planning for an Infectious Disease Outbreak: The Example of Smallpox Response," Y. Ren, F. Ordóñez, and S. Wu.
- S2 "The Multi-shift Vehicle Routing Problem with Overtime," Y. Ren, M.M. Dessouky, and F. Ordóñez.
- S3 "Capacitated Facility Location with Distance Dependent Coverage under Demand Uncertainty," P. Murali, F. Ordóñez, and M.M. Dessouky.
- S4 "The Perishable Inventory Management System with A Minimum Volume Constraint," Z. Shen, M. M. Dessouky, and F. Ordóñez.
- S5 "Robust Optimization: A Case in Forest Operations Planning," S. Maturana, F. Ordóñez, A. Perez, and J. Vera. USC ISE Working paper #2007-03.
- S6 "Discounted Robust Stochastic Games and an Application to Queueing Control," E. Kardes, F. Ordóñez, and R.W. Hall. USC ISE Working paper #2007-01.

Book Chapters / Dissemination Articles – in Print or Accepted

- B1 "Fundamental Limits of Networked Sensing," B. Krishnamachari and F. Ordóñez. In *Wireless Sensor Networks*, T. Znati, K. Sivalingam, and C.S. Raghavendra (eds), Kluwer Academic Publishers, 2004.
- B2 "Rapid Distribution of Medical Supplies," M. M. Dessouky, F. Ordóñez, H. Jia, Z. Shen. In *Patient Flow: Reducing Delay in Healthcare Delivery*, R. Hall (ed), Springer, 2006
- B3 "The Impact of Fairness Constraints on Data Gathering in Energy-Limited Wireless Sensor Networks: A Study Using Optimization Models," B. Krishnamachari and F. Ordóñez. In *Wireless Ad-Hoc and Sensor Networks*, A. Safwat (ed), Springer 2007.

- B4 "Coordinating Randomized Policies for Increasing Security in Multiagent Systems," P. Paruchuri, M. Tambe, F. Ordóñez, S. Kraus. Lecture Notes in Artificial Intelligence Hot Topic Volume, Springer, 2007
- B5 "Infrastructure: Network Futures," F. Bar, W. Baer, S. Ghandeharizadeh, F. Ordóñez. In *Networked Publics*, K. Varnelis (ed), MIT Press, 2008.
- B6 "Scaling Laws as a Tool of Materials Informatics," P. F. Mendez, R. Furrer, R. Ford, F. Ordóñez. *JOM: The Member Journal of TMS*, 60(3), pp 60–65, 2008.
- B7 "Using Game Theory for Los Angeles Airport Security," J. Pita, M. Jain, F. Ordóñez, C. Portway, M. Tambe, C. Western, P. Paruchuri, S. Kraus. *AI Magazine* 30(1), pp 43–57, 2009

Refereed Conference Proceedings in Print or Accepted (full paper review)

- C1 "IRIS – A Tool for Strategic Security Allocation in Transportation Networks," J. Tsai, S. Rathi, C. Kiekintveld, F. Ordóñez, M. Tambe. Proceedings of the AAMAS-2009 conference (Industry Track). Budapest, Hungary, May 2009.
- C2 "Robust Solutions in Stackelberg Games: Addressing Boundedly Rational Human Preference Models," M. Jain, F. Ordóñez, J. Pita, C. Portway, M. Tambe, C. Western, P. Paruchuri, S. Kraus. Proceedings of the AAI-2008 conference, 4th Multidisciplinary Workshop on Advances in Preference Handling. Chicago, July 2008.
- C3 "Efficient Algorithms to solve Bayesian Stackelberg Games for Security Applications," P. Paruchuri, J. Pearce, J. Marecki, M. Tambe, F. Ordóñez, S. Kraus. Proceedings of the AAI-2008 conference (Nectar Track). Chicago, July 2008.
- C4 "Deployed ARMOR Protection: The Application of a Game Theoretic Model for Security at the Los Angeles International Airport," J. Pita, M. Jain, C. Portway, C. Western, P. Paruchuri, J. Marecki, M. Tambe, F. Ordóñez, S. Kraus. Proceedings of the AAMAS-2008 conference (Industry Track). Estoril, Portugal, May 2008.
- C5 "A Constructive Heuristic Approach for the Integrated Inventory-Distribution Problem," T.F. Abdelmaguid, M.M. Dessouky, and F. Ordóñez. Proc. of the ninth Cairo University International Conference on Mechanical Design and Production (MDP-9), Cairo, January 2008.
- C6 "A Model for Railway Capacity Management," P. Murali, M.M. Dessouky, and F. Ordóñez. Conference Proceedings National Urban Freight Conference 2007, Long Beach, CA, 2007
- C7 "Robust Wardrop Equilibrium," F. Ordóñez, and N.E. Stier-Moses. In T. Chahed and B. Tuffin (eds.) LNCS #4465: NET-COOP 2007, Avignon, France, pages 247-256, 2007.
- C8 "An Efficient Heuristic for Security Against Multiple Adversaries in Stackelberg Games," P. Paruchuri, J. Pearce, M. Tambe, F. Ordóñez, S. Kraus. AAI Spring Symposium on Game and Decision-Theoretic Agents, GTDT, Stanford, March 2007

- C9 "Factors that impact solution run times of arc-based formulations of the Vehicle Routing Problem," F. Ordóñez, I. Sungur, and M. M. Dessouky. Proceedings of the Transportation Research Board Annual Meeting, Washington DC, January, 2007.
- C10 "Increasing security through communication and policy randomization in multiagent systems," P. Paruchuri, M. Tambe, F. Ordóñez, S. Kraus. MSDM Workshop, AAMAS-06, Hakodate, Japan, May 2006.
- C11 "Randomizing Policies for Agents and Agent-Teams," P. Paruchuri, M. Tambe, F. Ordóñez, S. Kraus. Proceedings of the 9th AI and Math Symposium, Fort Lauderdale, January 2006.
- C12 "Safety in multiagent systems by Policy Randomization," P. Paruchuri, D. Dini, M. Tambe, F. Ordóñez, S. Kraus. SASEMAS workshop, AAMAS-05, Utrecht, Netherlands, July 2005.
- C13 "Intentional Randomization for Single Agents and Agent-teams," P. Paruchuri, D. Dini, M. Tambe, F. Ordóñez, S. Kraus. GTDT workshop, IJCAI-05, Edinburgh, Scotland, July 2005.
- C14 "A Sub-Gradient Algorithm for Maximal Data Extraction in Energy-limited Wireless Sensor Networks," W. Ye and F. Ordóñez. Symposium on Wireless Sensor Networks, in IEEE WirelessCom 2005, Maui, June 2005.
- C15 "Analysis of Energy-Efficient, Fair Routing in Wireless Sensor Networks through Non-linear Optimization," B. Krishnamachari and F. Ordóñez. Workshop on Wireless Ad-hoc, Sensor, and Wearable Networks, in IEEE Vehicular Technology Conference - Fall, Orlando, October 2003.
- C16 "Determination of Scaling Laws from Statistical Data," P. Mendez and F. Ordóñez. Proceedings of Fifth International Workshop on Similarity Methods, Stuttgart, November 2002.

Conference Proceedings in Print or Accepted (extended abstract review)

- C17 "ARMOR Security for Los Angeles International Airport," J. Pita, M. Jain, F. Ordóñez, C. Portway, M. Tambe, C. Western, P. Paruchuri, S. Kraus. In Proceedings of AAAI-2008 Conference, Intelligent Systems Demonstrations. Chicago, July 2008.
- C18 "Mobility Allowance Shuttle Transit (MAST) Services: MIP formulation and strengthening with logic constraints," L. Quadrioglio, M.M. Dessouky, and F. Ordóñez. LNCS #5015: CPAIOR 2008, Paris, France, pages 387–391, 2008.
- C19 "A Robust Optimization Approach to Dispatching Technicians under Stochastic Service Times," C. Cortés, F. Ordóñez, S. Souyris, A. Weintraub. TRISTAN VI, Phuket, Thailand, June 2007.
- C20 "Robust Analysis for Wireless Sensor Networks under Distance Uncertainty," W. Ye and F. Ordóñez. 5th Intl. Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt'07), Limassol, Cyprus, April 2007.

C21 "A Robust Optimization Approach to Dispatching Technicians under Stochastic Service Times," S. Souyris, F. Ordóñez, C. Cortés, and A. Weintraub. XIII Congreso Latino-Iberoamericano de Investigación Operativa (CLAIO), Montevideo, Uruguay, November 2006.

Research Software

- SLAW, a Package for Scaling LAWs from Statistical Data", P. Mendez and F. Ordóñez, World Wide Web, <http://illposed.usc.edu/~pat/SLAW> (2004).
- "SLAW, a Package for Scaling LAWs from Statistical Data, Version 0.93, User's Guide," F. Ordóñez, T. Li, and P. Mendez. USC ISE Working paper #2004-02. Also available from <http://illposed.usc.edu/~pat/SLAW/>

Funded Research

— National Science Foundation, “Optimization Models and Algorithms for Emergency Response Planning,” 09/2007 - 08/2010, \$250,000.

A research to develop models and decomposition and warm start methods for convex programming that will allow optimal emergency response planning. Principal Investigator with R. Waltz.

— Department of Homeland Security, “Center for Risk and Economic Analysis of Terrorism Events (CREATE),” 08/2007 - 07/2010, \$300,000.

Bayesian Stackelberg Games for security applications. Research on methods and application to patrolling problems in Los Angeles international airport. Lead Investigator, with M. Tambe.

— USC/CSULB METRANS, “Strategies for Effective Rail Track Capacity Usage,” 06/2006 - 08/2008, \$180,000.

Research to create track usage models that can be used as an admission control policy for track capacity management. Co-Principal Investigator with M.M. Dessouky and R. Leachman.

— Department of Homeland Security, “Center for Risk and Economic Analysis of Terrorism Events (CREATE),” 03/2004 - 08/2007, \$525,000.

Research to develop a family of emergency planning models for the distribution of inventoried items such as vaccinations during the three wave response to a major emergency event. Lead Investigator, with M.M. Dessouky.

— USC/CSULB METRANS, “Better delivery/pick-up routes in the presence of uncertainty,” 02/2006 - 06/2007, \$85,000.

A project to compare different stochastic routing models for a real-world routing problem that faces demand uncertainty. Principal Investigator with M.M. Dessouky.

— National Science Foundation, “The Robust Vehicle Routing Problem,” 07/2004 - 06/2008, \$192,112.

A research project to apply robust optimization techniques for vehicle routing problems. Principal Investigator with M.M. Dessouky.

— USC Annenberg Center for Communication. “Networked Publics,” 09/2005 - 06/2006, \$40,000.

An interdisciplinary year long project to study the impact of new network communication technologies on society, space, media, and politics. Fellow with W. Baer, F. Bar, J. Bleecker, A. Friedberg, S. Ghandharizadeh, M. Ito, M. Kann, M. Lim, T. Richmond, A. Russell, M. Tuters, K. Varnelis.

— USC/CSULB METRANS, “Confidence Intervals for Estimated Traffic Demand,” 01/2004 - 08/2005, \$75,000.

A project to develop methods of estimating traffic demand from link flow data that give confidence intervals that depend only on the data uncertainty. Principal Investigator with K. Palmer.

— PATH - CALTRANS, “Productivity and Cost Effectiveness of DRTS,” 01/2004 - 06/2005, \$120,000.

A grant to study operational policies that can lead to the reduction of deadhead miles in demand

responsive transit systems. Co-Principal Investigator with M.M. Dessouky.

— USC Zumberge Research and Innovation Fund, “Analysis of Wireless Sensor Networks Through Non-linear Optimization,” 06/2003 - 06/2005, \$50,000.

The use of non-linear optimization for a study of the optimal design and operation of wireless sensor networks. Co-Principal Investigator with B. Krishnamachari.

— USC/CSULB METRANS, “Robust Investment Decisions for Highway Capacity Expansions,” 06/2003 - 08/2004, \$35,000.

A project to use robust optimization methods on network design problems. Principal Investigator.

Presentations

Invited / abstract review

1. “Observed IPM Iterations on Semi-Definite Programming Problems,” R.M. Freund, F Ordóñez, K.C. Toh. ICCOPT II, Hamilton, Canada, August 2007.
2. “How many IPM Iterations Does it Take to Solve an SDP?,” R.M. Freund, F Ordóñez, K.C. Toh. Mathematical Engineering Department Seminar, University of Chile. July 2007.
3. “Courier Delivery in the Presence of Uncertainty,” I. Sungur, F. Ordóñez, M.M. Dessouky. Industrial Engineering Department Seminar, University of Chile, July 2007.
4. “Routing Medical Supplies for Emergencies,” Z. Shen, F. Ordóñez, M.M. Dessouky. IIE IERC 2007, Nashville, May 2007.
5. “How many IPM Iterations Does it Take to Solve an SDP?,” R.M. Freund, F Ordóñez, K.C. Toh. GA-Tech, School of Industrial & Systems Engineering Seminar. May 2007.
6. “Robust Vehicle Routing,” F. Ordóñez, M.M. Dessouky, Z. Shen, I. Sungur. ROUTE 2007 Workshop, Jeckyll Island, May 2007.
7. “Robust Vehicle Routing,” F. Ordóñez, M.M. Dessouky, Z. Shen, I. Sungur. Seminar at Industrial and Systems Engineering Department, Pontificia Universidad Catolica de Chile. March 2007.
8. “Disbursement of Medical Supplies for Biological Emergencies,” F. Ordóñez, M.M. Dessouky, H. Jia, Z. Shen. Invited session on Planning for and Responding to Biological or Chemical Attacks. INFORMS 2006, Pittsburgh, November 2006.
9. “Routing of Technicians Under Stochastic Service Time,” S. Souyris, C.E. Cortés, A. Weintraub, and F. Ordóñez. 19th ISMP, Rio de Janeiro, Brazil, August 2006.
10. “Network Design and Routing with Demand and Travel Time Uncertainty,” F. Ordóñez. 19th ISMP, Rio de Janeiro, Brazil, August 2006.

11. "Robust Optimization in Transportation Networks," F. Ordóñez. Industrial Engineering Department Seminar, University of Chile, July 2006.
12. "Better Delivery/Pick Up Routes in the Presence of Uncertainty," F. Ordóñez and M.M. Dessouky, UPS Operations Research Group, Baltimore, June 2006.
13. "Robust Optimization in Transportation Networks," F. Ordóñez. UC Davis, ITS Seminar Series, May 2006.
14. "Efficient Routing Under Uncertainty," F. Ordóñez, M.M. Dessouky, Z. Shen, and I. Sungur. DIMACS Workshop on Computational Optimization and Logistics Challenges in the Enterprise (COLCE), Annandale, April 2006.
15. "Robust Wardrop Equilibria," F. Ordóñez and N. Stier-Moses. Invited session on robust optimization, INFORMS 2005, San Francisco, November 2005.
16. "Robust Airline Revenue Management," R. Caldentey and F. Ordóñez. Invited session on robust revenue management, INFORMS 2005, San Francisco, November 2005.
17. "Robust Optimization," F. Ordóñez. Tutorial given at the Workshop on Operations and Management Science, University of Chile, Santiago, Chile, July 2005
18. "Robust Network Capacity Expansion," F. Ordóñez. Workshop on Operations and Management Science, University of Chile, Santiago, Chile, July 2005
19. "Robust Network Capacity Expansion", F. Ordóñez. IFORS 2005, Honolulu, July 2005.
20. "A Modeling Framework for Facility Location of Medical Services for Large-Scale Emergencies", H. Jia, F. Ordóñez, and M. Dessouky. IFORS 2005, Honolulu, July 2005.
21. "On the Causes of Variability in IPM Iterations for Semi-Definite Programming Problems," R.M. Freund, F. Ordóñez, and K.C. Toh. SIAM Conference on Optimization, Stockholm, Sweden May 2005.
22. "Estimation and Confidence Intervals of OD Traffic Demand," F. Ordóñez, Y. Chen, W. Tjangnaka, and K. Palmer. Poster presented at SIAM SoCAMS Meeting, Los Angeles, April 2005.
23. "Robust Capacity Expansion of Transit Networks," F. Ordóñez. Poster presented at METRANS Annual Research Conference, Los Angeles, February 2005.
24. "Robust Network Revenue Management," R. Caldentey and F. Ordóñez. Invited session on robust revenue management, INFORMS 2004, Denver, October 2004.
25. "Robust Capacity Expansion of Transit Networks," F. Ordóñez and J. Zhao. Optimization Days 2004, Montreal, May 2004.
26. "Condition Number Complexity for Non-Conic Convex Optimization," F. Ordóñez and R.M. Freund. 18th ISMP, Copenhagen, Denmark, August 2003.

27. "Optimization Models for Wireless Sensor Network Design," F. Ordóñez. UCLA/HSSEAS Electrical Engineering Department, Signals and Systems Seminar, May 2003.
28. "Condition Number Theory for Non-conic Convex Optimization," F. Ordóñez and R.M. Freund. Industrial Engineering Department Seminar, University of Chile, December 2002.
29. "IPM Practical Performance on LPs and the Explanatory Value of Complexity Measures," F. Ordóñez and R.M. Freund. SIAM Conference on Optimization, Toronto, Canada, May 2002.
30. "Are Condition Numbers Good Predictors of the Performance of Interior-Point Algorithms on Practical Problems?" F. Ordóñez and R.M. Freund. MOPTA01, Hamilton, Canada. August 2001.
31. "Computational Experience with Condition Numbers and Performance Guarantees for Linear Optimization." F. Ordóñez and R.M. Freund, HPCES Workshop & Symp., Singapore. January 2001.

Teaching Experience

2002-Present *USC, Industrial and Systems Engineering Department*

- Assistant Professor. Courses:
 - ISE 520 Optimization: Theory and Algorithms
 - ISE 530 Introduction to Operations Research
 - ISE 532 Network Flows
 - ISE 536 Linear Programming and Extensions
 - ISE 650 Ph.D. Seminar in Industrial Eng.
 - ISE 599 Robust Optimization
 - MATH 126 Calculus II

1998-2001 *MIT, Sloan School of Management*

- Teaching assistant. Course: Data, Models and Decisions
- Instructor. Course: Mathematics Review for MBA students

1992-1997 *University of Chile, Mathematical Engineering Department*

- Lecturer. Courses: Numerical Calculus; Calculus
- Teaching Assistant. Courses: Calculus, Nonlinear Optimization, Applied Mathematics, Differential Equations.

Advisement

Doctoral Students (Completed) *Chair or Co-Chair*

1. Zhihong Shen, "Routing and Inventory Models for Emergency Response to Minimize Unmet Demand," Co-Chair, May 2008. (Researcher at Microsoft Corporation)
2. Ilgaz Sungur, "The Robust Vehicle Routing Problem," Chair, June 2007 (Project Manager, Innovative Scheduling)
3. Erim Kardes, "Robust Stochastic Games and Applications to Counter-Terrorism Strategies", Co-Chair, May 2007 (Post Doc Researcher at CREATE USC)
4. Wei Ye, "Models and Algorithms for Energy Efficient Wireless Sensor Networks," Chair, April 2007 (Project Manager/System Engineer at Bravo Tech Inc)
5. Hongzhong Jia, "Models and Solution Approaches for Facility Location of Medical Supplies for Large-scale Emergencies," Co-Chair, December 2006. (Researcher at Microsoft Corporation)

Doctoral Students (Completed) *Committee Member*

5. Jonathan Pearce, "Local Optimization in Cooperative Agent Networks," May 2007.
6. Xijin Yan, "Network Coding Capacity and Performance Optimization," May 2007.
7. Praveen Paruchuri, "Keep the Adversary Guessing: Agent Security by Policy Randomization," April 2007.
8. Pradeep Varakantham, "Towards efficient planning for real world partially observable domains," February 2007.
9. Wonseok Baek, "Reliable and Power Efficient Protocols for Space Communication and Wireless Ad-Hoc Networks," September 2006.
10. Zhiqiang Zhou, "Two-phase IMSE-optimal Latin Hypercube Design for Computer Experiments," June 2006
11. Worawan Suteewong, "Algorithms for Solving the Train Dispatching Problem for General Networks," May 2006
12. Luca Quadrioglio, "A Hybrid Fixed and Flexible Transportation Service: Description, Viability, Formulation, Optimization and Heuristic," June 2005.
13. Tamer Abdelmaguid, "New Algorithmic Approaches to the Integrated Inventory-Distribution Problem," May 2004.
14. Ding Chen Chang, "Microdynamic modeling of acoustic emission in machining," May 2004.

15. Apichat Chayanupatkul, "Freight Routing and Containerization in a Package Network that Accounts for Sortation Constraints and Costs," May 2004.

Doctoral Students (In Progress)

Yingtao Ren, "Pick up and delivery with overtime and linking time window constraints," Co-Chair.

Master Students (Completed)

Yoonheui Kim, MS-CS with thesis "Exploiting Locality of Interaction in Network Distributed POMDPs: An Empirical Evaluation," Reader, June 2006.

Don Dini, MS-CS with thesis "Advantages of unpredictable multiagent systems: randomized policies for single agent and agent-teams," Reader, June 2005.

Supakorn Mudchanatongsuk, MS-ORE, Robust Network Design Problem, Advisor, May 2005.

Yingying Chen, MS-ORE, Confidence Intervals for Estimation of OD-pairs, Advisor, May 2005.

Professional Honors

- Best paper award for "IRIS – A Tool for Strategic Security Allocation in Transportation Networks," J. Tsai, S. Rathi, C. Kiekintveld, F. Ordóñez, M. Tambe. at the Industry Track of the AAMAS-2009 conference, Budapest (2009)
- Best paper award for "Safety in multiagent systems by Policy Randomization," P. Paruchuri, D. Dini, M. Tambe, F. Ordóñez, S. Kraus. at SASEMAS workshop, AAMAS-05, Utrecht (2005)
- Annenberg Center for Communication Fellow (USC Research Award, 2005)
- Invited to the Young Researcher Roundtable at INFORMS Practice Meeting (2005)
- Zumberge Fellow (USC Research Award, 2003)

Memberships in Professional Societies

- Institute of Industrial Engineers (IIE), since 2003
- Institute for Operations Research and Management Science (INFORMS), since 2001
- Mathematical Programming Society (MPS), since 2003
- Society for Industrial and Applied Mathematics (SIAM), since 2004

Academic Service

To the University of Southern California

- Chair, Graduate Committee, Epstein ISE Department, 2004-present
- Member, EFC's Subcommittee on Teaching Loads Best Practices, Viterbi School of Engineering, USC, 2006-present.
- Chair, Committee to review Ph.D. program, Epstein ISE Department, 2006-present
- Member, Departmental Committee for Promotion to Associate Professor of Engineering Practice, Epstein ISE Department, 2006-2007.
- Member, Provost's Task Force on Diversity and Faculty Development, USC, 2005-2006.
- Chair, Ph.D. admissions committee, Epstein ISE Department, 2003-2006
- Member, Ph.D. admissions committee, Epstein ISE Department, 2002
- Chair, Committee to review Ph.D. screening exam, Epstein ISE Department, 2004
- Chair, Committee to review Ph.D. admission procedures, Epstein ISE Department, 2003
- Since 2003, I maintain an optimization computing environment (OptimISE) that makes available to the USC community optimization software. I maintain the computers, user accounts, and optimization software licenses. I also field questions on usage of computer and software. On this system students can access AMPL, CPLEX, LOQO, Knitro, and TAO remotely to solve optimization problems. To date this service has benefited the research of more than 16 Ph.D. students and is a resource for teaching optimization courses such as ISE 520 and ISE 536.

To Academic and Professional Societies

- Associate Editor of ITS Modeling and Analysis, for the 2nd Annual National Urban Freight Conference (NUF 2007), 2007.
- Session Organizer and Chair, "Convex optimization methods," ICCOPT II, 2007.
- Associate Editor of ITS Modeling and Analysis, for the ITSC 2006 conference, 2006.
- Session Organizer and Chair, "Planning for and Responding to Biological or Chemical Terrorist Attacks," INFORMS annual meeting, 2006.

Service as Referee or Reviewer

- Reviewer for Dissertation Fellowship, UC-Davis, 2006.
- Reviewer of proposals to FONDECYT-Chile, 2006.

- Reviewer in NSF panels 2003, 2004, 2005.
- External reviewer for Ph.D. dissertation in Industrial and Systems Engineering at Universidad Católica de Chile, 2006.
Ivan Derpich, “Explotación de nuevas medidas de complejidad en programación entera y su uso en algoritmos”, January 2006.
- Referee for papers in the following journals: Operations Research, SIAM Journal on Optimization, Mathematics of Operations Research, Mathematical Methods of Operational Research, Computational Optimization and Applications, Manufacturing & Service Operations Management, Production and Operations Management, European Journal of Operational Research, Annals of Operations Research, Transportation Research B, Transportation Research C, ASCE Journal of Transportation Engineering, Computers and Industrial Engineering, IEEE Transaction on Wireless Communications,