Erick Moreno-Centeno

Assistant Professor

Industrial & Systems Engineering
Texas A&M University
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RESEARCH INTERESTS

– Theory and applications of discrete optimization with emphasis on network optimization.

– Design and analysis of optimization models and algorithms. Computational optimization.

– Solving challenging problems by combining effective modeling with efficient computational techniques.

– Applications: Energy (topology control), decision theory (voting), and data mining.

EDUCATION

Ph.D.	**University of California, Berkeley**	**2006 - 2010**
	Industrial Engineering and Operations Research	

Use and analysis of new optimization techniques for decision theory and data mining
Dorit S. Hochbaum (chair), Alper Atamtürk, David R. Brillinger, Richard M. Karp

M.Sc.	**University of California, Berkeley**	
	Computer Science	**2009 - 2010**
	Industrial Engineering and Operations Research	**2005 - 2006**

B.Sc.	**Instituto Tecnológico y de Estudios Superiores de Monterrey**	**1998 - 2002**
	Industrial Physics Engineering	
	Minors: Combinatorial Optimization, Intelligent Systems	
	Visiting Student: University of Waterloo, Canada. (Spring 2002)	

EMPLOYMENT HISTORY

Assistant Professor   **Dec 2011 - present**
Visiting Assistant Professor   **Sep 2010 - Nov 2011**
Industrial & Systems Engineering, Texas A&M University

Graduate Research and Teaching Assistant   **(intermittently) Aug 2006 - May 2010**
University of California, Berkeley

Consultant in Information Technologies   **Feb 2003 - Dec 2004**
DMR Consulting México. México, D.F.

Undergraduate Research Assistant   **Jan 2002 - Apr 2002**
University of Waterloo, Canada

SELECTED AWARDS AND HONORS

Grants

– PI, "EAGER: Topology Control for Enhancing the Reliability of the National Power Grid", Sep 2014 to Aug 2016, NSF, $299,998

– Co-PI, "Big Data Enabled Proactive Alarm Management of Power Control Equipment", with Y. Ding (PI), P.R. Kumar, B. Mallick, N. Reddy, J. Juang, Sep 2014 to Aug 2016, TEES seed grant, $200,000

– Co-PI, "RAPID: Identifying social network and mobile technology use and its correlation with individual evacuation behavior in hurricane Sandy", with J. Yates (PI), T. Ferris, D. Matarrita, Jan 2013 to Dec 2014, NSF, $32,540

– PI, "EAGER: Optimization without round-off errors", Sep 2012 to Aug 2014, NSF, $120,000
   + REU Supplementary Grant, Mar 2014 to Jul 2014, NSF, $4,750

– Co-PI, "Robust adaptive control for maintaining the grid reliability and electricity market availability under n-m grid contingencies", with M. Kezunovic (PI), A. Sprinston, G. Huang, S. Oren (PI-UC Berkeley), K. Headman (PI-Arizona State U.), Jan 2012 to Dec 2014, DOE/ARPA-E, $5,539,380

– Co-PI, "RAPID: Identifying social network and mobile tech. use and its correlation with individual evacuation behavior", with J. Yates (PI), T. Ferris, D. Matarrita, Jan 2013 to Dec 2014, NSF, $32,540

– Co-PI, "High-performance Computing Equipment for Computational Operations Research and Applications Laboratory (CORAL) at Texas A&M University", with S. Butenko (PI), K. Kianfar, L. Ntaimo, W. Wilhem, Jun 2011 to Jun 2012, AFOSR/NL, $249,959

Research Awards

– **Finalist (within top 6 out of 62 valid submissions) Student Paper Competition**   **2011**
Awarded by INFORMS Decision Analysis Society

– **Katta G. Murty Best Paper Prize**   **2009**
Awarded by UC Berkeley's IEOR faculty to the best student paper in Optimization

– **Marshall-Oliver-Rosenberger Award**   **2007**
Awarded by UC Berkeley's IEOR faculty for my research in Decision Theory

Teaching Awards

– **Selectee: National Academy of Engineers's sixth Frontiers of Eng. Education Symposium** **2014**
Only 77 engineering educators were selected nation-wide

– **Annual Award for Excellence in the Teaching of Operations Research (OR)**   **2014**
OR division of IIE's annual national-level award recognizing excellence in teaching OR

– **Professor of the year award.**   **2013**
Voted by the undergraduate student members of the IIE student chapter

– **Montague-Center for Teaching Excellence (CTE) Scholar**   **2012**
Award recognizing early-career excellence in undergraduate teaching (1 faculty per college)

– **Graduate Student Instructor of the Year Award**   **2008**
Awarded by the UC Berkeley's Institute of Industrial Engineers student chapter

– **Outstanding Graduate Student Instructor Award**   **2007**
Campus-wide award by the UC Berkeley's Teaching Center

Other Awards: listed in the last page

PUBLICATIONS   [(*) indicates my graduate students at Texas A&M]

Appeared in Refereed Journals

[1] Bansal M., K. Kianfar, Y. Ding, E. Moreno-Centeno, "Hybridization of Bound-and-Decompose and Mixed Integer Feasibility Checking to Measure Redundancy in Structured Linear Systems", **IEEE Transactions** on Automation Science and Engineering, 10(4) 2013, 1151–1157

[2] Lee C. Y., A. L. Johnson, E. Moreno-Centeno, T. Kuosmanen, "A more efficient algorithm for convex nonparametric least squares", **European Journal of Operational Research**, 227(2) 2013, 391–400

[3] Moreno-Centeno E., R. M. Karp, "The implicit hitting set approach to solve combinatorial optimization problems with an application to multi-genome alignment", **Operations Research**, 61(2) 2013, 453–468

[4] Hochbaum D. S., E. Moreno-Centeno, P. Yelland, R. A. Catena, "Rating customers according to their promptness to adopt new products", **Operations Research**, 59(5) 2011, 1171–1183

[5] Hochbaum D. S., E. Moreno-Centeno, "The inequality satisfiability problem", **Operations Research Letters**, 36(2) 2008, 229–233

[6] Hochbaum D. S., E. Moreno-Centeno, "Country credit-risk rating aggregation via the separation-deviation model", **Optimization Methods and Software**, 23(5) 2008, 741–762

[7] Escobedo A. R.(*), E. Moreno-Centeno, K. W. Hedman, "Topology control for load-shed recovery", **IEEE Transactions** on Power Systems, 29(2) 2014, 908–916.

Appeared in Refereed Conference Proceedings of prestigious Computer Science conferences

[1] Chandrasekaran K., R. M. Karp, E. Moreno-Centeno, S. Vempala, "Algorithms for Implicit Hitting Set Problems", ACM-SIAM Symposium on Discrete Algorithms (**SODA11**), Jan 2011
SODA is one of the most prestigious Computer Science Conferences. Acceptance rate: 29.9%.

Submitted to Refereed Journals

[1] Hochbaum D. S., E. Moreno-Centeno, "Simultaneous aggregation of cardinal and ordinal evaluations: ranking in a student paper competition", under revision at **IIE Transactions**

[2] Dehghanian P., Y. Wang(*), G. Gurrala, E. Moreno-Centeno, M. Kezunovic, "Reliable implementation of power system corrective topology control", under revision at **IEEE Transactions** on Power Systems.

[3] Moreno-Centeno E., A. R. Escobedo(*) "Axiomatic aggregation of incomplete rankings", submitted.

[4] Sung K.(*), E. Moreno-Centeno, D. Matarrita-Cascante, J. Yates, "Identification of significant community growth factors research", submitted.

[5] Ferris T., D. Matarrita-Cascante, E. Moreno-Centeno, J. Yates, K. Sung (*), M. El-Sherif, "Studying the usage of social media and mobile technology during extreme events and their implications for evacuation decisions: A case study of Hurricane Sandy", submitted.

[6] Escobedo A. R.(*), E. Moreno-Centeno, "Roundoff-error-free algorithms for solving linear systems via Cholesky and LU factorizations", submitted.

[7] Butenko S., A. L. Johnson, E. Moreno-Centeno, J. Yates, "An Analytical Method for College Football Recruiting Rankings", under minor revision at the **Journal of Quantitative Analysis of Sports**.

Manuscripts in preparation

[1] Fishbain B., E. Moreno-Centeno, "Aggregating inaccurate pollution sensors to obtain high accuracy measurements"

[2] Moreno-Centeno E., R. Razo-Garcia, "Creating a better monetary policy classification system"

[3] Wang Y.(*), E. Moreno-Centeno, Y. Ding, "Aligning mismatched multi-resolution metrology datasets"

PUBLICATIONS (continued)   [(*)indicates my graduate students at Texas A&M]

Un-refereed Conference Proceedings

– Dsoki C. E., A. Fügenschuh, H. Hanselka, D. S. Hochbaum, I. Hernandez-Magallanes, E. Moreno-Centeno, P. Andrea, "Comparison between Artificial Neural Networks and the Separation-Deviation Model", SFB 666: Integral sheet metal design with higher order bifurcations - Development, Production, Eval., Editor Groche P., (2008), 97 - 106. (In german)

University-invited presentations

– "Solving large scale instances of a special case of the Quadratic Assignment Problem", School of Industrial Engineering & Management Seminar, Oklahoma State University, Oct, 2014

– "Implicit Hitting Set Problems", Industrial Engineering Program's Seminar, University of Texas, Austin, TX, Feb 2013

– "Implicit Hitting Set Problems", Industrial Engineering Department's Seminar, University of Houston, TX, Nov 2012

– "Axiomatic aggregation of incomplete evaluations", Theory/Experimental Seminar, Economics Department at Texas A&M, College Station, TX, Sep 2011

– "Axiomatic aggregation of incomplete evaluations", Industrial Engineering Seminar, Instituto Tecnológico Autónomo de México (ITAM), Mexico DF, Dec 2009

– "Axiomatic aggregation of incomplete evaluations", Industrial Engineering Seminar, Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Monterrey Mexico, Sep 2009

– "Country credit-risk rating aggregation via the SD model", Seminar in Optimization, TU Darmstadt, Germany, Jul 2008

Conference presentations [(*) indicates my graduate students at Texas A&M]

– Moreno-Centeno E., Y. Wang(*), Y. Ding, "Solving large scale instances of a special case of the Quadratic Assignment Problem", Latin-American Conference on Operations Research (CALIO), Monterrey, Mexico, Oct, 2014

– Moreno-Centeno E., A.R. Escobedo(*), K.W. Hedman, "Topology control for load-shed recovery", SIAM Annual Meeting, Chicago IL, Jul 2014

– Moreno-Centeno E., Y. Wang(*), Y. Ding, "Aligning mismatched multi-resolution metrology datasets", Optimization, Control and Applications in the Information Age, Chalkidiki Greece, Jun 2014

– Moreno-Centeno E., A.R. Escobedo(*), K.W. Hedman, "Topology control for load-shed recovery", IIE Annual Conference and Exposition (ISERC), Montreal Canada, Jun 2014

– Moreno-Centeno E., Y. Wang(*), Y. Ding, "Aligning mismatched multi-resolution metrology datasets", INFORMS Optimization Society Meeting, Houston TX, Mar 2014

– Escobedo A.R.(*), E. Moreno-Centeno, K.W. Hedman, "Topology control for load-shed recovery", INFORMS Annual Meeting, Minneapolis MN, Oct 2013

– Sung K.(*), E. Moreno-Centeno, D. Matarrita, J. Yates, "Identification of significant community growth factors research", INFORMS Annual Meeting, Minneapolis MN, Oct 2013

– Moreno-Centeno E., C.Y. Lee, A.L. Johnson, T. Kuosmanen, "A more efficient algorithm for convex nonparametric least squares", INFORMS Computing Society Meeting, Santa Fe NM, Jan 2013

– Moreno-Centeno E., R.M. Karp, "Implicit Hitting Set Problems", Society of Hispanic Professional Engineers Annual Meeting (SHPE 2012), Fort Worth TX, Nov, 2012

– Johnson A.L., C.Y. Lee, E. Moreno-Centeno, T. Kuosmanen, "A more efficient algorithm for convex nonparametric least squares", INFORMS Annual Meeting, Phoenix AZ, Oct 2012

– Moreno-Centeno E., D.S. Hochbaum, P. Yelland, R.A. Catena, "Rating customers according to their promptness to adopt new products", Congreso de la Sociedad Mexicana de Investicaion de Opera-

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ciones, Guadalajara, Oct, 2012

– Moreno-Centeno E., R.M. Karp, "Implicit Hitting Set Problems", 21st International Symposium on Mathematical Programming (ISMP), Berlin Germany, Aug, 2012

– Moreno-Centeno E., D.S. Hochbaum, P. Yelland and R.A. Catena, "Rating customers according to their promptness to adopt new products", IIE Annual Conference and Exposition (ISERC), Orlando FL, May 2012

– Moreno-Centeno E., C.Y. Lee, A.L. Johnson, T. Kuosmanen, "An efficient algorithm for convex non-parametric least squares", INFORMS Optimization Society Meeting, Miami FL, Feb 2012

– Moreno-Centeno E., D.S. Hochbaum, "Group-decision making: The incomplete ranking case", INFORMS Annual Meeting, Charlotte NC, Nov 2011

– Moreno-Centeno E., D.S. Hochbaum, P. Yelland, R.A. Catena, "Rating customers according to their promptness to adopt new products", IFORS Triennial Conference, Melbourne Australia, Jul 2011

– Moreno-Centeno E., R.M. Karp, "Implicit Hitting Set Problems", INFORMS Computing Society, Monterey CA, Jan 2011

– Moreno-Centeno E., R.M. Karp, "Implicit Hitting Set Problems", US-MX Workshop on Optim., Oaxaca México, Jan 2011

– Moreno-Centeno E., R.M. Karp, "Solving the multi-genome alignment problem as an Implicit Hitting Set Problem", INFORMS Annual Meeting, Austin TX, Nov 2010

– Moreno-Centeno E., D.S. Hochbaum, "A new data mining model for customer segmentation", INFORMS Annual Meeting, San Diego CA, Oct 2009

– Moreno-Centeno E.,"Toma de decisión en grupos: el caso de rankings incompletos", Joint Conference of the Mathematical Societies of México and Spain, Oaxaca México, Jul 2009

– Moreno-Centeno E., D.S. Hochbaum, "Finalist selection in a student paper competition", NSF's CMMI Grantee Conference, Honolulu HI, Jun 2009

– Moreno-Centeno E., A. Atamturk, M. Dror, "A network flow-based relaxation of the split delivery vehicle routing problem", INFORMS Annual Meeting, Washington DC, Oct 2008

– Moreno-Centeno E., D.S. Hochbaum, "Country credit-risk rating aggregation via the separation-deviation model", INFORMS Annual Meeting, Washington DC, Oct 2008

– Moreno-Centeno E., D.S. Hochbaum, "The separation-deviation model: analysis and applications in data mining and decision making", NSF's CMMI Grantee Conference, Knoxville TN, Jan 2008

– Moreno-Centeno E., D.S. Hochbaum, "The inequality satisfiability problem", INFORMS Meeting, Seattle WA, Oct 2007

TEACHING DEVELOPMENT

– Certificate of completion "Faculty Teaching Academy"	Sep 2012 - April 2013
– Faculty Teaching Academy, offered by A&M's Center for Teaching Excellence	Sep 2010 - to date
– INFORMS 2012: Teaching Effectiveness Colloquium	Oct 2012
– Fellow of the Summer Institute for Preparing Future Faculty	Jun 2009 - Jul 2009
– Teaching Operations Research	Aug 2006 - Dec 2006
– Teaching Conference for Graduate Student Instructors	Aug 2006
– Workshop on Teaching in the U.S classroom	Aug 2006
– Professional Standards and Ethics in Teaching	Aug 2006

STUDENT ADVISING AND MENTORING

Doctor of Philosophy

- Adolfo Escobedo; in progress.
    + Received *twice*: Conoco-Phillips Fellowship from Texas A&M Energy Institute   2013 & 2014
- Kisuk Sung; in progress.
- Yaping Wang; in progress.
- Ahmed Badr; co-advised with Halit Üster; in progress.

Undergraduate research

- Faculty mentor using an NSF's Research Experiences for Undergraduates (REU) supplement. Mar - Jul 2014

    Mentor of an underrepresented-minority undergraduate student, Joel A. Guerra, through a research project.
- Mentor for the UC Leads Science Research Program   Jun - Aug 2006

    University of California, Berkeley, CA, USA.

    Mentor of an underrepresented-minority undergraduate student, Jose R Mojica, through a research project.

TEACHING EXPERIENCE   [Evaluation Average/Maximum Score]

Assistant Professor   Jan 2012 - present
Industrial & Systems Engineering, Texas A&M University

ISEN 420 - Operations Research I (Undergraduate level course)	[TBD/5]	Sep 2014 - Dec 2014
ISEN 623 - Nonlinear Optimization (Ph.D. level course)	[4.78/5]	Jan 2014 - May 2014
ISEN 420 - Operations Research I (Undergraduate level course)	[4.65/5]	Sep 2013 - Dec 2013
ISEN 420 - Operations Research I (Undergraduate level course)	[4.47/5]	Jan 2013 - May 2013
ISEN 489 - Optimization Algorithms (Undergraduate level course)	[4.84/5]	Jan 2012 - May 2012
ISEN 420 - Operations Research I (Undergraduate level course)	[4.30/5]	Jan 2012 - May 2012

Visiting Assistant Professor   Sep 2010 - Dec 2011
Industrial & Systems Engineering, Texas A&M University

ISEN 420 - Operations Research I (Undergraduate level course)	[4.46/5]	Sep 2011 - Dec 2011
ISEN 623 - Nonlinear Optimization (Ph.D. level course)	[4.63/5]	Jan 2011 - May 2011
ISEN 620 - Survey of Optimization (Master's level course)	[4.52/5]	Sep 2010 - Dec 2010

Instructor   Jan 2010 - May 2010
Industrial Engineering and Operations Research, University of California, Berkeley, CA, USA.

Operations Research I (upper division course)	[4.51/5]
Co-instructor with Prof. Dorit S. Hochbaum	

Graduate Student Instructor (a.k.a. Teaching Assistant)   Aug 2008 -Dec 2008
Industrial Engineering and Operations Research, University of California, Berkeley, CA, USA.

Network flows and graphs (graduate level course)	[4.60/5]

Graduate Student Instructor   Aug 2007 -Dec 2007
Industrial Engineering and Operations Research, University of California, Berkeley, CA, USA.

Operations Research I (upper division course)	[4.81/5]
Graduate Student Instructor of the Year Award by UC Berkeley's Institute of Industrial Engineers.	

Graduate Student Instructor   Aug 2006 - Dec 2006
Physics, University of California, Berkeley, CA, USA.

Physics for Scientists and Engineers (lower division course)	[6.67/7]
Outstanding graduate teaching assistant award recipient.	

Volunteer Social Work (480 hours)   Aug 2000 - Dec 2001
Instituto Tecnológico y de Estudios Superiores de Monterrey. Monterrey, N.L. México

- Leadership & Values teacher in a rural elementary school. (6 months)
- Science teacher in a rural elementary school. (1 year)

SERVICE

Professional

International

— Member of the electoral committee, Mexican OR Society (SMIO)   Oct 2014

— Accredited evaluator for CONACyT's Mexican Evaluation System of Science and Technology   Mar 2014 - present.
     Registry number: RCEA-01-28719-2014;   Knowledge Area: (1) Physics, Mathematics and Earth Sciences.

— Scientific Committee Member, LatinAmerican OR Workshop (TLAIO-V) and (CSMIO-II)   Aug 2013

— Scientific Committee Member, 1st Mexican OR Society Annual Conference (CSMIO-I)   Aug 2012

— Delegate of the Mexican OR Society at IFORS, Melbourne, Australia   Jul 2011

Review panelist for

— 2015 Richard Tapia Celebration of Diversity in Computing Conference   2014

— CONACyT (Mexican National Science Foundation) research proposals   2014

— National Science Foundation (unsolicited proposals)   2013

— INFORMS 2012 - Decision Analysis Society (DAS) Student Paper Competition   2012

Elected positions

— Media coordinator, INFORMS Junior Faculty Interest Group (JFIG)   May 2013 - April 2014

Workshop administration/organization

— Member of the Planning Committee for the Smart Grid Workshop, College Station, TX   Apr 2014

Session Chair / Panel Organizer

— JFIG-sponsored Panel "Hiring and advising graduate students", INFORMS Annual Meeting   Nov 2014

— Joint Latin-Iberian-American Association for OR and SMIO Conference, Monterrey, Mexico   Oct 2014

— IIE annual conference (ISERC), Montreal, CA   Jun 2014

— (co-Chair) Focus group, "Big data in energy", Smart Grid Workshop, College Station, TX   Apr 2014

— INFORMS Optimization Society Conference, Houston, TX   Mar 2014

— JFIG-sponsored panel "Grant writing for new faculty", INFORMS Annual Meeting   Oct 2013

— INFORMS Annual Meeting, Minneapolis, MN   Oct 2013

— Mexican OR Society Annual Conference, Guadalajara, Mexico   Oct 2012

— INFORMS Annual Meeting, Washington, DC   Oct 2008

Reviewer for

— Operations Research
— Management Science
— Mathematics of Operations Research
— SIAM Journal on Discrete Mathematics
— Annals of Operations Research
— Journal of Discrete Algorithms
— Networks
— Journal of Combinatorial Optimization
— Journal of Global Optimization
— Optimization Methods and Software
— Optimization Letters
— IIE Transactions
— Conference Approx 2009
— Conference ISERC 2012
— International Journal of Management Science
— Int. Journal of Computer Integrated Manuf.

Invited Speaker (addressing undergraduates or potential future faculty)

— "Professional Panel", MAES Latinos in Science and Eng.'s Science Extravaganza, College Station, TX   Feb 2014

— "Teaching" and "What-to-expect" panels, Future Academician Colloq., INFORMS Annual Meeting   Oct 2013

— "Navigating through Graduate Education", CMMI Grantees Conference, Knoxville, TN   Jan 2008

SERVICE (continued)

University

– College of Engineering's Computer Science and Visualization Committee (member)	Sep 2011 - Present
– ISEN Department EFAC representative (elected)	Sep 2014 - present
– ISEN Department Graduate Committee (member)	Sep 2014 - present
– Faculty mentor for Capstone Design Course (up to three teams per semester)	Fall 2010 - Present
– Faculty Mentor for TAMU Center for Teaching Excellence's Graduate Teaching Academy Certificate Program	Spring 2014
– ISEN Department Growth Committee (member)	Sep 2013 - Aug 2014
– Faculty Mentor in TAMU Center for Teaching Excellence's Teaching Assistant Institute	Aug 2013
– ISEN Department Graduate Committee (member)	Sep 2011 - Aug 2013
– ISEN Department PhD Presentation Competition (judge & rank aggregation)	Oct 2012, 2013
– Faculty mentor in the Society of Hispanic Professional Engineers (SHPE) mentorship program	Fall 2012
– Faculty advisor and speaker for ENGR 689—STEM Teaching Professional Development	Spring 2012
– Panelist for ENGR 681—Preparing Future Faculty	Apr 2012
– ISEN Department Computing Committee (member)	Sep 2010 - Aug 2011
– ISEN Department PhD Presentation Competition (judge & rank aggregation)	Oct 2010

PROFESSIONAL AFFILIATIONS

- Institute for Operations Research and the Management Sciences (INFORMS)
- Mathematical Optimization Society (MOS)
- Institute of Industrial Engineers (IIE)
- **Founding Member of** Sociedad Mexicana de Investigación de Operaciones (SMIO) (Mexican OR Society)
- American Society for Engineering Education (ASEE)

OTHER AWARDS

Fellowships

– **NSF supplemental grant:** Cyber-infrastructure experiences for graduate students. One of ten nation-wide grants: Summer internship at San Diego Supercomputer Center.	**2007**
– **CONACyT (Mexico's NSF) and UC Mexus Doctoral Fellowship** Full tuition and stipend throughout my Ph.D. studies.	**2005-2009**

Other awards

– Excellence Mention, B.Sc. Physics Engineering, ITESM	2002
– Five consecutive top places at the ACM Programming Contest, Central-American Region	1998-2002
– Honorary Mention at the "International Olympiad in Informatics", Portugal	1998
– Second place at the Ibero-American Correspondence Programming Contest	1998
– Top places/honorable mentions at National Olympiads in Chemistry, Physics and Informatics	1997-1998