

# Erick Moreno-Centeno

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## EDUCATION

- Ph.D. **University of California, Berkeley** **2005 - May 2010 (expected)**  
Industrial Engineering and Operations Research  
*Use and analysis of new optimization techniques for decision theory and data mining*  
Dorit S. Hochbaum (chair), Alper Atamtürk, Laurent El Ghaoui, Richard M. Karp
- M.Sc. **University of California, Berkeley** **2009 - May 2010 (expected)**  
Computer Science **2005 - 2006**  
Industrial Engineering and Operations Research
- 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)
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## AWARDS, FELLOWSHIPS AND GRANTS

### *Grants and Fellowships*

- **NSF supplemental grant** **2007**  
Cyber-infrastructure experiences for graduate students.  
Supplemental to Prof. Dorit Hochbaum's NSF Grant No. DMI-0620677.  
One of ten nation-wide grants to fund a summer internship at San Diego Supercomputer Center.
- **CONACyT and UC Mexus Doctoral Fellowship** **2005-2009**  
Awarded by Consejo Nacional de Ciencia y Tecnología (CONACyT), and  
University of California Institute for México and the United States (UC Mexus)

### *Research Awards*

- **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 science and analysis.

### *Teaching Awards*

- **Graduate Student Instructor of the Year Award** **2008**  
Awarded by the UC Berkeley's Institute of Industrial Engineering student chapter.
  - **Outstanding Graduate Student Instructor Award** **2007**  
Campus-wide award by the UC Berkeley's Teaching Center.  
Less than 5% of all teaching assistants receive such an award.
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**SERVICE**

- Referee for Operations Research
- Referee for Management Science
- Referee for Mathematics of Operations Research
- Referee for Journal of Discrete Algorithms
- Referee for Networks
- Referee for the Conference Approx 2009

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**PUBLICATIONS***Peer reviewed publications*

- Hochbaum D.S., Moreno-Centeno E., “The inequality satisfiability problem”, *Operations Research Letters*, 23 (2008), 741-762
- Hochbaum D.S., Moreno-Centeno E., “Country credit-risk rating aggregation via the separation-deviation model”, *Optimization Methods and Software*, 36 (2008), 229-233

*Manuscripts under review*

- Hochbaum D.S., Moreno-Centeno E., Yelland P., Catena, R.A., “A new data mining model for customer segmentation”, Submitted to *Management Science* on Nov 09, 2009 (Status reported *Management Science*’s online system: “Awaiting Reviewer Scores”).

*Manuscripts in preparation*

- Karp R.M., Moreno-Centeno E., “The implicit hitting set approach with an application to solving the multiple-genome alignment problem”.
- Atamturk A., Dror M., Moreno-Centeno E., “A network flow-based relaxation of the split delivery vehicle routing problem”.
- Hochbaum D.S., Moreno-Centeno E., “Finalist selection in a student paper competition”.
- Moreno-Centeno E., “Axiomatic aggregation of incomplete rankings”.
- Moreno-Centeno E., “Computational study of the algorithms for the convex dual of the minimum cost network flow”.

*Conference presentations and proceedings*

- “A new data mining model for customer segmentation”, *INFORMS Annual Meeting*, San Diego, CA, Oct 2009.
- “Toma de decisión en grupos: el caso de rankings incompletos”, *Joint Conference of the Mathematical Societies of México and Spain*, Oaxaca, México, Jul 2009.
- “Finalist selection in a student paper competition”, *NSF’s CMMI Grantee Conference*, Honolulu, HI, Jun 2009.
- “A network flow-based relaxation of the split delivery vehicle routing problem”, *INFORMS Annual Meeting*, Washington, DC, Oct 2008.
- “Country credit-risk rating aggregation via the separation-deviation model”, *INFORMS Annual Meeting*, Washington, DC, Oct 2008.
- “The separation-deviation model: analysis and applications in data mining and decision making”, *NSF’s CMMI Grantee Conference*, Knoxville, TN, Jan 2008.
- “The inequality satisfiability problem”, *INFORMS Annual Meeting*, Seattle, WA, Oct 2007.

## RESEARCH INTERESTS

- Network and combinatorial optimization, Integer programming, Computational optimization.
- Design and analysis of optimization models and algorithms.
- Decision theory, Data mining, Vehicle Routing, Computational Biology.

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## RESEARCH EXPERIENCE

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|---|-----------------------------------|
| <p><b>Graduate Research Assistant</b><br/>University of California, Berkeley, CA, USA.</p> <ul style="list-style-type: none"> <li>– Prof. Dorit S. Hochbaum.</li> <li>– Use of network flow techniques for decision making and data mining.</li> </ul>  | <p><b>Sep 2009 - Dec 2009</b></p> |
| <p><b>Visiting Scholar</b><br/>Technische Universität Darmstadt, Darmstadt, Germany</p> <ul style="list-style-type: none"> <li>– Prof. Armin Fügenschuh.</li> <li>– Use of network flow techniques for data mining in the metallurgy industry.</li> </ul>   | <p><b>Jul 2008 - Aug 2008</b></p> |
| <p><b>Graduate Research Assistant</b><br/>University of California, Berkeley, CA, USA.</p> <ul style="list-style-type: none"> <li>– Prof. Dorit S. Hochbaum.</li> <li>– Modeling and computational solution of open-pit mining problem.</li> </ul>  | <p><b>Jan 2008 - Jun 2008</b></p> |
| <p><b>Cyber-infrastructure experiences for graduate students</b><br/>Supercomputer Center at University of California at San Diego, CA, USA</p> <ul style="list-style-type: none"> <li>– NSF supplemental grant.</li> <li>– Large-scale optimization problem solving with parallel computing.</li> </ul>  | <p><b>Jul 2007 - Aug 2007</b></p> |
| <p><b>Graduate Research Assistant</b><br/>University of California, Berkeley, CA, USA.</p> <ul style="list-style-type: none"> <li>– Prof. Dorit S. Hochbaum.</li> <li>– Modeling and computational solution of network design problems for a telecommunications company.</li> </ul>   | <p><b>Jan 2007 - Jun 2007</b></p> |
| <p><b>Volunteer Research Assistant</b><br/>Universidad Nacional Autónoma de México, D.F. México</p> <ul style="list-style-type: none"> <li>– Prof. Luis B. Morales.</li> <li>– Research and implementation of combinatorial optimization algorithms.</li> <li>– Applications include protein folding.</li> </ul>  | <p><b>May 2003 - Dec 2003</b></p> |
| <p><b>Volunteer Research Assistant</b><br/>Instituto Tecnológico y de Estudios Superiores de Monterrey, N.L. México</p> <ul style="list-style-type: none"> <li>– Prof. José Luis González-Velarde.</li> <li>– Research and implementation of combinatorial optimization algorithms.</li> <li>– Applications include design of assembly systems for modular products.</li> </ul> | <p><b>Jan 2000 - Dec 2002</b></p> |
| <p><b>Undergraduate Research Assistantship</b><br/>University of Waterloo, ON, Canada</p> <ul style="list-style-type: none"> <li>– Prof. Alejandro López-Ortiz.</li> <li>– Literature research on subsumption techniques for an Automatic Theorem Prover (ATP).</li> <li>– Implementation of those techniques increasing the ATP's performance.</li> </ul>                      | <p><b>Jan 2002 - Apr 2002</b></p> |
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## TEACHING INTERESTS

- Network Flows and Graphs
- Linear Programming
- Integer Programming
- Combinatorial Optimization
- Optimization modeling and applications
- Design and analysis of algorithms

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## TEACHING EXPERIENCE

**Instructor** **Jan 2010 - May 2010**

Industrial Engineering and Operations Research, University of California, Berkeley, CA, USA.

- Operations Research I (upper division course)
- 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).

**Graduate Student Instructor** **Aug 2007 -Dec 2007**

Industrial Engineering and Operations Research, University of California, Berkeley, CA, USA.

- Operations Research I (upper division course)
- 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)
- Outstanding graduate teaching assistant award recipient.

**Mentor for the UC Leads Science Research Program** **Jun 2006 - Aug 2006**

University of California, Berkeley, CA, USA.

- Mentor an underrepresented-minority undergraduate student through a research project.

**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)

## **PROFESSIONAL EXPERIENCE**

### **Consultant in Information Technologies (Full Time)**

**Feb 2003 - Dec 2004**

DMR Consulting México. México, D.F.

- Design of some of the front end services for a Mexican bank's financial terminal.
- Implementation of a simulation tool for a Mexican bank's financial terminal.

### **Academic Support Services (Part Time: In-Campus Job)**

**Aug 2000 - Dec 2002**

Instituto Tecnológico y de Estudios Superiores de Monterrey. Monterrey, N.L. México

- Design and implementation of a storehouse managing program for the Physics Laboratory.
- Design and implementation of an administrative tool for the "Alumni Service Center".

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## **COMPUTER PROFICIENCY**

### **Programming languages**

C, C++, Visual Basic, SQL, Pascal, Basic, Matlab

### **Mathematical Programming**

AMPL, Lindo, CPLEX (include Concert Library for C++)

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## **REFERENCES**

Provided upon request

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