

# Cong Han Lim

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## Academic Appointments

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<b>Simons Institute for the Theory of Computing</b>	<b>Berkeley, CA</b>
Research Fellow, Semester on Bridging Continuous and Discrete Optimization	Fall 2017
<b>University of Wisconsin-Madison</b>	<b>Madison, WI</b>
Postdoctoral Research Associate, Wisconsin Institute for Discovery	September 2016–August 2018
Advisors: Jeffrey Linderoth, James Luedtke, and Stephen Wright	

## Research Interests

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**Main Area:** Discrete optimization problems in *operations research* and *machine learning*  
**Topics:** Mixed-integer nonlinear programming, stochastic programming, separable nonconvex optimization, regularization, permutation and ranking problems

## Education

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<b>University of Wisconsin-Madison</b>	<b>Madison, WI</b>
Ph.D., Computer Sciences	2010–2016
Advisor: Stephen Wright	
Dissertation: Relaxations for Some Discrete Optimization Problems	
<b>University of Wisconsin-Madison</b>	<b>Madison, WI</b>
M.S., Computer Sciences	2010–2012
<b>University of Chicago</b>	<b>Chicago, IL</b>
B.S. (honors), Mathematics; B.S. (honors), Computer Science	2006–2010

## Publications

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C.H. Lim, S.J. Wright.  $k$ -Support and Ordered Weighted Sparsity for Overlapping Groups: Hardness and Algorithms, *Neural Information Processing Systems (NIPS)*, 2017.

C.H. Lim, J. Linderoth, J. Luedtke. Valid Inequalities for Separable Concave Constraints with Indicator Variables, *Mathematical Programming*, 2017.

C.H. Lim, S.J. Wright. A Box-Constrained Approach for Hard Permutation Problems, *International Conference on Machine Learning (ICML)*, 2016.

C.H. Lim, S.J. Wright. Efficient Bregman Projection onto the Permutahedron and Related Polytopes, *Artificial Intelligence and Statistics (AISTATS)*, 2016.

C.H. Lim, J. Linderoth, J. Luedtke. Valid Inequalities for Separable Concave Constraints with Indicator Variables, *Integer Programming and Combinatorial Optimization (IPCO)*, 2016.

C.H. Lim, S.J. Wright. Beyond the Birkhoff Polytope: Convex Relaxations for Vector Permutation Problems, *Neural Information Processing Systems (NIPS)*, 2014.

## Refereed Workshop Papers

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C.H. Lim. A Note on Extended Formulations for Cardinality-based Sparsity, *NIPS Optimization for Machine Learning Workshop*, 2017.

## Submitted and Working Papers

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C.H. Lim, J. Linderoth, J. Luedtke, S.J. Wright. Subgradient Sampling Methods for the Lagrangian Dual in Stochastic Mixed-Integer Programming, *In preparation*.

C.H. Lim. Separable Nonconvex Isotonic Regression, *In preparation*.

J. Chen, C.H. Lim, P. Qian, J. Linderoth, S.J. Wright. Validating Sample Average Approximation Solutions with Negatively Dependent Batches, *In Submission, Preprint on Optimization Online*.

## Invited Talks

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Subgradient Methods for Stochastic Mixed-Integer Programs, *INFORMS Annual Meeting*, Houston, TX, October 2017

Optimization Problems Involving Permutations, *Mathematics Department Seminar, National University of Singapore*, Singapore, October 2016

Valid Inequalities for Separable Concave Constraints, *International Symposium on Mathematical Programming (ISMP)*, Pittsburgh, PA, July 2015

## Honors and Awards

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Simons Research Fellowship, Fall 2017, Simons Institute for the Theory of Computing

Computer Sciences Department Summer Fellowship 2011, University of Wisconsin-Madison

Dean's List 2006–2010, University of Chicago

## Academic Service

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**Reviewer:** Journals – Machine Learning, Mathematical Programming, SIAM Journal on Optimization. Conferences – ALT, SDM

## Teaching Experience

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<b>University of Wisconsin-Madison</b>	<b>Madison, WI</b>
Computer Sciences Department	
Teaching Assistant – Database Management Systems	Fall 2012
Volunteer – Scratch programming language for elementary school students	Fall 2012
Teaching Assistant – Numerical Methods	Spring 2012
Teaching Assistant – Algorithms	Fall 2011
Teaching Assistant – Algorithms (Honors)	Spring 2011
Teaching Assistant – Theory of Computation	Fall 2010
<b>University of Chicago</b>	<b>Chicago, IL</b>
Mathematics Department and Computer Science Department	

Grader – Linear Algebra, Introduction to Computer Systems  
Course Assistant – Computer Science with Applications I  
Teaching Assistant – Calculus I-II

Academic Year 2009-2010  
Fall 2009  
Summer 2009

## Industry Experience

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### **Technicolor SA**

Research Intern, Technicolor Research Bay Area  
Developed coding theory techniques for robust DNA storage.

**Los Altos, CA**  
Summer 2015

### **Facebook**

Software Engineering Intern, Ads Optimization Group  
Augmented pipeline for estimated click-through-rate prediction.

**Menlo Park, CA**  
Summer 2012

## Other Work Experience

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### **Ministry of Manpower (Singapore)**

Intern, Income Security Policy Department  
Analyzed effects of personal pension fund withdrawal for tertiary education.

**Singapore**  
Summer 2007

### **6SIR Support Company, Singapore Armed Forces**

Personal Assistant to Officer-in-Commanding (Military Service)  
Awarded 'Outstanding' grade for overall performance during service.

**Singapore**  
August 2004 - June 2006

## Skills

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**Technical Skills:** Python, Julia, MATLAB, C/C++, LaTeX, SAGE, Java, GAMS

**Languages:** English (native), Chinese (fluent – speaking Mandarin, writing)

## References

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### **Stephen Wright**

Department of Computer Sciences, University of Wisconsin-Madison  
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### **Jeffrey Lindereth**

Department of Industrial and Systems Engineering, University of Wisconsin-Madison  
lindereth@wisc.edu

### **James Luedtke**

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