

Hongbo Dong

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Education/Academic Positions

- 08/2013 - **Washington State University**
Assistant Professor, Department of Mathematics
- 9/2011 - 08/2013 **University of Wisconsin-Madison**
Research Associate in the Optimization Group led by Michael Ferris
- 8/2006 - 12/2011 **University of Iowa**, Iowa City, IA, USA
Ph.D., Applied Mathematical and Computational Sciences
Advisors: Kurt Anstreicher and Samuel Burer
Thesis title: *Copositive programming: Separation and Relaxations.*
- 9/2001 - 7/2005 **Shanghai Jiao Tong University**, Shanghai, China
B.S./B.E., Applied Mathematics, 6/2005
Graduate with *Outstanding Undergraduate Thesis Award.*
Thesis title: *Designing a Color Image Denoising Algorithm, Theoretical Analysis and Numerical Experiments (in Chinese)*

Graduate students advising

- Bo Han F2014 – Sum.2016 (expected). PhD in Applied Math;
- Wei Li F2014 – Spr. 2017 (expected). PhD in Applied Math (co-advised with Haijun Li);
- Carol Phillips F2014 – Spr.2016 (expected). Master in Applied Math.

Refereed Publications (published)

1. **Hongbo Dong** and Nathan Krislock. Semidefinite approaches for miqcp: Convex relaxations and practical methods. In Boris Defourny and Tamás Terlaky, editors, *Modeling and Optimization: Theory and Applications*, Aug. 2014
2. Kun Chen, **Hongbo Dong**, and Kung-Sik Chan. Reduced Rank Regression via Adaptive Nuclear Norm Penalization. *Biometrika*, 100(4):901–920, 2013
3. **Hongbo Dong** and Jeff Linderoth. On valid inequalities for quadratic programming with continuous variables and binary indicators. In *16th International Conference on Integer Programming and Combinatorial Optimization. Lecture Notes in Computer Science*, volume 7801, March 2013

4. **Hongbo Dong**. Symmetric tensor approximation hierarchies for the completely positive cone. *SIAM Journal on Optimization*, 23(3):1850–1866, 2013
5. Samuel Burer and **Hongbo Dong**. Representing quadratically constrained quadratic programs as generalized copositive programs. *Operations Research Letters*, 40(3):203–206, May 2012
6. **Hongbo Dong** and Kurt Anstreicher. Separating doubly nonnegative and completely positive matrices. *Mathematical Programming, Series A*, 137(1-2):131–153, Feb. 2013
7. Samuel Burer and **Hongbo Dong**. Separation and relaxation for cones of quadratic forms. *Mathematical Programming, Series A*, 137(1-2):343–370, Feb. 2013
8. **Hongbo Dong** and Kurt Anstreicher. A note on “ 5×5 Completely positive matrices”. *Linear Algebra and its Applications*, 433(5):1001–1004, 2010

Refereed Publications (under review)

1. **Hongbo Dong**, Kun Chen, and Jeff Linderoth. Regularization vs. relaxation: A conic optimization perspective of statistical variable selection. Under review on *Mathematical Programming*, Oct. 2015
2. **Hongbo Dong**. Relaxing nonconvex quadratic functions by multiple adaptive diagonal perturbations. Submitted 03/2014, Revised 12/2015, currently under 2nd round of review on *SIAM Journal on Optimization*, 2014

Invited Presentations / Workshops

1. Conic Relaxations of the Sparse Linear Regression Problem. U.S.-Mexico Workshop on Optimization and its Applications. Merida, Mexico, Jan., 2016. **Invited talk.**
2. CMO-BIRS workshop: Modern Techniques in Discrete Optimization: Mathematics, Algorithms and Applications. Oaxaca, Mexico, Nov 1-6, 2015. **Invited participation.**
3. Regularization vs. Relaxation: A conic optimization perspective of statistical variable selection. International Symposium on Mathematical Programming, Jul., 2015. **Invited talk.**
4. Regularization vs. Relaxation: A conic optimization perspective of statistical variable selection. Mixed Integer Programming Workshop, Jun., 2015. **Invited talk.**
5. Relaxing nonconvex quadratic functions by multiple adaptive diagonal perturbations. MOPTA 2014, Lehigh University, Aug. 2014. **Session organizer and speaker.**
6. Relaxing nonconvex quadratic functions by multiple adaptive diagonal perturbations. SIAM Conference on Optimization, San Diego, May 2014. **Invited talk.**
7. Relaxations for convex quadratic programming with binary indicator variables. MOPTA 2013, Lehigh University, Aug. 2013. **Session organizer and speaker.**
8. Relaxations for convex quadratic programming with binary indicator variables. ICCOPT 2013 Lisbon, Aug. 2013. **Invited talk.**

9. Solving quadratic programming with binary indicators via sparse lifting. INFORMS Computing Society Conference, Santa Fe. Jan, 2013. **Invited talk.**
10. Brown Gold: The smell of \$\$\$ / An optimization model for dairy farms. WID-DOW seminar. Jointly presented with Tom Cox. Dec, 2012.
11. On valid inequalities for quadratic programming with continuous variables and binary indicators. INFORMS 2012, Phoenix, USA, Oct. 2012. **Invited talk.**
12. U.S. - Mexico Workshop on Optimization and its Applications. **Invited presentation.** Merida, Mexico, Jan 4-8, 2016.
13. CMO-BIRS workshop: Modern Techniques in Discrete Optimization: Mathematics, Algorithms and Applications. **Invited participation.** Oaxaca, Mexico, Nov 1-6, 2015.
14. Regularization vs. Relaxation: A conic optimization perspective of statistical variable selection. 22nd International Symposium of Mathematical Programming, Jul. 12-17, 2015. **Invited presentation.**
15. Regularization vs. Relaxation: A conic optimization perspective of statistical variable selection. 2015 Mixed-Integer Programming Workshop, Jun. 1-4, 2015. **Invited presentation.**
16. Relaxing nonconvex quadratic functions by multiple adaptive diagonal perturbations. INFORMS annual conference, Nov. 9-12, 2014. **Invited presentation.**
17. Relaxing nonconvex quadratic functions by multiple adaptive diagonal perturbations. SIAM Conference on Optimization, Aug. 13-15, 2014. **Special session organizer and speaker.**
18. Relaxing nonconvex quadratic functions by multiple adaptive diagonal perturbations. SIAM Conference on Optimization, May 19-22, 2014. **Invited presentation.** Computing Doubly Nonnegative relaxation of maximum stable set problem using an Augmented Lagrangian algorithm. Modeling and Optimization: Theory and Applications (MOPTA), Aug, 2010. Contributed presentation.
19. Relaxations for convex quadratic programming with binary indicator variables. MOPTA 2013, Lehigh University, Aug. 2013. **Session organizer and speaker.**
20. Relaxations for convex quadratic programming with binary indicator variables. ICCOPT 2013 Lisbon, Aug. 2013. **Invited presentation.**
21. Solving quadratic programming with binary indicators via sparse lifting. INFORMS Computing Society Conference, Santa Fe. Jan, 2013. **Invited presentation.**
22. Brown Gold: The smell of \$\$\$ / An optimization model for dairy farms. WID-DOW seminar. Jointly presented with Tom Cox. Dec, 2012.
23. On valid inequalities for quadratic programming with continuous variables and binary indicators. INFORMS 2012, Phoenix, USA, Oct. 2012. **Invited presentation.**
24. On valid inequalities for quadratic programming with continuous variables and binary indicators. 21st International Symposium on Mathematical Programming (ISMP), Berlin, Germany. Aug. 2012. **Invited presentation.**
25. Between continuous and binary: Quadratic programming with continuous variables and their indicators. Modeling and Optimization: Theory and Applications (MOPTA), Lehigh University. Aug. 2012. **Invited presentation.**

26. Separation and Relaxations for Cones of Quadratic Forms. INFORMS Optimization Society Conference, Miami, USA. Feb. 2012. **Invited presentation.**
27. Separating doubly nonnegative and completely positive matrices. 7th International Congress on Industrial and Applied Mathematics (ICIAM), Vancouver B.C., Canada. July, 2011. **Invited presentation.**
28. Symmetric tensor approximation hierarchies for the completely positive cone. SIAM conference on Optimization, Darmstadt, Germany, May 2011. **Invited presentation.**
29. Symmetric tensor approximation hierarchies for the completely positive cone. GERAD seminar, Université de Montréal, Montreal, Canada, Feb. 24, 2011. **Invited presentation.**
30. Computing Doubly Nonnegative relaxation of maximum stable set problem using an Augmented Lagrangian algorithm. Modeling and Optimization: Theory and Applications (MOPTA), Aug, 2010. Contributed presentation.

Research Funding Experiences

1. WSU new faculty seed-grant competition (21 funded out of 77 submitted) with an amount of \$20,136, "*Mixed-Integer Quadratic Optimization and its Application in Data-enabled Decision-making*", 2015.
2. Internal one-year RA fund from College of Liberal Arts and Sciences, WSU, 2014-2015.
3. Joint proposal with Haijun Li (WSU math) to NSF program CDS\E - MSS: "*Regularized Optimization in High-Dimensional Vine Copulas*", 2015 (currently pending, both lead-PIs).

Teaching (Washington State University)

MATH364 Principles of Optimization Techniques	Fall 2015
MATH565 Nonlinear Optimization I	Fall 2015
MATH420 Linear Algebra	Spring 2014
MATH220 Introductory Linear Algebra	Spring 2014
MATH364 Principles of Optimization Techniques	Fall 2015
MATH565 Nonlinear Optimization II	Spring 2014
MATH565 Nonlinear Optimization II	Spring 2014
MATH564 Nonlinear Optimization I	Fall 2013

Professional Service

Referee for scientific journals in optimization, operations research, and matrix analysis, including *Mathematical Programming Computation*, *Mathematical Programming*, *SIAM Journal on Optimization*, *SIAM Journal on Matrix Analysis and Applications*, *European Journal of Operational Research*, *Journal of Global Optimization*, *Computational Optimization and Applications*, *Optimization Letters*, *RAIRO - Operations Research* and *Applied Mathematics-A Journal of Chinese Universities*.

Member of professional societies including *Mathematical Optimization Society*, *Institute for Operations Research and the Management Sciences (INFORMS)* and *Society for Industrial and Applied Mathematics (SIAM)*

References

Available upon request.

Last updated: February 25, 2016