

Curriculum Vitae

Adrian Lewis

September 16, 2013

1 Personal Data

Name: Adrian Stephen Lewis

Date of birth: January 25, 1962

Citizenship: British and Canadian, U.S. Permanent Resident

Employer: Cornell University, School of Operations Research and Information Engineering, Ithaca, NY 14853, USA.

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Degrees

- B.A. (Mathematics), 1983, Cambridge University, U.K.
- M.A., 1987, Cambridge University, U.K.
- Ph.D. (Engineering), July 1987, Cambridge University, U.K.
(Dissertation: Extreme point methods for infinite linear programming.)

Positions

1. July 2004 onwards: **Full Professor** (with tenure), School of Operations Research and Information Engineering, Cornell University.
2. July 2010 – June 2013: **Director**, School of Operations Research and Information Engineering.
3. Apr. 2001 – Apr. 2006: Full Professor (with tenure), Department of Mathematics, Simon Fraser University.
4. July 1997 – Apr. 2003: Full Professor (with tenure), Combinatorics and Optimization Dept., University of Waterloo.
5. July 1999 – Apr. 2000: Visiting Member, Courant Institute, N.Y.
6. June 1999, Professeur Invité, Université de Montpellier II, France.
7. Sep. 1998, Visiting Professor, M.S.R.I. Berkeley, U.S.A.
8. Feb. – Apr. 1998: Visiting Scientist, Cornell University.
9. July 1993 – July 1997: Associate Professor (with tenure), Combinatorics and Optimization Dept., University of Waterloo.
10. Mar. 1996: Invited Professor, University of Milan, Italy.
11. June 1995, Jan. 1996, and Apr. 2003: Professeur Invité, Université Paul Sabatier, France.
12. Aug. 1988 – June 1993: Assistant Professor (Tenure-track), Combinatorics and Optimization Dept., University of Waterloo.
13. Apr. 1993: Visiting Lecturer, Engineering Science Dept., University of Auckland, New Zealand.
14. Apr. 1991: Maître de Conférences, Université de Limoges, France.
15. June 1989: Maître de Conférences, Université de Pau, France.
16. Aug. 1988: Visiting Research Fellow, Centre for Mathematical Analysis, Australian National University.

17. Jan. 1987 – June 1989: Research Fellow, Dalhousie University.
18. Sep. 1986 – Aug. 1989: Research Fellow, Queens' College, Cambridge University, U.K.

2 Research and Scholarship

Prizes and other honours

- **Section Lecturer, International Congress of Mathematicians, Seoul, 2014.**
- **Fellow of the Society for Industrial and Applied Mathematics (2009).**
- **2005 Outstanding Paper Prize**, from SIAM, for “Active sets, non-smoothness, and sensitivity”. (Awarded, for originality, to a paper published in a SIAM journal in the period 2001–4.)
- **2003 Lagrange Prize for Continuous Optimization**, from the Mathematical Programming Society and SIAM. (Awarded every three years for an outstanding work in continuous optimization. My paper “Nonsmooth analysis of eigenvalues” was the first winner.)
- **1995 Aisenstadt Prize** from Centre de Recherches Mathématiques, Montréal. (Awarded annually to a Canadian within 7 years of Ph.D.)

Major plenary presentations

- Matheon Colloquium, Berlin, Feb. 2008.
- Second Mathematical Programming Society International Conference on Continuous Optimization, Aug. 2007. (Opening Plenary Speaker. 400 participants.)
- Fiftieth Annual Meeting of the Australian Mathematical Society, Sydney, Sep. 2006. (Plenary speaker. 500 participants.)
- Fifth Conference on Foundations of Computational Mathematics, Santander, July 2005. (Plenary speaker. 500 participants.)

- Twelfth Conference of the International Linear Algebra Society, Regina, June 2005. (Plenary speaker. 200 participants.)
- Eighteenth International Symposium on Mathematical Programming, Copenhagen, Aug. 2003. (Semi-plenary speaker. 1,000 participants.)
- Fifth SIAM Conference on Optimization, Victoria, May 1996. (Plenary speaker. 400 participants.)

In my lists of publications I have indicated graduate students (at the time of the work) by *, and postdoctoral fellows by **.

Monographs

- J.M. Borwein and A.S. Lewis, ‘Convex Analysis and Nonlinear Optimization’, 273 pages, Springer, New York (2000). Expanded Second Edition appeared in 2006.

Articles submitted to refereed journals

1. D. Drusvyatskiy* and A.S. Lewis, ‘Optimality, identifiability, and sensitivity’, 43 pages, submitted to *Mathematical Programming*, in revision.
2. A.S. Lewis and S.J. Wright, ‘A proximal method for composite minimization’, 32 pages, submitted to *Mathematical Programming*, in revision.
3. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘Clarke subgradients for directionally Lipschitzian stratifiable functions’, 23 pages, submitted to *Mathematics of Operations Research*.
4. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘Curves of descent’, 23 pages, submitted to *SIAM Journal on Control and Optimization*.
5. D. Drusvyatskiy*, A. Daniilidis and A.S. Lewis, ‘Orthogonal invariance and identifiability’, 21 pages, submitted to *SIAM Journal on Matrix Analysis and Applications*, in revision.
6. A.S. Lewis and S. Zhang*, ‘Nonsmoothness and the BFGS method’, 15 pages, submitted to *Journal of Optimization Theory and Applications*.

Articles in refereed journals

1. D. Drusvyatskiy* and A.S. Lewis, ‘Tilt stability, uniform quadratic growth, and strong metric regularity of the subdifferential’, *SIAM Journal on Optimization* 23 (2013), 256–267.
2. A.S. Lewis and S. Zhang*, ‘Partial smoothness, tilt stability, and generalized Hessians’, *SIAM Journal on Optimization* 23 (2013), 74–94.
3. D. Drusvyatskiy* and A.S. Lewis, ‘Semi-algebraic functions have small subdifferentials’, *Mathematical Programming B* 140 (2013), 5–29.
4. A.S. Lewis and M.L. Overton, ‘Nonsmooth optimization via quasi-Newton methods’, *Mathematical Programming* 141 (2013), 135–163
5. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘The dimension of semi-algebraic subdifferential graphs’, *Nonlinear Analysis* 75 (2012), 1231–1245.
6. A.S. Lewis and C.H.J. Pang*, ‘Level set methods for finding critical points of mountain pass type’, *Nonlinear Analysis* 74 (2011), 4058–4082.
7. A.S. Lewis and S.J. Wright, ‘Identifying activity’, *SIAM Journal on Optimization* 21 (2011), 597–614.
8. J. Bolte, A. Daniilidis and A.S. Lewis, ‘Generic optimality conditions for semi-algebraic convex programs’, *Mathematics of Operations Research* 36 (2011), 55–70.
9. D. Leventhal* and A.S. Lewis, ‘Randomized Hessian estimation and directional search’, *Optimization* 60 (2011), 329–345.
10. D. Drusvyatskiy* and A.S. Lewis, ‘Generic nondegeneracy in convex optimization’, *Proceedings of the American Mathematical Society* 139 (2010), 2519–2527.
11. D. Leventhal* and A.S. Lewis, ‘Randomized methods for linear constraints: convergence rates and conditioning’, *Mathematics of Operations Research* 35 (2010), 641–654.

12. A.S. Lewis and C.H.J. Pang*, ‘Lipschitz behavior of the robust regularization’, *SIAM Journal on Control and Optimization* 48 (2009), 3080–3104.
13. A.S. Lewis, D.R. Luke and J. Malick, ‘Local linear convergence for alternating and averaged nonconvex projections’, 32 pages, *Foundations of Computational Mathematics* 9 (2009), 485–513.
14. J. Bolte, A. Daniilidis and A.S. Lewis, ‘Tame mappings are semismooth’, *Mathematical Programming B* 117 (2009), 5–19.
15. A. Daniilidis, A.S. Lewis, J. Malick and H. Sendov, ‘Prox-regularity of spectral functions and spectral sets’, *Journal of Convex Analysis* 15 (2008), 547–560.
16. J.V. Burke, A.S. Lewis and M.L. Overton, ‘The speed of Shor’s R-algorithm’, *IMA Journal on Numerical Analysis* 28 (2008), 711–720.
17. A.S. Lewis and C.H.J. Pang*, ‘Variational analysis of pseudospectra’, *SIAM Journal on Optimization* 19 (2008), 1048–1072.
18. A.S. Lewis and J. Malick**, ‘Alternating projections on manifolds’, *Mathematics of Operations Research* 33 (2008), 216–234.
19. A.D. Ioffe and A.S. Lewis, ‘Critical points of simple functions’, *Optimization* 57 (2008), 3–16.
20. A.S. Lewis, ‘Nonsmooth optimization and robust control’, *Annual Reviews in Control* 31 (2007), 167–177.
21. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Spectral conditioning and pseudospectral growth’, *Numerische Mathematik* 107 (2007), 27–37.
22. W.L. Hare* and A.S. Lewis, ‘Identifying active manifolds’, *Algorithmic Operations Research* 2 (2007), 75–82.
23. J. Bolte, A. Daniilidis, A.S. Lewis and M. Shiota, ‘Clarke subgradients of stratifiable functions’, *SIAM Journal on Optimization* 18 (2007) 556–572.

24. J. Bolte**, A. Daniilidis** and A.S. Lewis, ‘The Lojasiewicz inequality for nonsmooth subanalytic functions with applications to subgradient dynamical systems’, *SIAM Journal on Optimization* 17 (2007), 1205–1223.
25. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Convexity and Lipschitz behavior of small pseudospectra’, *SIAM Journal on Matrix Analysis and Applications* 29 (2007) 586–595.
26. J.V. Burke, D. Henrion, A.S. Lewis and M.L. Overton, ‘Stabilization via nonsmooth, nonconvex optimization’, *IEEE Transactions on Automatic Control* 51 (2006), 1760–1769.
27. S. Fitzpatrick and A.S. Lewis, ‘Weak-star convergence of convex sets’, *Journal of Convex Analysis* 13 (2006), 711–719.
28. J. Bolte, A. Daniilidis and A.S. Lewis, ‘A nonsmooth Morse-Sard theorem for subanalytic functions’, *Journal of Mathematical Analysis and Applications* 321 (2006), 729–740.
29. R. Henrion, A.S. Lewis and A. Seeger, ‘The distance to uncontrollability for convex processes’, *SIAM Journal on Control and Optimization* 45 (2006), 26–50.
30. J. Bolte, A. Daniilidis, A.S. Lewis and M. Shiota, ‘Clarke critical values of subanalytic Lipschitz continuous functions’, *Annales Polonici Mathematici* 87 (2005), 13–25.
31. W.L. Hare* and A.S. Lewis, ‘Estimating tangent and normal cones without calculus’, *Mathematics of Operations Research* 30 (2005), 785–799.
32. A.L. Dontchev and A.S. Lewis, ‘Perturbations and metric regularity’, *Set-Valued Analysis* 13 (2005), 417–438.
33. A.S. Lewis and H.S. Sendov*, ‘Nonsmooth analysis of singular values. Part I: Theory’, *Set-Valued Analysis* 13 (2005), 213–241.
34. A.S. Lewis and H.S. Sendov*, ‘Nonsmooth analysis of singular values. Part II: Applications’, *Set-Valued Analysis* 13 (2005), 243–264.

35. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Variational analysis of functions of the roots of polynomials’, *Mathematical Programming* 104 (2005), 263–292.
36. J.V. Burke, A.S. Lewis and M.L. Overton, ‘A robust gradient sampling algorithm for nonsmooth, nonconvex optimization’, *SIAM Journal on Optimization* 15 (2005), 751–779.
37. A.S. Lewis, P. Parrilo and M. Ramana, ‘The Lax conjecture is true’, *Proceedings of the American Mathematical Society* 133 (2005), 2495–2499.
38. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Pseudospectral components and the distance to uncontrollability’, *SIAM Journal on Matrix Analysis and Applications* 26 (2004), 350–361.
39. W.L. Hare* and A.S. Lewis, ‘Identifying active constraints via partial smoothness and prox-regularity’, *Journal of Convex Analysis* 11 (2004), 251–266.
40. A.S. Lewis, ‘The structured distance to ill-posedness for conic systems’, *Mathematics of Operations Research* 29 (2004), 776–785.
41. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Variational analysis of the abscissa mapping for polynomials and the Gauss-Lucas theorem’, *Journal of Global Optimization* 28 (2004), 259–268.
42. A.S. Lewis, ‘The mathematics of eigenvalue optimization’, *Mathematical Programming* 97 (2003), 155–176.
43. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Optimization and pseudo-spectra, with applications to robust stability’, *SIAM Journal on Matrix Analysis and Applications* 25 (2003), 80–104.
44. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Robust stability and a criss-cross algorithm for the pseudospectral abscissa’, *IMA Journal of Numerical Analysis* 23 (2003), 359–375.
45. J.M. Borwein, J.V. Burke and A.S. Lewis, ‘Differentiability of cone-monotone functions on separable Banach space’, *Proceedings of the American Mathematical Society* 132 (2003), 1067–1076.

46. A.S. Lewis, ‘Active sets, nonsmoothness and sensitivity’, *SIAM Journal on Optimization* 13 (2003), 702-725.
47. A.L. Dontchev, A.S. Lewis and R.T. Rockafellar, ‘The radius of metric regularity’, *Transactions of the American Mathematical Society* 355 (2003), 493–517.
48. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Approximating subdifferentials by random sampling of gradients’, *Mathematics of Operations Research* 27 (2002), 567–584.
49. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Two numerical methods for optimizing matrix stability’, *Linear Algebra and its Applications* 351/2 (2002), 117–145.
50. A.S. Lewis and H.S. Sendov*, ‘Quadratic expansions of spectral functions’ *Linear Algebra and its Applications* 340 (2002), 97–121.
51. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Optimal stability and eigenvalue multiplicity’, *Foundations of Computational Math.* 1 (2001), 205–225.
52. A.S. Lewis and H.S. Sendov*, ‘Twice differentiable spectral functions’, *SIAM Journal on Matrix Analysis and Applications* 23 (2001), 368–386.
53. A.S. Lewis and H.S. Sendov*, ‘Self-concordant barriers for hyperbolic means’, *Mathematical Programming* 91 (2001), 1–10.
54. H. Bauschke**, O. Güler, A.S. Lewis and H.S. Sendov*, ‘Hyperbolic polynomials and convex analysis’, *Canadian Journal of Mathematics* 53 (2001), 470–488.
55. A.S. Lewis, ‘Ill-conditioned inclusions’, *Set-Valued Analysis* 9 (2001), 375–381.
56. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Optimizing matrix stability’, *Proceedings of the American Mathematical Society* 129 (2000), 1635–1642.
57. A.S. Lewis, ‘Convex analysis on Cartan subspaces’, *Nonlinear Analysis, Theory, Methods and Applications* 42 (2000), 813-820.

58. A.S. Lewis and R.E. Lucchetti, ‘Nonsmooth duality, sandwich and squeeze theorems’, *SIAM J. Control and Optimization* 38 (2000), 613–626.
59. H.H. Bauschke** and A.S. Lewis, ‘Dykstra’s algorithm with Bregman projections: a convergence proof’, *Optimization* 48 (2000), 409–427.
60. J.M. Borwein, A.S. Lewis, J. Read** and Q. Zhu, ‘Convex spectral functions of compact operators’, *Journal of Nonlinear and Convex Analysis* 1 (2000), 17–35.
61. A.S. Lewis, ‘Ill-conditioned convex processes and conic linear systems’, *Mathematics of Operations Research* 24 (1999), 829–834.
62. A.S. Lewis, ‘Lidskii’s theorem via nonsmooth analysis’, *SIAM Journal on Matrix Analysis and Applications* 21 (1999), 379–381.
63. A.S. Lewis, ‘Nonsmooth analysis of eigenvalues’, *Mathematical Programming* 84 (1999), 1–24.
64. J.-B. Hiriart-Urruty and A.S. Lewis, ‘The Clarke and Michel-Penot sub-differentials of the eigenvalues of a symmetric matrix’, *Computational Optimization and Applications* 13 (1999), 13–23.
65. A.S. Lewis, ‘Eigenvalue-constrained faces’, *Linear Algebra and Applications* 269 (1998), 159–181.
66. A.S. Lewis and M.L. Overton, ‘Eigenvalue optimization’, *Acta Numerica* 5 (1996) 149–190.
67. A.S. Lewis, ‘Group invariance and convex matrix analysis’, *SIAM Journal on Matrix Analysis* 17 (1996), 927–949.
68. A.S. Lewis, ‘Derivatives of spectral functions’, *Mathematics of Operations Research* 21 (1996), 576–588.
69. J.M. Borwein, A.S. Lewis and D. Noll, ‘Maximum entropy reconstruction using derivative information part 1: Fisher information and convex duality’, *Mathematics of Operations Research* 21 (1996), 442–468.
70. A.S. Lewis, ‘Superresolution in the Markov moment problem’, *Journal of Mathematical Analysis and Applications* 197 (1996) 774–780.

71. A.S. Lewis and D. Ralph, ‘A nonlinear duality result equivalent to the Clarke-Ledyaeв mean value inequality’, *Nonlinear Analysis* 26 (1996) 343–350.
72. A.S. Lewis, ‘Convex analysis on the Hermitian matrices’, *SIAM Journal on Optimization* 6 (1996) 164–177.
73. A.S. Lewis, ‘The convex analysis of unitarily invariant matrix norms’, *Journal of Convex Analysis* 2 (1995) 173–183.
74. A.S. Lewis and A.B. Philpott, ‘Experiments with affine scaling and semi-infinite programming’, *New Zealand Journal of Mathematics* 24 (1995), 49–71.
75. A.S. Lewis, ‘Consistency of moment systems’, *Canadian Journal of Mathematics* 47 (1995) 995–1006.
76. J.M. Borwein, A.S. Lewis, M.N. Limber** and D. Noll, ‘Maximum entropy reconstruction using derivative information part 2: computational results’, *Numerische Mathematik* 69 (1995) 243–256.
77. J.M. Borwein, A.S. Lewis and M.A. Limber**, ‘Entropy minimization with lattice bounds’, *Journal of Approximation Theory* 79 (1994) 1–16.
78. J.M. Borwein, A.S. Lewis and R. Nussbaum, ‘Entropy minimization, DAD problems, and doubly stochastic kernels’, *Journal of Functional Analysis* 123 (1994) 264–307.
79. A.S. Lewis, ‘Facial reduction in partially finite convex programming’, *Mathematical Programming* 65 (1994) 123–138.
80. P. Borwein and A.S. Lewis, ‘Moment matching and best entropy estimation’, *Journal of Mathematical Analysis and Applications* 185 (1994) 596–604.
81. M. Chamberland* and A.S. Lewis, ‘Contours of Liapunov functions’, *Journal of Optimization Theory and Applications* 80 (1994) 149–160.
82. J.M. Borwein and A.S. Lewis, ‘Strong rotundity and optimization’, *SIAM Journal on Optimization* 4 (1994) 146–158.

83. J.M. Borwein and A.S. Lewis, ‘Convergence of decreasing sequences of convex sets in nonreflexive Banach spaces’, *Set-Valued Analysis* 1 (1993) 355–363.
84. A.S. Lewis, ‘The convergence of entropy-based approximations for moment problems’, *Optimization* 28 (1993) 383–395.
85. J.M. Borwein and A.S. Lewis, ‘Partially finite programming in L_1 and the existence of maximum entropy estimates’, *SIAM Journal on Optimization* 3 (1993) 248–267.
86. J.M. Borwein and A.S. Lewis, ‘Decomposition of multivariate functions’, *Canadian Journal of Mathematics* 44 (1992) 463–482.
87. J.M. Borwein and A.S. Lewis, ‘Partially-finite convex programming, Part I: Quasi relative interiors and duality theory’, *Mathematical Programming, Series B* 57 (1992) 15–48.
88. J.M. Borwein and A.S. Lewis, ‘Partially-finite convex programming, Part II, Explicit lattice models’, *Mathematical Programming, Series B* 57 (1992) 49–84.
89. J.M. Borwein and A.S. Lewis, ‘Duality relationships for entropy-like minimization problems’, *SIAM Journal on Control and Optimization* 29 (1991) 325–338.
90. J.M. Borwein and A.S. Lewis, ‘Convergence of best entropy estimates’, *SIAM Journal on Optimization* 1 (1991) 191–205.
91. J.M. Borwein and A.S. Lewis, ‘On the convergence of moment problems’, *Transactions of the American Mathematical Society* 325 (1991) 249–271.
92. E.J. Anderson and A.S. Lewis, ‘An extension of the simplex algorithm for semi-infinite linear programming’, *Mathematical Programming* 44 (1989) 247–269.
93. E.J. Anderson, A.S. Lewis and S.Y. Wu, ‘The capacity problem’, *Optimization* 20 (1989) 725–742.

Articles in refereed conference proceedings

1. J.V. Burke, D. Henrion, A.S. Lewis and M.L. Overton, ‘HIFOO — A MATLAB package for fixed-order controller design and H_∞ optimization’, 6 pages, to appear in: *Proceedings of the 5th IFAC Symposium on Robust Control Design, ROCOND’06*.
2. A.S. Lewis, ‘Eigenvalues and nonsmooth optimization’, in: L.M. Pardo, A. Pinkus, E. Süli and M.J. Todd (eds), *Foundations of Computational Mathematics: Santander 2005*, Cambridge University Press (2006), 208–229.
3. J.V. Burke, A.S. Lewis and M.L. Overton, ‘A nonsmooth, nonconvex optimization approach to robust stabilization by static output feedback and low-order controllers’, 7 pages, in: *Proceedings of the 4th IFAC Symposium on Robust Control Design, ROCOND’03*.
4. J.M. Borwein, A.S. Lewis and Q.J. Zhu, ‘Convex spectral functions of compact operators, Part II: lower semicontinuity and rearrangement invariance’, in: A. Rubinov and B. Glover (eds), ‘Optimization and Related Topics’, Kluwer (2001), 179–196.
5. A.S. Lewis and J.-S. Pang, ‘Error bounds for convex inequality systems’, in: J.-P. Crouzeix, J.-E. Martinez-Legaz and M. Volle (eds), *Generalized Convexity, Generalized Monotonicity* (1998) 75–110.
6. H. Bauschke*, J.M. Borwein, and A.S. Lewis, ‘The method of cyclic projections for closed convex sets in Hilbert space’, in: Y. Censor and S. Reich (eds), ‘Recent Developments in Optimization Theory and Non-linear Analysis’, *Contemporary Mathematics* 204, AMS, Providence RI, 1997, 1–38.
7. J.M. Borwein and A.S. Lewis, ‘Practical conditions for Fenchel duality in infinite dimensions’, in: M. Théra and J.-B. Baillon (eds.), *Fixed Point Theory and Applications* (Longman, U.K., 1991) 83–89.
8. A.S. Lewis, ‘The convergence of entropic estimates for moment problems’, in: J.R. Giles and S. Fitzpatrick (eds.), *Functional Analysis/Optimization, Proceedings of the Centre for Mathematical Analysis, Canberra, Australia, Vol. 20*, (1989) 100–115.

9. A. Brace, A.S. Lewis and G.N. Newsam, ‘The valuation of contingent securities’, in: J.R. Giles and S. Fitzpatrick (eds.), *Functional Analysis/Optimization, Proceedings of the Centre for Mathematical Analysis, Canberra, Australia, Vol. 20*, (1989) 205–206.
10. A.S. Lewis, ‘Extreme points of infinite transportation problems’, in: M.J. Beckmann, K.-W. Gaede, K. Ritter and H. Schneeweiss (eds.), *Proceedings of the Tenth Symposium on Operations Research, Munich* (Verlag Anton Hain, 1986) 115–126.
11. A.S. Lewis, ‘Extreme points and purification algorithms in general linear programming’, in: E.J. Anderson and A.B. Philpott (eds.), *Infinite Programming, Proceedings* (Springer-Verlag, Berlin, 1985) 123–135.

Articles in unrefereed proceedings

1. A.S. Lewis, ‘Local structure and algorithms in nonsmooth optimization’, in: F. Jarre, C. Lemaréchal and J. Zowe (eds), *Oberwolfach Proceedings, 2005*.
2. A.S. Lewis, ‘Nonsmooth analysis of eigenvalues: a summary’, *Rendiconti del Seminario Matematico e Fisico di Milano*, Vol. LXVI (1998) 33–41.
3. A.S. Lewis, ‘Convex analysis and applications’, in *Bulletin of the Centre de Recherches Mathématiques, Montréal* (1996): a summary of my research interests as Aisenstadt prize recipient.
4. J.M. Borwein and A.S. Lewis, ‘A survey of convergence results for maximum entropy methods’, in: A. Mohammad-Djafari and G. Demoments (eds), ‘Maximum Entropy and Bayesian Methods’, Kluwer, 1993.

Miscellaneous

1. A.S. Lewis, Book review of ‘Lectures on Modern Convex Optimization’ by A. Ben-Tal and A. Nemirovski, *SIAM Review* 44, 731-734, 2002.
2. A.S. Lewis, 50 entries for: J. Bothamley (ed.), ‘Dictionary of Theories’, Gale Research, London, U.K., 1993.

Invited presentations and colloquia (past 6 years)

I have listed major plenary presentations at the beginning of this section.

1. Feb. 2013: ‘A fresh look at active sets’, Applied and Computational Mathematics Colloquium, Caltech.
2. Oct. 2012: ‘A fresh look at active sets’, Discrete Mathematics and Optimization Seminar, McGill University, Montreal.
3. Aug. 2012: ‘Active sets and nonsmooth geometry’, 21st International Symposium on Mathematical Programming, Berlin.
4. Nov. 2011: ‘Active sets and nonsmooth geometry’, Conference on Optimization, Games, and Dynamics, Institut Henri Poincaré, Paris.
5. Sep. 2011: ‘Nonsmooth optimization and semi-algebraic sets’, Workshop on Optimization, Fields Institute, Toronto.
6. Aug. 2011: ‘Nonsmooth optimization and semi-algebraic sets’, plenary lecture, Conference on Modeling and Optimization: Theory and Applications, Lehigh University.
7. May 2011: ‘Nonsmooth optimization and semi-algebraic sets’, Workshop on Computational and Analytical Mathematics, Vancouver.
8. Dec. 2010: ‘Nonsmooth optimization and semi-algebraic sets’, International Conference on Advances in Optimization and Related Topics, Barcelona.
9. Sep. 2010: ‘Nonsmooth optimization and semi-algebraic sets’, plenary lecture, 2nd IMA Conference on Numerical Linear Algebra and Optimization, Birmingham, U.K.
10. Apr. 2010: ‘Semi-algebraic optimization theory’, Operations Research Colloquium, Georgia Tech.
11. Oct. 2008: ‘Metric regularity illustrated’, Optimization Seminar, University of Wisconsin.
12. Sep. 2008: ‘Regularity illustrated’, Numerical Analysis Seminar, Courant Institute, New York.

13. Aug. 2008: ‘Regularity illustrated’, semi-plenary lecture, Annual German Operations Research Conference, Augsburg.
14. June 2008: ‘Metric regularity illustrated’, Conference on the Foundations of Computational Mathematics, Hong Kong.
15. May 2008: ‘Alternating projections and metric regularity’, Optimization Workshop, Politecnico di Milano.
16. Apr. 2008: ‘Metric regularity illustrated’, plenary lecture, 2nd International Conference on Nonlinear Programming with Applications, Beijing.
17. Feb. 2008: ‘Semi-algebraic ideas in nonsmooth optimization’, Humboldt University, Berlin.
18. Jan. 2008: ‘Nonsmooth optimization: foundations, special structure, and algorithms’, La Sapienza University, Rome.
19. Sep. 2007: ‘Regularity illustrated’, 11th Workshop on Well-Posedness, Alicante, Spain.
20. June 2007: ‘Semi-algebraic ideas in nonsmooth optimization’, plenary lecture, 23rd IFIP TC 7 Conference on System Modelling and Optimization, Crakow, Poland.
21. July 2007: ‘Alternating projections revisited’, plenary lecture, Joint EUROPT-OMS Meeting, Prague, Czech Republic.
22. June 2007: ‘Semi-algebraic ideas in nonsmooth optimization’, plenary lecture, C&O@40, University of Waterloo.
23. May 2007: ‘Eigenvalues and optimization’, Colloquium, Simon Fraser University.
24. May 2007: ‘Variational properties of pseudospectra’, Canadian Applied and Industrial Mathematics Conference, Banff.
25. Nov. 2006: ‘Alternating projections revisited’, Operations Research Seminar, MIT.

26. Jul. 2006: Plenary speaker at the 5th IFAC Symposium on Robust Control Design, Toulouse, France.
27. May 2006: ‘Structure in nonsmooth optimization’, International Conference on Nonlinear Programming, Shanghai, China.
28. May 2006: ‘Nonsmooth optimization and eigenvalues’, Institute of Computational Mathematics, Beijing, China.

Funding (past 6 years)

Principal Investigator

- National Science Foundation 3-year grant DMS-1208338, ‘Geometry in Nonsmooth Optimization’, US\$ 412,971 (total), June 2012.
- National Science Foundation grant DMS-0849383, ‘Special Semester: Foundations of Computational Mathematics’, US\$ 110,000 (total), August 2009. Co-PI: M.J. Todd.
- United States – Israel Binational Science Foundation 4-year grant 2008261, ‘Tame Optimization’, \$68,000 (total), July 2009. Co-PI: A. Ioffe.
- National Science Foundation 3-year grant DMS-0806057, ‘Variational Analysis for Practical Optimization’, US\$ 387,861 (total), June 2008.
- National Science Foundation 3-year grant DMS-0504032, ‘Applied Variational Analysis: Structure, Regularity, and Algorithms’, US\$ 275,364 (total), June 2005. (total), Apr. 2003.

3 Teaching activities (past six years)

Prizes

- 2007 Sonny Yau ’72 Excellence in Teaching Award from Cornell’s College of Engineering.
- 2007 Outstanding Teaching Award at Cornell’s School of ORIE in the Undergraduate Program.

Courses taught

(Approximate class sizes in parentheses.)

- ORIE 639, 6328: Convex Analysis, Spring 2009 (25).
- ORIE 6300: Mathematical Programming I (25), Fall 2007, Fall 2009.
- ORIE 632: Nonlinear Programming (22), Spring 2007 (joint with M.J. Todd).
- ORIE 321/521/522: Optimization 2 (170), Spring 2007 (joint with D. Shmoys).
- ORIE 3300/5300: Optimization 1 (170), Fall 2011 (assisting R. Bland and M. Larsson).

Curriculum development

ORIE 320/520 and 321/521/522: Optimization I and II A complete redesign (with D. Shmoys) of the year-long undergraduate/masters optimization sequence, including a thorough reworking of the lecture material, complete online lecture notes, and extensive modelling and AMPL programming sections.

ORIE 639, 6328: Convex Analysis Course redesign.

ORIE 632: Nonlinear Programming Course redesign.

Supervision

Postdoctoral fellows

1. F. Aragón-Artacho, Spring – Summer 2010.

Ph.D. Committee Chair

1. S. Zhang, Summer 2009 – Summer 2013.
2. D. Drusvyatskiy, Summer 2009 – Summer 2013.
3. S. Schismenos, Spring 2006 – Spring 2009 (joint with S. Henderson).
Currently with J.P. Morgan-Chase in London.

4. J. Pang (Applied Mathematics), Spring 2005 – Spring 2009. Currently tenure-track Assistant Professor, National University of Singapore.
5. D. Leventhal, Spring 2005 – Spring 2009. Currently with Goldman-Sachs in New York.
6. W. Hare , Spring 2001 – Spring 2004. Currently tenure-track Assistant Professor, University of British Columbia (Okanagan).
7. H. Sendov, Fall 1996 – Fall 2000. Associate Professor, University of Western Ontario.

M.Eng. projects

1. C. Kansu, J. Lee, S. Mtandwa, B. Olaleye, H. Zhang: Tax-efficient portfolio management strategies. (Client: Goldman-Sachs.) Fall 2009.

4 Service (past six years)

Administrative positions

- Director, School of Operations Research and Information Engineering, July 2010 – June 2013.

Committees

- Center for Applied Mathematics redesign committee, Fall 2012 – Spring 2013.
- Executive Committee, Fall 2009 – Spring 2010.
- Financial Engineering Review Committee, Fall 2009 (Chair).
- Director Selection Committee, Spring 2009 (Chair).
- Dean's Ad Hoc Committee, Fall 2007, Spring 2009.
- Tenure Committee, Fall 2009.

Conferences and seminars organized

1. Scientific Committee, Barcelona Mathematics Research Center International Conference on Advances in Optimization and Related Topics, Fall 2010.
2. Organizing Committee, Fields Institute Semester on Foundations of Computational Mathematics, 2009.
3. Organizing Committee, Workshop on Convex Analysis, Optimization and Applications, Spring 2010, Les Houches (France).
4. Organizer, weekly Continuous Optimization Seminar, Cornell University, Spring 2010.
5. Organizing Committee, Twelfth Workshop on Well-Posedness in Optimization, Levico Terme (Italy), 2009. 50 international participants.

5 Professional activities

Editorial boards

- Co-Editor, *Mathematical Programming, Series A*, Oct. 2005 – present.
- Associate Editor, *Mathematics of Operations Research*, Dec. 1998 – present.
- Associate Editor, *SIAM Journal on Matrix Analysis and Applications*, Dec. 2006 – Jan. 2012.
- Associate Editor, *SIAM Journal on Optimization*, June 1994 – Jan. 2007.
- Associate Editor, *SIAM Journal on Control and Optimization*, Jan. 1997 – Jan. 2000.
- Associate Editor, *Mathematical Programming*, Oct. 1999 – Oct. 2005.
- Springer SIAM/MPS Monographs in Optimization, Summer 1999 – present.

Positions

- Lagrange Prize Committee, Aug. 2005 – Aug. 2006, and Nov. 2007 – Mar. 2009 (Chair).
- 2008 NSF Operations Research Panel.
- Selection Committee for 2005 SIAG-SIOPT Best Paper Prize.
- Treasurer, Foundations of Computational Mathematics, 2005 – 2010.
- Selection Committee for 2004 Math. Programming Society Young Researcher Competition (Chair).
- 2006 NSF Numerical Analysis and Optimization Panel.