

Short Vita: Michael Todd

Leon C. Welch Professor,
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Education:

B.A., Mathematics, Cambridge University, England, 1968
Ph.D., Administrative Sciences, Yale University, 1972

Professional Experience:

1973-present, Assistant, Associate, and Full Professor, OR&IE,
Cornell University
1971-1973, Lecturer and Assistant Professor,
Operations Research and Planning, University of Ottawa

Honors:

Guggenheim Fellowship, John Simon Guggenheim Memorial Foundation, 1980-81.
Sloan Research Fellowship, Alfred P. Sloan Foundation, 1981-85.
George B. Dantzig Prize, Mathematical Programming Society and SIAM, 1988.

Special Appointments:

Cowles Foundation for Research in Economics
OR Center, MIT
Department of Mathematics, University of Washington
BellCore
Department of Applied Mathematics and Theoretical Physics, Cambridge University
CORE, Leuven, Belgium

Editorial Positions:

Co-Editor, Editor-in-Chief, Associate Editor: Mathematical Programming, 1980-present
Associate Editor: Mathematics of Operations Research, 1978-2000
Associate Editor: Operations Research, 1982-86
Member of Editorial Board: SIAM Journal on Optimization, 1997-present
Member of Editorial Board: Foundations of Computational Mathematics, 2000-present

Grants and Contracts:

NSF, 1974-present
ONR, 1987-present
AFOSR, 1990-1993

Selected Publications:

- (1977) Union Jack triangulations, in: Fixed Points: Algorithms and Applications (S. Karamardian, ed.), Academic Press, New York, 315-336.
- (1976) On triangulations for computing fixed points, Mathematical Programming 10 322-346.
- (1978) Efficient acceleration techniques for fixed-point algorithms (with R. Saigal), SIAM Journal on Numerical Analysis 15 997-1007.
- (1980) Traversing large pieces of linearity in algorithms that solve equations by following piecewise-linear paths, Mathematics of Operations Research 5 242-257.
- (1980) The monotonic bounded Hirsch conjecture is false for dimension

- at least four, *Mathematics of Operations Research* 5 599-601.
- (1980) The ellipsoid method: a survey (with R.G. Bland and D. Goldfarb), *Operations Research* 29 1039-1091.
- (1982) An introduction to piecewise-linear homotopy algorithms for solving systems of equations, in: *Topics in Numerical Analysis* (P.R. Turner, ed.), *Lecture Notes in Mathematics* 965, Springer-Verlag, Berlin-Heidelberg-New York, 149-202.
- (1983) Large-scale linear programming: geometry, working bases and factorizations, *Mathematical Programming* 26 1-20.
- (1985) Linear and quadratic programming in oriented matroids, *Journal of Combinatorial Theory (B)* 39 105-133.
- (1985) The ellipsoid method generates dual variables (with B. Burrell), *Mathematics of Operations Research* 10 688-700.
- (1986) Polynomial expected behavior of a pivoting algorithm for linear complementarity and linear programming problems, *Mathematical Programming* 35 173-192.
- (1989) Linear programming (with D. Goldfarb), in: *Handbooks in Operations Research and Management Science*, vol. 1: Optimization (G.L. Nemhauser, A.H.G. Rinnooy Kan and M.J. Todd, eds.), North Holland, Amsterdam, 73-170.
- (1990) A centered projective algorithm for linear programming (with Y. Ye), *Mathematics of Operations Research* 15 508-529.
- (1991) Probabilistic models for linear programming, *Mathematics of Operations Research* 16 671-693.
- (1993) On the complexity of approximating the maximal inscribed ellipsoid for a polytope (with L.G. Khachiyan), *Mathematical Programming* 61 137-159.
- (1994) An $\mathcal{O}(\sqrt{nL})$ -iteration homogeneous and self-dual linear programming algorithm (Y. Ye, M.J. Todd, and S. Mizuno), *Mathematics of Operations Research* 19 53-67.
- (1996) A lower bound on the number of iterations of long-step and polynomial interior-point linear programming algorithms (with Y. Ye), *Annals of Operations Research* 62 233-252.
- (1997) Self-scaled barriers and interior-point methods for convex programming (with Yu. E. Nesterov), *Mathematics of Operations Research* 22 1--42.
- (1999) SDPT3 --- a Matlab software package for semidefinite programming, Version 1.3 (K.C. Toh, M.J. Todd, and R.H. Tutuncu), *Optimization Methods and Software* 11 545--581.
- (2001) Semidefinite optimization, *Acta Numerica* 10 515--560.

Books:

- (1976) *The Computation of Fixed Points and Applications*, Springer-Verlag, Berlin
- (1983) *Homotopy Methods and Global Convergence*, edited with B.C. Eaves, F.J. Gould and H.-O. Peitgen, Plenum Press, New York-London
- (1989) *Optimization*, volume 1 of *Handbooks in Operations Research and Management Science*, edited with G.L. Nemhauser and A.H.G. Rinnooy Kan, North Holland, Amsterdam
- (1990) *Mathematical Developments Arising from Linear Programming*, *Contemporary Mathematics* 114, edited with J.C. Lagarias, American Mathematical Society, Providence

Doctoral Students:

D. Strip,	1978
S.A. Awoniyi,	1980
A. Vardi,	1980
C.-M. Ip,	1985

W.D. Morris, Jr.,	1986
J.E. Mitchell,	1988
Y. Wang,	1991
A. Liao,	1991
K.A. McShane,	1992
L. Tuncel,	1993
J.S. Shahabuddin,	1996
R.H. Tutuncu,	1996
R.A. Hauser,	2000
M. Wagner,	2000
E. A. Yildirim,	2001