Alan Weiss

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Married, US citizen, born 5 December 1955

Professional experience:

June 2007–present
   Consulting engineering technical writer, The MathWorks. Documenting MATLAB mathematical toolboxes, including Optimization, Statistics, PDE, and Symbolic Mathematics.

August 1981–March 2007
   Member of Technical Staff, Bell Laboratories, in Mathematical Sciences Research Center. Promoted to Distinguished Member 2001. (Also worked summers of 1977 and 1978.) Research includes theory and applications of large deviations, training of optical systems, analysis of parallel algorithms and communication networks for parallel computers, and some control problems. Coauthor of book Large Deviations for Performance Analysis, Chapman & Hall, 1995.

Fall 2005
   Adjunct lecturer, Drew University, Numerical Analysis (undergraduate).

Fall 1993
   Visiting lecturer, Columbia University, Statistics and Business school. Taught a graduate class in large deviations and applications.

Fall 1986
   Visiting lecturer, University of Maryland College Park, Systems Research Center. Taught a graduate class in large deviations and applications.

September 1976–June 1981.
   New York University. Taught 8 semesters of undergraduate math including business calculus, calculus I–III, linear algebra, statistics, and a summer reading class in ODE.

Education:

1981 Ph.D. Mathematics, Courant Institute of Mathematical Sciences. Dissertation under S.R.S. Varadhan, "Invariant Measures of Diffusions in Bounded Domains." NSF graduate fellowship awarded 1976–79.
1979 M.S. Mathematics, Courant Institute of Mathematical Sciences.
1976 B.S. Mathematics with highest honors and B.S. Physics with highest honors, Case Western Reserve University. Awarded 1/2 tuition merit scholarship 1973–76, top freshman prize, co-recipient senior math prize, senior physics prize.

Patents applied for:

2001 with Carl Nuzman and Iraj Saniee, for our method of generating synthetic data traffic. **Granted 2/2011**
2000 with Boris Lubachevsky, for our parallel simulation algorithm, Synchronous Relaxation. **Granted 8/2007**
2000 with Wonho Yang, for our voice over data networks algorithm. **Granted 9/2005**
2001 with Carl Nuzman and Stanley Pau (Agere), for LambdaRouterTM training algorithms. **Abandoned**
2005 with Carl Nuzman, Vladimir Aksyuk, and Maria Elina Simon, for a method of determining the univalent region of MEMS actuators. **Granted 4/2011**

Grants Received:

   Binational Science Foundation 2001–2004 with Adam Shwartz (Technion), Rami Atar (Technion), and Paul Dupuis (Brown), for large deviations.
   Part of the Brown VIGRE grant 2000–2005, led by Walter Craig.

Publications:

1. Digital Adaptive Filters: Conditions for Convergence, Rates of Convergence, Effects of Noise and Errors Arising from the Implementation, D. Mitra and A. Weiss, IEEE Trans. on Information Theory, IT-25:6, pp. 637-652, November 1979.

2. Analysis of Delay-Differential Equations Arising in Communication Network Synchronization, D. Mitra and A. Weiss, Proc. Symp. Circuits and Systems Planning, 3, pp. 839-843, 1980.

3. An Analysis of Teletraffic Generated by a Large Number of Markovian Sources, A. Weiss, Trans. Tenth Intl. Teletraffic Cong., Montreal, June 1983, Session 4.4a.

4. Allocating Independent Substaks on Parallel Processors, C. P. Kruskal and A. Weiss, IEEE Trans. Software Eng., 11:10, pp. 1001-1016, October 1985.

5. A Lower Bound for Probabilistic Algorithms for Finite State Machines, A. G. Greenberg and A. Weiss, J. Computer and System Sci., 33:1, pp. 88-105, August 1986.

6. A New Technique for Analyzing Large Traffic Systems, A. Weiss, Adv. Appl. prob., 18, pp. 506-532, 1986.

7. A Transient Analysis of a Data Network with a Processor-Sharing Switch, D. Mitra and A. Weiss, AT&T Technical Journal, pp. 4-16, September/October 1988.

8. The Distribution of Waiting Times in Clocked Multistage Interconnection Networks, C. P. Kruskal, M. Snir, and A. Weiss, IEEE Trans. Computers, 37:11, pp. 1337-1352, November 1988.

9. The Transient Behavior in Erlang's Model for Large Trunk Groups and Various Traffic Conditions, D. Mitra and A. Weiss, 12th International Teletraffic Congress, Torino, Italy, pp. 5.1B4.1-5.1B4.8, 1988.

10. Light Traffic Derivatives via Likelihood Ratios, M. I. Reiman and A. Weiss, IEEE Trans. Info. Theory, 35:3, pp. 648-654, May 1989.

11. Sensitivity Analysis for Simulations via Likelihood Ratios, M. I. Reiman and A. Weiss, Operations Research, 37:5, pp. 830-844, September-October 1989.

12. Roll-back Sometimes Works...If Filtered, B. D. Lubachevsky, A. Shwartz, and A. Weiss, 1989 Winter Simulation Conf. Proc., pp. 630-639, 1989.

13. An Analysis of rollback-based simulation, B. D. Lubachevsky, A. Shwartz, and A. Weiss, ACM Trans. on Modeling and Comp. Simulation, 1:2, pp. 154-193, April 1991.

14. Large Deviations for Markov Process with Discontinuous Statistics, I: General Upper Bounds, P. Dupius, R. S. Ellis, and A. Weiss, Ann. Prob., 19:3, pp. 1280-1297, July 1991.

15. A branching random walk with a barrier, J. D. Biggins, B. D. Lubachevsky, A. Shwartz, and A. Weiss ,Ann. Appl. Prob., 1:4, pp. 573-581, November 1991.

16. Synchronous Relaxation for Parallel Simulation with Applications to Circuit Switched Networks, S. Eick, B. D. Lubachevsky, A. G. Greenberg, and A. Weiss, ACM TOMACS, 1991.

17. A Unified Set of Proposals for Control and Design of High Speed Data Networks, D. Mitra, I. Mitrani, K. G. Ramakrishnan, J. B. Seery, and A. Weiss, Queueing Systems, 9, pp. 215-234, 1991.

18. Analysis of a Rate-based Feedback Control Strategy for Long Haul Data Transport, K. W. Fendick, D. Mitra, I. Mitrani, M. A. Rodrigues, J. B. Seery, and A. Weiss, IEEE Communications Magazine, October 1991.19. The 3x+1 Problem: Two Stochastic models, J. C. Lagarias and A. Weiss, Ann. Appl. Prob., 2:1, pp. 229-267, February 1992.

20. An Approach to High Performance, High Speed Data Networks, K. Fendick, M. Rodrigues, and A. Weiss, Performance Evaluation, 1992.

21. Induced Rare Events: Analysis via Large Deviations and Time Reversal, A. Shwartz and A. Weiss, Adv. Appl. Prob., September 1993.

22. Fundamental Bounds and Approximations for ATM Multiplexers with Applications to Video Teleconferencing,, A. Elwalid, D. Heyman, T.V. Lakshman, D. Mitra and A. Weiss, IEEE Journal on Selected Areas in Communications, 13:6, pp. 1004-1016, August 1995. (Best Paper)

23. Large deviations for performance analysis, A. Shwartz and A. Weiss, Chapman and Hall, 1995.

24. Sharing Bandwidth in ATM, K. Ramanan and A. Weiss, Allerton conference, 1996.

25. A Compound Model for TCP Connection Arrivals, Carl J. Nuzman, I. Saniee, Wim Sweldens, A. Weiss, ITC Seminar on IP Traffic, September 2000.

26. Synchronous Relaxation For Parallel Ising Spin Simulations, B.D. Lubachevsky and A. Weiss, PADS conference May 2001.

27. 1100 x 1100 Port MEMS-Baswed Optical Crossconnect With 4-dB Maximum Loss, J. Kim, C.J. Nuzman, B. Kumar, D.F. Lieuwen, J.S. Kraus, A. Weiss, C.P. Lichtenwalner, A.R. Papazian, R.E. Frahm, N.R. Basavanhally, D.A. Ramwey, V.A. Aksyuk, F. Pardo, M.E. Simon, V. Lifton, H.B. Chan, M. Haueis, A. Gasparyan, H.R. Shea, S. Arney, C.A. Bolle, P.R. Kolodner, R. Ryf, D.T. Neilson, J.V. Gates,, IEEE Photonics Technology Letters, 15, No. 11, pp. 1537–1539, November 2003.

28. Dynamic Optimization in Future Cellular Networks, S.C. Borst, A. Buvaneswari, L.M. Drabeck, M.J. Flanagan, J.M. Graybeal, G.K. Hampel, M. Haner, W.M. MacDonald, P.A. Polakos, G. Rittenhouse, I.I. Saniee, A. Weiss, and P.A. Whiting, Bell Labs Tech. J. 10, No. 2, pp. 99–119, 2005.

29. Large deviations with diminishing rates, A. Shwartz and A. Weiss, Math of OR 30, No. 2, pp. 281–310, May 2005.

30. Uniqueness of a Constrained Variational Problem and Large Deviations of Buffer Size, A. Shwartz and A. Weiss, IEEE Trans. Auto. Control 55 #2, pp. 425–430, 2010.

Co-editor of the Boca 2000 Telecommunications Conference Select Proceedings.