William S. Evans

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Education

B.S. (Computer Science) Yale University, June 1987
Ph.D. (Computer Science) University of California at Berkeley, December 1994
Thesis Title: Information Theory and Noisy Computation
Adviser: Manuel Blum

Employment

University of British Columbia
Assistant Professor of Computer Science, since January 2001
University of Arizona
Assistant Professor of Computer Science, 1996–2001
University of British Columbia
Postdoctoral Research Fellow, 1994–1996 (Sponsor: Nicholas Pippenger)
Lecturer, Spring 1995 (Discrete Mathematics)
University of California at Berkeley
Research Assistant, Computer Science, 1989–1993 (Sponsor: Manuel Blum)
Teaching Assistant, Computer Science, 1989–1992 (for Manuel Blum, Richard Karp, Arthur Gill)
Mentor for SUPERB (Summer Undergraduate Program in Engineering Research)
San Francisco State University
Lecturer, Fall 1993 (Analysis of Algorithms)
AT&T Bell Labs
Student Researcher, summer 1988 (Sponsor: Binay Sugla)

Honors and Awards

- NSERC Canada International Fellowship, 1994-1996
- Honorable Mention Incredible Instructor, 1995 (University of British Columbia)
- Outstanding Teaching Assistant, 1989 (University of California at Berkeley)
- Tandem Fellowship, 1989-92; GTE Fellowship, 1988-89; California Fellowship in Microelectronics, 1987-88.

Service

Referee:
Random Structures and Algorithms
Algorithmica
Information Processing Letters
Software Practice & Experience
SIAM Journal on Computing
Departmental Committees:
U.A. Graduate Admissions, 1996–1997, 1999
U.A. Curriculum, 1996–1998
U.A. Master's Examination, 1997–

Journal Papers

1. Compiler techniques for code compaction, S. Debray, W. Evans, R. Muth, and B. de Sutter, *Transactions on Programming Languages and Systems (TOPLAS)*, 22(2), March 2000, pp. 378–415. Preliminary version appeared as Compiler techniques for code compression, S. Debray, W. Evans, and R. Muth, in *Workshop on Compiler Support for System Software (WCSSS)*, 1999.

2. Right-triangulated irregular networks, W. Evans, D. Kirkpatrick, and G. Townsend, *Algorithmica: Special Issue on Algorithms for Geographical Information*, (accepted June 1999).

3. Efficiently supporting temporal granularities, C. Dyreson, W. Evans, H. Lin, and R. Snodgrass, *IEEE Transactions on Knowledge and Data Engineering*, 12(4), July/August 2000, pp. 568–587.

4. Broadcasting on trees and the Ising model, W. Evans, C. Kenyon, Y. Peres, and L. J. Schulman, *Annals of Applied Probability*, 10(2), 2000, pp. 410–433.

5. Signal propagation and noisy circuits, W. Evans and L. J. Schulman, *IEEE Transactions on Information Theory*, 45(7), November 1999, pp. 2367–2373.

6. Average-case lower bounds for noisy boolean decision trees, W. Evans and N. Pippenger, *SIAM Journal on Computing*, 28(2), July 1998, pp. 433–446. Preliminary version appeared in *28th Symposium on the Theory of Computation (STOC)*, 1996.

7. On the maximum tolerable noise for reliable computation by formulas, W. Evans and N. Pippenger, *IEEE Transactions on Information Theory*, 44(3), May 1998, pp. 1299–1305.

8. Checking the correctness of memories, M. Blum, W. Evans, P. Gemmell, S. Kannan, and M. Naor, *Algorithmica* 12, 1994, pp. 225–244. Extended abstract appeared in *32nd Symposium on Foundations of Computer Science (FOCS)*, 1991.

Refereed Conference Papers

1. Restructuring binary search trees, W. Evans and D. Kirkpatrick, *Proceedings of the Eleventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2000.

2. Code compression, J. Ernst, W. Evans, C. W. Fraser, S. Lucco, and T. Proebsting, *Proceedings SIGPLAN '97 Conference on Programming Language Design and Implementation (PLDI)*, 1997.

3. Signal propagation, with application to a lower bound on the depth of noisy formulas, W. Evans and L. J. Schulman, *34th Symposium on Foundations of Computer Science (FOCS)*, 1993.

4. Choosing a reliable hypothesis, W. Evans, S. Rajagopalan, and U. Vazirani, *Proceedings of the 6th Workshop on Computational Learning Theory (COLT)*, 1993.

Other Published Papers

1. Recovering lines with fixed linear probes, M. de Berg, P. Bose, D. Bremner, W. Evans, and Lata Narayanan, *Proceedings of the Tenth Canadian Conference on Computational Geometry (CCCG)*, August 1998.

2. Compression via guided parsing, W. Evans, *Proceedings of the 1998 Data Compression Conference (poster session)*, March 1998.

3. A glossary of time granularity concepts, C. Bettini, C. E. Dyreson, W. Evans, R. T. Snodgrass, and X. S. Wang, in *Temporal Databases: Research and Practice*, O. Etzion, S. Jajodia, and S. Sripada (eds.), Springer, pp. 406–413, 1998.

4. Approximating shortest paths in arrangements of lines, P. Bose, W. Evans, D. Kirkpatrick, M. McAllister, and J. Snoeyink, *Proceedings of the Eighth Canadian Conference on Computational Geometry (CCCG)*, 1996.

5. Regular polygons are most tolerant, W. Evans, *Proceedings of the Seventh Canadian Conference on Computational Geometry (CCCG)*, 1995.

6. Parallel random number generation, W. Evans and B. Sugla, *Proceedings of the Fourth Conference on Hypercubes, Concurrent Computers and Applications*, 1989.

Software

1. TopoVista, by W. Evans and G. Townsend, is now in its third major revision. It allows an observer to "fly" over a digital terrain model at interactive speeds. One of its more interesting applications is as a tool for researchers from the Instituto Tecnologico y de Estudios Superiores de Monterrey in Mexico to visualize the ocean floor of the Sea of Cortez.

2. squeeze, by S. Debray, W. Evans, and R. Muth, takes as input an executable and produces an executable that is functionally equivalent yet is 70% of the original's size.

Submitted Journal Papers

1. On the spanning ratio of Gabriel graphs and beta-skeletons, P. Bose, L. Devroye, W. Evans, and D. Kirkpatrick, submitted to *SIAM Journal on Discrete Mathematics.*

2. Diamonds are not a minimum weight triangulation's best friend, P. Bose, L. Devroye, and W. Evans, *Univ. of British Columbia Tech. Report 96-01*, 1996, submitted to *International Journal of Computational Geometry and Applications.*

Other Work in Progress

- Finite memory reconstruction strategies in noisy trees, W. Evans and L. J. Schulman.
- Lower bounds for reconstructing arrangements from fixer linear probes, R. Beals, W. Evans, and J. Friedman.

Media

- TopoVista – Interactive Terrain Navigation, *Videotape presentation*, University of British Columbia, 1996.

Scholarly Presentations

- Recovering lines with fixed linear probes, *Theory Seminar*, University of British Columbia, Vancouver, Canada, 1999.
- Signal propagation and noisy circuits, *Microsoft Theory Seminar*, Microsoft Corp., Redmond, WA 1998.
- Height Restricted Binary Search Trees, *Theory Seminar*, University of Arizona, Fall 1997.
- Right Triangular Irregular Networks, *Workshop on Computational Cartography*, Dagstuhl, Germany, 1996. Partially supported by a University of Arizona Foreign Travel Grant.
- Lower Bounds for Noisy Boolean Decision Trees, *28th Symposium on the Theory of Computation*, Philadelphia, 1996.
- Information Theory and Noisy Computation, *IEEE International Symposium on Information Theory*, Vancouver, Canada, 1995.
- Regular Polygons are Most Tolerant, *Seventh Canadian Conference on Computational Geometry*, Quebec City, Canada, 1995.
- Signal Propagation, with Application to a Lower Bound on the Depth of Noisy Formulas, *34th Symposium on Foundations of Computer Science*, Palo Alto, 1993.

- Checking the Correctness of Memories, *32nd Symposium on Foundations of Computer Science*, Puerto Rico, 1991.
- Checking the Correctness of Memories, *DIMACS Workshop on Structural Complexity and Cryptography*, Rutgers University, 1990.
- Parallel Random Number Generation, *Fourth Conference on Hypercubes, Concurrent Computers and Applications*, Monterey, 1989.

Grants and Contracts

Awarded

- Compiler Techniques for Code Compression, S. Debray and W. Evans. NSF, $264,000 over 3 years starting September, 2000.
- Better Fault Tolerance via Application-Enhanced Networks, W. Evans and J. Hartman. DARPA, $1.3 million over 3 years starting July, 2000.
- University of Arizona Foreign Travel Grant, $600, September, 1996, and $525, February, 1999.