

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2
Photocopy this page or follow this format for each person.

NAME Walter L. Ruzzo, Ph.D.		POSITION TITLE Professor	
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i>)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
California Institute of Technology, Pasadena, CA	B.S.	1968	Mathematics
University of California, Berkeley, CA	Ph.D.	1978	Computer Science

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

Professional Positions

Professional Programmer and Systems Analyst, 1966-1973
Assistant Professor of Computer Science, University of Washington, 1977-1982
Visiting Scholar, Electrical Engineering and Computer Science, University of California, San Diego, 1984-1985
Associate Professor of Computer Science, University of Washington, 1982-1990
Visiting Professor of Computer Science, University of Toronto, 1990-1991
Professor of Computer Science, University of Washington, 1990-present

Recent Research Grants

- "Interdisciplinary Training in Genomic Sciences," NIH, 1995-2000. (Participating faculty; B. Trask, PI. Renewal pending.)
- "Computational Problems in Physical Mapping and Sequencing," NSF BIR-9601046, 1996-1999, \$725,000. (Joint with R. Karp and M. Tompa.)
 - "Computational Problems in DNA Sequencing, and Regulatory and Sequence Analysis." NSF DBI-9974498 (Directorate for Biological Sciences), 1999-2002, \$1,292,457. (Joint with R. Karp and M. Tompa.)

Selected Publications

- M. A. Harrison, **W. L. Ruzzo**, and J. D. Ullman, "Protection in operating systems," *Communications of the ACM* 19, 8 (Aug 1976) 461-476. Preliminary version in Proc. of the 5th ACM Symp. on Operating Systems Principles (November 1975) 14-24.
- L. Adleman, K. S. Booth, F. P. Preparata, and **W. L. Ruzzo**, "Improved time and space bounds for Boolean matrix multiplication," *Acta Informatica*, 11 (1978) 61-70.
- W. L. Ruzzo**, "Tree-size bounded alternation," *Journal of Computer and System Sciences*, 21, 2 (October 1980) 218-235. (Special issue of papers invited from 11th ACM Symp. on Theory of Computing, 1979.)
- S. L. Graham, M. A. Harrison, and **W. L. Ruzzo**, "An improved context-free recognizer," *ACM Transactions on Programming Languages and Systems*, 2, 3 (July 1980) 415-462.
- M. S. Paterson, **W. L. Ruzzo**, and L. Snyder, "Bounds on minimax edge length for complete binary trees," *Proc. of the 13th ACM Symp. on Theory of Computing* (1981) 293-299.
- W. L. Ruzzo**, "On Uniform Circuit Complexity," *Journal of Computer and System Sciences*, 22, 3 (June 1981) 365-383. (Special issue of papers invited from 20th IEEE Symp. on Foundations of Computer Science, 1979.)

7. **W. L. Ruzzo** and L. Snyder, "Minimum edge length planar embeddings of trees," in *VLSI Systems and Computations*, Kung, Sproull, and Steele, eds., Computer Science Press (1981) 119-123. (Proc. of the CMU Conference on VLSI Systems and Computations, October 1981.)
8. **W. L. Ruzzo**, J. Simon, and M. Tompa, "Space-Bounded Hierarchies and Probabilistic Computations," *Journal of Computer and System Sciences*, 28, 2 (April 1984) 216-230. (Special issue of papers invited from 14th ACM Symp. on Theory of Computing, 1982.)
9. H. J. Karloff and **W. L. Ruzzo**, "The Iterated Mod Problem," *Information and Computation* 80, 3 (March 1989) 193-204.
10. Borodin, S. Cook, P. Dymond, **W. Ruzzo**, M. Tompa, "Two Applications of Inductive Counting for Complementation Problems," *SIAM Journal on Computing* 18, 3 (June 1989) 559-578.
11. T. W. Lam and **W. L. Ruzzo**, "The Power of Parallel Pointer Manipulation," First ACM Symp. on Parallel Algorithms and Architectures, Santa Fe, New Mexico, June 1989, pages 92-102.
12. R. J. Anderson, P. Beame, and **W. L. Ruzzo**, "Low Overhead Parallel Schedules for Task Graphs," Second ACM Symp. on Parallel Algorithms and Architectures, Crete, Greece, June 1990.
13. Borodin, **W. L. Ruzzo** and M. Tompa, "Lower Bounds on the Length of Universal Traversal Sequences," *Journal of Computer and System Sciences* 45, 2 (Oct. 1992) 180-203. (Special issue of papers invited from 21st ACM Symp. on Theory of Computing, 1989.)
14. T. W. Lam and **W. L. Ruzzo**, "Results on Communication Complexity Classes," *Journal of Computer and System Sciences* 44, 2 (April 1992) 324-342. (Special issue of papers invited from 4th Structure in Complexity Theory Conference, Eugene Oregon, June 1989.)
15. R. Greenlaw, H. J. Hoover, and **W. L. Ruzzo**. *Limits to Parallel Computation: P-Completeness Theory*. Oxford University Press, 1995.
16. P. W. Dymond, F. E. Fich, N. Nishimura, P. Ragde, and **W. L. Ruzzo**, "Pointers versus Arithmetic in PRAMs." *Journal of Computer and System Sciences*, 53(2):218-232, Oct. 1996. (Special issue of papers invited from 8th Structure in Complexity Theory Conference, San Diego, CA, May, 1993.)
17. P. Beame, A. Borodin, P. Raghavan, **W. L. Ruzzo**, and M. Tompa, "Time-Space Tradeoffs for Undirected Graph Traversal," *Information and Computation*, 130(2):101-129, Nov. 1996. Also appeared in Proc. of the 31st IEEE Symp. on Foundations of Computer Science, St. Louis, MO, Oct. 1990, pages 429-438 (Vol. I).
18. G. Barnes and **W. L. Ruzzo**, "Undirected s-t Connectivity In Polynomial Time and Sublinear Space," *Computational Complexity*, 6(1):1-28, 1996-1997. Also appeared in Proc. of the Twenty 3rd ACM Symp. on Theory of Computing, New Orleans, LA, May 1991, pages 43-53.
19. K. Chandra, P. Raghavan, **W. L. Ruzzo**, R. Smolensky and P. Tiwari, "The Electrical Resistance of a Graph Captures its Commute and Cover Times," *Computational Complexity*, 6(4):312-340, 1997. Also appeared in Proc. of the 21st ACM Symp. on Theory of Computing, Seattle, WA, May 1989, 574-586.
20. G. Barnes, J. F. Buss, **W. L. Ruzzo**, B. Schieber, "A Sublinear Space, Polynomial Time Algorithm for Directed s-t Connectivity," *SIAM Journal on Computing*, 27(5):1273-1282, Oct. 1998. Also appeared in Proc. of the 7th Structure in Complexity Theory Conference, Boston, MA, June, 1992, pages 27-3.
21. P. Beame, A. Borodin, P. Raghavan, **W. L. Ruzzo**, and M. Tompa, "A Time-Space Tradeoff for Undirected Graph Traversal by Walking Automata," *SIAM Journal on Computing* 28(3):1051-1072, 1999.
22. **W. L. Ruzzo** and M. Tompa. "A linear time algorithm for finding all maximal scoring subsequences," Proc. of the 7th International Conference on Intelligent Systems for Molecular Biology, 234-241, Heidelberg, Germany, Aug. 1999. AAAI Press.
23. P. W. Dymond and **W. L. Ruzzo**, "Parallel Random Access Machines With Owned Global Memory and Deterministic Context-Free Language Recognition," To appear, *Journal of the ACM*, 47(1), Jan. 2000.
24. J. Redstone and **W. L. Ruzzo**, "Algorithms for a Simple Point Placement Problem." Invited lecture, to appear in Fourth Italian Conference on Algorithms and Complexity (CIAC 2000), March 2000. (Also Technical Report UW-CSE-98-12-04.)
25. K.Y. Yeung, D. Haynor and **W. L. Ruzzo**, "Validating Clustering for Gene Expression Data," University of Washington Dept. of Computer Science and Engineering Technical Report UW-CSE-00-01-01, Jan. 2000.