

Alejandro A. Schäffer
Curriculum Vitae
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Carnegie-Mellon University, 1983
M.S. Mathematics, Honors Degree Program
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Ph.D. Computer Science, Stanford University, 1988
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National Center for Human Genome Research, Merit Award, 1996
Fannie and John Hertz Foundation Fellowship, 1986–1988
National Science Foundation Graduate Fellowship, 1983–1986
Andrew Carnegie Society Scholarship, 1982–83
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2006–present Clinical Investigator, National Center for Biotechnology Information, NIH
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1998–present Computer Scientist, National Center for Biotechnology Information, NIH
1995–1998 Computer Scientist, National Center for Human Genome Research, NIH
1988–1996 Assistant Professor, Dept. of Computer Science, Rice University
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1988–89 Postdoctoral Member of Technical Staff, AT&T Bell Laboratories,
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1986–88 Research Student Associate, IBM Almadén Research Center,
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1985 Summer Member of Technical Staff, AT&T Bell Laboratories, Murray Hill, NJ
1985 Winter, Spring Research Assistant, Stanford University
1984 Autumn Teaching Assistant, Stanford University
1984 Summer Member of Technical Staff, AT&T Bell Laboratories, Murray Hill NJ
1983–84 Research Assistant, Stanford University
1980–83 Part-time programmer, Computer Science Department,
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Areas of Interest: Computational Biology, Algorithms, Biological Sequence Analysis,
Mammalian Genetics and Genomics, Primary Immunodeficiency Diseases

Publications:

1. “LUCIFER: A Latent, UNIX-Compatible, Interfaced File Emulator and Retriever”, Alejandro A. Schäffer, Carnegie-Mellon University, SPICE Document D007, 1981.
2. “A Polynomial Time Algorithm for Finding the Prime Factors of Cartesian-Product Graphs”, Joan Feigenbaum, John Hershberger, and Alejandro A. Schäffer, *Discrete Applied Mathematics* 12(1985), pp. 123–138.
3. “Recognizing Composite Graphs is Equivalent to Testing Graph Isomorphism”, Joan Feigenbaum and Alejandro A. Schäffer, *SIAM Journal on Computing* 15(1986), pp. 619–627.
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5. “Convex Hulls of Piecewise-Smooth Jordan Curves”, Alejandro A. Schäffer and Christopher J. Van Wyk, *Journal of Algorithms* 8(1987), pp. 66–94.
6. “Shortest Prefix Strings Containing All Subset Permutations”, Alejandro A. Schäffer, *Discrete Mathematics* 64(1987), pp. 239–252.
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8. “A Tighter Upper Bound on the Worst Case Behavior of Conway’s Parallel Sorting Algorithm”, Alejandro A. Schäffer, *Journal of Algorithms* 9(1988) pp. 321–342.
9. “Fast Parallel Algorithms for Chordal Graphs”, Joseph Naor, Moni Naor, and Alejandro A. Schäffer, (extended abstract) Proceedings of the 19th Annual ACM Symposium on Theory of Computing, 1987, pp. 355–364; (full paper) *SIAM Journal on Computing* 18(1989) pp. 327–349; more detailed version of full paper available as IBM Research Report RJ5629.
10. “Recognizing Bellman-Ford-Orderable Graphs”, Ramsey W. Haddad and Alejandro A. Schäffer, *SIAM Journal on Discrete Mathematics* 1(1988), pp. 447–471.
11. “Computing the Bump Number with Techniques from Two-Processor Scheduling”, Alejandro A. Schäffer and Barbara B. Simons, *Order* 5(1988), pp. 131–141.
12. “Time Bounds on Fault Tolerant Broadcasting”, David Peleg and Alejandro A. Schäffer, *Networks* 19(1989), pp. 803–822.
- 13a. “Storing and Searching a Multikey Table”, Amos Fiat, Moni Naor, Alejandro A. Schäffer, Jeanette P. Schmidt, and Alan Siegel, (extended abstract) Proceedings of the 20th Annual ACM Symposium on Theory of Computing, 1988, pp. 344–353.
- 13b. “An Implicit Data Structure for Searching a Multikey Table in Logarithmic Time”, Amos Fiat, J. Ian Munro, Moni Naor, Alejandro A. Schäffer, Jeanette P. Schmidt, and Alan Siegel, *Journal of Computer and System Sciences* 43(1991), pp. 406–424 (special issue for best papers presented at the 20th ACM Symposium on Computing); this is a full version of 13a.
14. “Graph Spanners”, David Peleg and Alejandro A. Schäffer, *Journal of Graph Theory* 13(1989), pp. 99–116. (cited > 100 times)
15. “A Faster Algorithm to Recognize Undirected Path Graphs”, Alejandro A. Schäffer, *Discrete Applied Mathematics* 43(1993), pp. 261–295.
16. “Recognizing Brittle Graphs: Remarks on a Paper of Hoàng and Khouzam”, Alejandro A. Schäffer, *Discrete Applied Mathematics* 31(1991), pp. 29–35.
17. “Optimal Node Ranking of Trees in Linear Time”, Alejandro A. Schäffer, *Information Processing Letters* 33(1989), pp. 91–96.
18. “Finding the Prime Factors of Strong Direct Product Graphs in Polynomial Time”, Joan Feigenbaum and Alejandro A. Schäffer, invited paper for an International Conference on Algebraic Graph Theory, Leibnitz, Austria, June 1989; *Discrete Mathematics* 109(1992), pp. 77–102 (special volume devoted to this conference).
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- 98(1991), pp. 418–419.
- 20a. “Simple Local Search Problems That Are Hard to Solve”, Alejandro A. Schäffer and Mihalis Yannakakis, *SIAM Journal on Computing* 20(1991), pp. 56–87.
 - 20b. “On the Complexity of Local Search”, Christos H. Papadimitriou, Alejandro A. Schäffer, and Mihalis Yannakakis, (extended abstract) Proceedings of the 22nd Annual ACM Symposium on Theory of Computing, 1990, pp. 438–445 (This is a combined summary of 20a. and a later paper by Papadimitriou) (20a and 20b cited a total of > 75 times).
 21. “Parallel Batch Update of Minimum Spanning Trees”, Alejandro A. Schäffer and Peter J. Varman, Rice Univ. Comp. Sci. Tech. Rept. 90–140.
 22. “Faster Isometric Embedding in Products of Complete Graphs”, Franz Aurenhammer, Michael Formann, Ramana M. Idury, Alejandro A. Schäffer, and Frank Wagner, *Discrete Applied Mathematics* 52(1994), pp. 17–28.
 23. “Markov Analysis of Multiple Disk Prefetching for External Mergesort”, Vinay Sadananda Pai, Alejandro A. Schäffer, and Peter J. Varman, (extended abstract) Proceedings of 21st International Conference on Parallel Processing, 1992, pp. III-272–279; (full paper with slightly altered title) *Theoretical Computer Science* 128(1994), pp. 211–239.
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- rithms, 1997, and Data Structures, Lecture Notes in Computer Science 1272, 69–92. (refereed paper) *Journal of Computational Biology* 5(1998), 9–26.
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 51. “Coping with Complexity: Lessons from the Mathematical Sciences”, Alejandro A. Schäffer, *Human Genetics* 103(1998), 5–10. (invited paper, only editorial review)
 52. “Software for Constructing and Verifying Pedigrees Within Large Genealogies and an Application to the Old Order Amish of Lancaster County”, Richa Agarwala, Leslie G. Biesecker, Katherine A. Hopkins, Clair A. Francomano, Alejandro A. Schäffer, *Genome Research* 8(1998), 211–221. (cited > 50 times)
 53. “Protein Sequence Similarity Searches Using Patterns as Seeds” Zheng Zhang, Alejandro A. Schäffer, Webb Miller, Thomas L. Madden, David J. Lipman, Eugene V. Koonin, Stephen F. Altschul, *Nucleic Acids Research* 26(1998), 3986–3990. (cited > 100 times)
 54. “Inverse Inbreeding Coefficient Problems with an Application to Linkage Analysis of Recessive Diseases in Inbred Populations”, Richa Agarwala, Leslie G. Biesecker, Alejandro A. Schäffer, (extended abstract) Proceedings of the 10th Annual ACM-SIAM Symposium on Discrete Algorithms, 1999, 840–841; (full paper) *Discrete Applied Mathematics* 104(2000), 3–44 (special issue on Computational Molecular Biology).
 55. “Inferring Tree Models for Oncogenesis from Comparative Genome Hybridization Data”, Richard Desper, Feng Jiang, Olli-P. Kallioniemi, Holger Moch, Christos H. Papadimitriou, Alejandro A. Schäffer, *Journal of Computational Biology* 6(1999), 37–51. (actually published in 2000) (cited > 50 times)
 56. “Evaluation of the Clonal Relationship Between Primary and Metastatic RCC by Comparative Genomic Hybridization”, Heidi Bissig, Jan Richter, Richard Desper, Verena Meier, Peter Schraml, Alejandro A. Schäffer, Guido Sauter, Michael J. Mihatsch, Holger Moch, *American Journal of Pathology* 155(1999), 267–274. (cited > 50 times)
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