Curriculum Vitae of Shlomo Hoory

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Education

2004- Postdoctoral fellow, Department of Computer Science, University of British Columbia, Vancouver. Awarded PIMS Postdoctoral fellowship.

2002-2004 Postdoctoral fellow, Department of Computer Science, University of Toronto.

2002 Ph.D. in Theoretical Computer Science.
The Hebrew University of Jerusalem.
Supervisor: Prof. Nati Linial.
Thesis title: "On graphs of high girth".

1990 M.Sc. in Computer Science - Cum Laude, Hebrew University.
Supervisor: Prof. Avi Wigderson.
Thesis title: "Universal sequences for expander graphs & contracting sequences".

1986 B.Sc. in Physics (extended), Mathematics and Computer Science - Cum Laude, Hebrew University.

Teaching Experience

- Intermediate Algorithm Design and Analysis, CPSC 320,
www.cs.ubc.ca/∼shlomoh/cpsc320,
University of British Columbia, Fall 2005.

- Expander Graphs and their Applications, CS 2414, www.cs.toronto.edu/∼shlomoh/ExpandersF03.html, University of Toronto, Fall 2003.
- Teaching assistant at the Hebrew University, for the following courses: Expander Graphs, Prof. Nati Linial and Prof. Avi Wigderson, 2002; Topics in Graph Theory, Prof. Nati Linial, 2000; Error Correcting Codes, Prof. Nati Linial, 1999; Computational Complexity, Prof. Avi Wigderson, 1995; Algorithms II, Prof. Eli Shamir, 1995; Algorithms II, Prof. Avi Wigderson, 1994; Randomized Algorithms, Prof. Avi Wigderson, 1993; Parallel Algorithms, Prof. Noam Nisan, 1992.

Work experience:

1996-2001 A founder of "Millimetrix Broadband Networks", a startup company specializing in broadband wireless communications at the cutting edge of technology, and today employs about 50 people. I took a leading role in designing and implementing critical components in communication systems that are now being used worldwide. Specifically, my work included:

- modem design and implementation, starting at the high level design of the digital signal processing algorithms, through hardware implementation, to the final laboratory tests.
- Developing innovative CAD tools for the specification and implementation of computationally intensive dataflow oriented hardware (ASIC, FPGA).
- Implementing a versatile error correction encoder and decoder (BCH, Reed Solomon).
- Fine tuning the error correction capability for high level protocols (ATM, SDH), using complex stochastic modeling of the correlation of errors after the error correction and interleaver blocks.
- An algorithm for multiplexing fixed rate data channels, while guarantying a small queue for each channel.
- A fair queuing algorithm for packet switching, that guarantees quality of service (QoS).

1993-1996 Part time free-lance work on projects in communication systems. Various projects involving real time systems, distributed computing, and operating systems design.

1986-1992 Military service in a technical unit, including low level Unix, a distributed OS and file system implementation, and FPGA hardware design.

1986 Graduated as a technical officer from "Talpiot" - a prestigious 3 year military program.

Publications

Journal Articles

1. Shlomo Hoory and Nathan Linial, "A counterexample to a conjecture of Björner and Lovász on the χ-coloring complex", Journal of Combinatorial Theory Series B, 95(2), p.346-349, 2005.
2. Shlomo Hoory and Stefan Szeider, "Computing Unsatisfiable k-SAT Instances with Few Occurrences per Variable", Theoretical Computer Science 337(1-3), p.347-359, 2005. Also in SAT 2004.
3. Shlomo Hoory, "A lower bound on the spectral radius of the universal cover of a graph", Journal of Combinatorial Theory Series B, 93(1), p.33-43, 2005.
4. Shlomo Hoory and Nathan Linial, "Colorings of the d-regular infinite tree", Journal of Combinatorial Theory Series B, 91(2), p.161-167, 2004.
5. Yonatan Bilu and Shlomo Hoory, 'On Codes from Hypergraphs', European Journal of Combinatorics, 25(3), p.339-354, 2004.
6. Shlomo Hoory, "The size of bipartite graphs with a given girth", Journal of Combinatorial Theory Series B, 86(2), p.215-220, 2002.
7. Alon Amit, Shlomo Hoory and Nathan Linial, "A Continuous Analogue of the Girth Problem", Journal of Combinatorial Theory Series B, 84(2), p.340-363, 2002.
8. Noga Alon, Shlomo Hoory and Nathan Linial, "The Moore bound for irregular graphs", Graph and Combinatorics 18(1), p.53-57, 2002.
9. Shlomo Hoory and Nathan Linial, "Central Points for Set in $\mathbb{R}^n$ (or: the Chocolate Ice-Cream Problem)", Discrete and Computational Geometry 15, p.467-479, 1996.
10. Shlomo Hoory and Avi Wigderson, "Universal Traversal Sequences for Expander Graphs", Information Processing Letters, vol. 46, 1993.

Accepted articles

11. Shlomo Hoory, Avner Magen, Steve Mayers and Charles Rackoff, "Simple permutations mix well", to appear at Theoretical Computer Science. Also in ICALP 2004.
12. Shlomo Hoory and Stefan Szeider, "A Note on unsatisfiable k-CNF formulas with few occurrences per variable", Arxiv math.CO/0411167, to appear in SIAM Journal on Discrete Mathematics.

Invited survey

13. Shlomo Hoory, Nathan Linial, and Avi Wigderson, "Expander Graphs and their Applications", to appear in the Bulletin of the AMS.

Conferences Papers

14. Joshua Buresh-Oppenheim, Nicola Galesi, Shlomo Hoory, Avner Magen and Toniann Pitassi, "Rank Bounds and Integrality Gaps for Cutting Planes Procedures", IEEE Symposium on Foundations of Computer Science (FOCS), 2003.

Submitted articles

15. Shlomo Hoory and Alex Brodsky, "Simple Permutation Mix Even Better", Arxiv math.CO/0411098, submitted to Random Structures and Algorithms.
16. Shlomo Hoory, Avner Magen and Toniann Pitassi, "Small monotone circuits for the majority function", submitted to CCC 2006.
17. Shlomo Hoory, and Jacob Goldberger, "A Continuous Version of Regular LDPC Codes", submitted to IEEE Transactions on Information Theory.

Work in progress

18. Alex Gamburd, Shlomo Hoory, Mehrdad Shahshahani and Bálint Virág, "The girth of random Cayley graphs".
19. Omer Angel, Joel Friedman and Shlomo Hoory, "The non-backtracking spectrum of the universal cover of a graph".
20. Shlomo Hoory and Nick Wormald, "On the largest eigenvalue of irregular graphs".

21. Shlomo Hoory, Jacques A. Verstraete, and Felix Lazebnik, "Maximizing the number of 8-cycles in a 4-cycle-free bipartite graph".
22. Abraham D. Flaxman, Shlomo Hoory, "Maximum matchings in regular graphs of high girth".

Miscellaneous

- **Plenary speaker:** "An Alon-Boppana type bound for irregular graphs", 13th Ontario Combinatorics Workshop, 2004.
- **Refereeing:** Information Processing Letters, Journal of Combinatorial Theory Series B, Random Structures and Algorithms, Advances in Mathematics, Linear and Multilinear Algebra, IJMMS, WADS, STOC, FOCS, SODA, RANDOM.