

**Seshadhri Comandur**  
**(C. Seshadhri)**

Curriculum Vitae

IBM Almaden Research Center  
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## EDUCATION

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- Princeton University** 2003–2008  
**Ph.D. Candidate in Computer Science**  
*Advisor:* Prof. Bernard Chazelle  
*Thesis Topic:* Sublinear Distributed Reconstruction
- Indian Institute of Technology, Kanpur** 1999–2003  
**B.Tech. in Computer Science and Engineering**  
*Advisor:* Prof. Manindra Agrawal  
*Thesis Topic:* Generating Large Primes Using Cyclotomic Polynomials

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## RESEARCH INTERESTS

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- Sublinear Algorithms and Property Testing
- Approximation Algorithms
- Computational Geometry

A major portion of my research is the design of *sublinear* time algorithms. These algorithms read an extremely small portion of their input to make their decision. My work deals with a wide variety of combinatorial and geometric problems in this domain. I have done work on *self-improving algorithms* - algorithms that are able to use the structure of their input distribution to optimize their running time. This has led to better algorithms for classical geometric problems under certain input settings. I have also been involved in problems in online learning and polynomial identity testing.

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## WORK EXPERIENCE

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- **Theory Group, IBM Almaden Research Center, CA** September 2008 - present  
Postdoctoral researcher
- **Theory Group, IBM Almaden Research Center, CA** Summer 2007  
Summer Intern
- **Tata Institute of Fundamental Research, Mumbai** Summer 2002  
Summer Intern

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## HONORS

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- **Awarded *Director's Gold Medal* in the IIT Kanpur class of 2003**  
Awarded one per class of 450 students to the best all-round student
- **4<sup>th</sup> in the IIT Kanpur class of 2003**  
With GPA of 9.9/10, placed fourth in a class of 450 students
- **All India rank 51 (out of about 150,000) in IIT-JEE 1999**  
Ranked 51 in the Joint Entrance Examination to the Indian Institutes of Technology
- **Scholarship in National Talent Search Examination (NTSE) 1997**  
750 students are awarded scholarships every year all over India

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## PUBLICATIONS

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- **Self-Improving Algorithms for Convex Hulls** (with Kenneth Clarkson and Wolfgang Mulzer), Proceedings of the 21st Symposium on Discrete Algorithms (SODA 2010)
- **Efficient Learning Algorithms for Changing Environments** (with Elad Hazan), Proceedings of 26th International Conference on Machine Learning (ICML 2009)
- **An Almost Optimal Rank Bound for Depth-3 Identities** (with Nitin Saxena), Proceedings of 24th Conference on Computation Complexity (CCC 2009)
- **Noise Tolerance of Expanders and Sublinear Expander Reconstruction** (with Satyen Kale and Yuval Peres), Proceedings of 49th Symposium on Foundations of Computer Science (FOCS 2008)
- **Testing Expansion in Bounded Degree Graphs** (with Satyen Kale), Proceedings of 35th International Colloquium on Automata, Languages, and Programming (ICALP 2008)
- **Self-Improving Algorithms for Delaunay Triangulations** (with Kenneth Clarkson) Proceedings of 24th Symposium on Computational Geometry (SOCG 2008).
- **Parallel Monotonicity Reconstruction** (with Michael Saks), Proceedings of 19th Symposium on Discrete Algorithms (SODA 2008). Journal version to appear *SIAM Journal of Computing*.
- **Online Geometric Reconstruction** (with Bernard Chazelle), Proceedings of 22nd Symposium on Computational Geometry (SOCG 2006).
- **Self-Improving Algorithms** (with Nir Ailon, Bernard Chazelle, and Ding Liu), Proceedings of 17th Symposium on Discrete Algorithms (SODA 2006).
- **RAM Simulation of BGS model of Abstract State Machines**, (with Anil Seth and Somenath Biswas) Proceedings of 12th International Workshop on Abstract State Machines (ASM 2005).

- **Property-Preserving Data Reconstruction** (with Nir Ailon, Bernard Chazelle, and Ding Liu), Proceedings of 15th International Symposium on Algorithms and Computation (ISAAC 2004). Journal version in *Algorithmica*.
- **Estimating the Distance to a Monotone Function** (with Nir Ailon, Bernard Chazelle, and Ding Liu), Proceedings of 8th International Workshop on Randomization and Computation (RANDOM 2004). Journal version in *Random Structures and Algorithms*.

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## INVITED TALKS

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- **Theory seminar, IBM Almaden Research Center, CA** March 2010  
Invited talk on *Sylvester Gallai Bounds, Free Variables in Depth-3 Circuits, and Improved Black-Box Identity Testers*
- **Theory seminar, Hausdorff Center for Mathematics, Bonn** November 2009  
Invited talk on *Self-Improving Algorithms for Convex Hulls*
- **Theory seminar, IBM Almaden Research Center, CA** October 2008  
Invited talk on *Noise Tolerance of Expanders and Sublinear Expander Reconstruction*
- **Theory seminar, Computer Science Department, University of Toronto, Canada** February 2008  
Invited talk on *Adaptive Algorithms for Online Optimization Problems*
- **Theory seminar, IBM T. J. Watson Research Center, NY** February 2008  
Invited talk on *Adaptive Algorithms for Online Optimization Problems*
- **Theory seminar, Computer Science Department, Rutgers University, NJ** February 2008  
Invited talk on *Parallel Monotonicity Reconstruction*
- **Theory seminar, Google, NY** February 2008  
Invited talk on *Adaptive Algorithms for Online Optimization Problems*
- **Theory seminar, Computer Science Department, Princeton University, NJ** February 2008  
Invited talk on *Adaptive Algorithms for Online Optimization Problems*
- **Theory seminar, Microsoft Research, WA** December 2007  
Invited talk on *Parallel Monotonicity Reconstruction*
- **Theory seminar, IBM Almaden Research Center, CA** August 2007  
Invited talk on *Self-Improving Algorithms*
- **Theory seminar, IBM T. J. Watson Research Center, NY** March 2007  
Invited talk on *Online Reconstruction*
- **DIMACS Mixer Series, Rutgers University, NJ** October 2006  
Invited talk on *Online Geometric Reconstruction*
- **Theory seminar, Computer Science Department, Princeton University, NJ** September 2004  
Invited talk on *Estimating Distance to Monotonicity*

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## TEACHING EXPERIENCE

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- **Computer Science Department, Princeton University, NJ** Spring 2006  
Teaching Assistant for COS 451: *Computational Geometry*
- **Computer Science Department, Princeton University, NJ** Fall 2004  
Teaching Assistant for COS 226: *Algorithms and Data Structures*

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## PROGRAMMING LANGUAGES

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C, Java

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## REFERENCES

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**Prof. Bernard Chazelle**

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**Prof. Michael Saks**

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Rutgers University  
Phone: (732) 445 5434  
Email: [saks@math.rutgers.edu](mailto:saks@math.rutgers.edu)

**Dr. Kenneth L. Clarkson**

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**Dr. Elad Hazan**

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