Kevin Matulef

CONTACT
INFORMATION

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CURRENT
POSITION

Aarhus University, Aarhus, Denmark   Jan 2013-Present
Postdoctoral Researcher, funded by the Center for the Theory of Interactive Computation (CTIC), and the Center for Massive Data Algorithmics (MADALGO)

PREVIOUS
POSITIONS

MongoDB Inc., New York, NY   Nov 2011-Dec 2012
Core Database Engineer
Worked on improvements to MongoDB's internal sharding framework. Presented at several conferences, led MongoDB trainings, and consulted with customers.

Tsinghua University, Beijing, China   Sep 2009-Sep 2011
Postdoctoral researcher at IIIS

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA   Sep 2009
Doctor of Philosophy in Applied Mathematics
Advisor: Ronitt Rubinfeld
Dissertation: Testing and Learning Boolean Functions

Cambridge University, Cambridge, England   June 2003
Master of Advanced Study in Mathematics
Essay: The Hidden Subgroup Problem as a Unifying Concept for Quantum Algorithms

Brown University, Providence, RI   May 2002
Bachelor of Science in Mathematics-Computer Science
GPA: 4.0/4.0. Magna Cum Laude. Phi Beta Kappa.

CONFERENCE
PUBLICATIONS
AND
MANUSCRIPTS

Property Testing on Linked Lists
Peyman Afshani, Kevin Matulef, Bryan T. Wilkinson. *Manuscript, 2013.*

Lower Bounds for Testing Computability by Small Width OBDDs
Joshua Brody, Kevin Matulef, Chenggang Wu. *8th Annual Theory and Applications of Models of Computation (TAMC), 2011.*

Finding the Maximum Area Parallelogram in a Convex Polygon
Kai Jin, Kevin Matulef. *The Canadian Conference on Computational Geometry (CCCG), 2011.*

Property Testing Lower Bounds via Communication Complexity
Eric Blais, Joshua Brody, Kevin Matulef. *26th Conference on Computational Complexity (CCC), 2011. Invited to appear in the CCC special issue of Computational Complexity, 2012.*

Testing {-1,1}-Weight Halfspaces
Kevin Matulef, Ryan O'Donnell, Rocco Servedio, Ronitt Rubinfeld. *13th International Workshop on Randomization and Computation (RANDOM), 2009.*

Testing Halfspaces

Kevin Matulef, Ryan O'Donnell, Rocco Servedio, Ronitt Rubinfeld. *20th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2009.*

Efficiently Testing Sparse GF(2) Polynomials

Ilias Diakonikolas, Homin Lee, Kevin Matulef, Rocco Servedio, Andrew Wan. *35th International Colloquium on Automata, Languages and Programming (ICALP), 2008.*

Testing for Concise Representations

Ilias Diakonikolas, Homin Lee, Kevin Matulef, Krzyszstof Onak, Ronitt Rubinfeld, Rocco Servedio, Andrew Wan. *48th Annual Symposium on Foundations of Computer Science (FOCS), 2007.*

Testing k-wise and Almost k-wise Independence

Noga Alon, Alex Andoni, Tali Kaufman, Kevin Matulef, Ronitt Rubinfeld, Ning Xie. *39th ACM Symposium on Theory of Computing (STOC), 2007.*

<table>
<tr><td>JOURNAL
PUBLICATIONS</td><td>

Property Testing Lower Bounds via Communication Complexity

Eric Blais, Joshua Brody, Kevin Matulef. *Computational Complexity, Volume 21, Number 2, June 2012.*

Efficiently Testing Sparse GF(2) Polynomials

Ilias Diakonikolas, Homin Lee, Kevin Matulef, Rocco Servedio, Andrew Wan. *Algorithmica, Volume 61, Number 3, November 2011.*

Testing Halfspaces

Kevin Matulef, Ryan O'Donnell, Rocco Servedio, Ronitt Rubinfeld. *SIAM Journal on Computing, Volume 39, Issue 5, pp. 2004-2047, January 2010.*

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<tr><td>TEACHING</td><td>

Aarhus University

- *Sublinear Time Algorithms: Property Testing* (co-taught with Joshua Brody and Peter Bro Miltersen). A quarter-long Masters/Ph.D. level course covering the foundations of sublinear time algorithms.

Tsinghua University

- *Theoretical Computer Science II*. Primary instructor of a semester-long course covering computability and computational complexity, aimed at advanced undergraduates in the "Yao class" (Fall 2010).

- *Mini-Course: Property Testing from a Fourier Analytic Perspective* (co-taught with Victor Chen). A five-week long graduate course on analysis of Boolean functions, aimed at bringing doctoral students up to the research level (Spring 2010).

Massachusetts Institute of Technology

- *Design and Analysis of Algorithms*. Teaching Assistant, responsible for designing homework sets and leading a weekly recitation section (Fall 2008).

  Student Rating: 6.4/7.0. Summary of reviews: "...very helpful and understood the material well. He was organized and able to explain even difficult concepts."

- *Theory of Computation*. Teaching Assistant, responsible for designing homework sets and leading a weekly recitation section (Fall 2004 and Fall 2005).

  Student Rating: 6.1/7.0. Summary of reviews: "TA gave well prepared recitations. He was clear and patient."

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Brown University

- *Introduction to Cryptography.* Teaching Assistant (Spring 2002).
- *Integrated Introduction to Computer Science.* Head Teaching Assistant (Fall 2000 to Spring 2001), Teaching Assistant (Fall 1999 to Spring 2000).

Chenggang Wu, IIIS, Tsinghua University

National Science Foundation Graduate Fellowship (2004-2007)

MIT-Akamai Presidential Fellowship for first year of graduate study (2003-2004)

Gates Cambridge Scholarship for graduate study at Cambridge University, awarded to approximately 40 students in the US and 100 worldwide (2002-2003)

Fulbright Scholarship (declined, 2002-2003)

Susan Colver Rosenberger Prize in Computer Science, given to 6 graduating seniors in computer science (2002).

David Howell Premium for Excellence in Mathematics, given to 3 graduating seniors in mathematics (2002)

Program Committee member for

- *China Theory Week*, 2010, Beijing, China.

External Reviewer for

- *Symposium on Discrete Algorithms* (SODA), 2014.
- *International Colloquium on Automata, Languages, and Computation* (ICALP), 2013.
- *Workshop on Randomization and Computation* (RANDOM), 2010, 2013.
- *Symposium on Theory of Computing* (STOC), 2006, 2008, 2010.
- *Foundations of Computer Science* (FOCS), 2005, 2010.
- *Conference on Computational Complexity* (CCC), 2008.
- *SIAM Journal on Computing (SICOMP).*
- *Algorithmica.*
- *Theoretical Computer Science.*

Co-organizer of the MIT Theory of Computation Colloquium (2005-2006).

Co-organizer of the MIT Simple Person's Applied Mathematics Seminar (2005-2006).

Government Communications Headquarters, Cheltenham, UK Summer 2002
Research Internship, Student Summer Program (SSP)
In cooperation with the US Department of Defense, applied mathematical methods to cryptologic problems. One of two students chosen from previous summer program (DSP) as a representative of the United States.

National Security Agency, Fort Meade, Maryland   Summer 2001
Research Internship, Director's Summer Program (DSP)
Explored improvements to an algorithm in algebraic geometry using theoretical and empirical techniques. Briefed the director of the agency.

Microsoft Corporation, Redmond, Washington   Summer 2000
Software Design Engineer in Test
Developed tools and tests for the Common Language Runtime, a multi-language programming framework.

STUDENT   **Massachusetts Institute of Technology**   Fall 2004 - Summer 2009
LIFE   *Graduate Resident Tutor*
Responsible for the well-being of approximately 40 undergraduates in an MIT residence hall. Provided academic and emotional support, and organized social events.

SOFTWARE   **Enemybook** is an application that I wrote to remedy the one-sided perspective of Facebook. It gave users the ability to add and track "enemies" on their Facebook account, in the same manner in which they add and track friends. The program received a large amount of national and international press coverage.
Selected Press and Interviews:

- *Posting Your Revenge.* Boston Globe, October 11, 2007.

- *Keeping Friends Close and Enemies Online.* National Public Radio, Day to Day, October 11, 2007.

- *The Dark Side of Social Networking.* National Public Radio, All Things Considered, November 23, 2007.

- *Parody Sites Start Anti-Social Networking Trend.* Reuters, December 21, 2007.

REFERENCES   Ronitt Rubinfeld
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Ryan O'Donnell
Assistant Professor of Computer Science
Carnegie Mellon University
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Peter Bro Miltersen
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