

RASMUS KYNG

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CONTACT INFORMATION

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WORK AND EDUCATION

2018–present Postdoctoral Fellow, Theory of Computing Group at SEAS, Harvard University, U.S.A.
Fall 2017 Postdoctoral Research Fellow, Simons Institute for Theoretical Computer Science, UC Berkeley, U.S.A.
2011–2017 PhD, Department of Computer Science, Yale University, U.S.A.
2008–2011 BA Hons Computer Science, University of Cambridge, United Kingdom
First Class Honours.
2005–2008 Risskov Gymnasium, upper secondary school, Denmark
Highest GPA in national exams.

PUBLICATIONS AND MANUSCRIPTS

FOCS 2017 *Hardness Results for Structured Linear Systems*
with P.Zhang. Paper won the Machtey Award for Best Student Paper.
STOC 2017 *Sampling Random Spanning Trees Faster than Matrix Multiplication*
with D. Durfee, J. Peebles, A.B. Rao, and S. Sachdeva.
SODA 2017 *A Framework for Analyzing Resparsification Algorithms*
with J. Pachocki, R. Peng, and S. Sachdeva.
FOCS 2016 *Approximate Gaussian Elimination for Laplacians: Fast, Sparse, and Simple*
with S. Sachdeva.
STOC 2016 *Sparsified Cholesky and Multigrid Solvers for Connection Laplacians*
with Y.T. Lee, R. Peng, S. Sachdeva, and D.A. Spielman.
NIPS 2015 *Fast, Provable Algorithms for Isotonic Regression in all ℓ_p -norms*
with S. Sachdeva and A. Rao.
COLT 2015 *Algorithms for Lipschitz Learning on Graphs*
with S. Sachdeva, D.A. Spielman, and A. Rao.
STOC 2014 *Solving SDD Linear Systems in Nearly $m \log^{1/2} n$ Time*
with M.B. Cohen, G.L. Miller, J.W. Pachocki, R. Peng, A. Rao, and S.C. Xu.

WORK EXPERIENCE

- Jun–Aug 2011 Research Assistant at Microsoft Research in Cambridge, UK
Employed through Brook Street. Worked for Senior Researchers Pushmeet Kohli and Jamie Shotton on tools for GPU-based 3D scene reconstruction using data from a moving Kinect device.
- Jan 2011 Research Assistant at Microsoft Research in Cambridge, UK
Employed through Brook Street. Worked for Senior Researchers Pushmeet Kohli and Jamie Shotton on Kinect data collection and labeling tools for gesture recognition.
- Summer 2010 Research Intern in Computational Geometry at the University of Utah
Supervised by Prof Suresh Venkatasubramanian. I worked on Johnson-Lindenstrauss-style dimensionality reduction from high- to low-dimensional simplices with Hellinger distance as the metric.

TEACHING EXPERIENCE

- Spring 2018 Harvard Instructor for AM 221: Advanced Optimization
- Fall 2013 Yale Teaching Fellow for AMTH/CPSC 462/562: Graphs and Networks
- Spring 2013 Yale Teaching Fellow for CPSC 469/569: Randomized Algorithms
- Fall 2012 Yale Teaching Fellow for CPSC 201: Introduction to Computer Science

CODE

github.com/danspielman/Laplacians.jl

Work in progress. Developing fast Laplacian linear system solvers in Julia.

github.com/danspielman/YINSlex

Fast Matlab and Java code for computing Lex-minimizers in directed and undirected graphs. See the paper *Algorithms for Lipschitz Learning on Graphs* for experiments.

github.com/sachdevasushant/Isotonic

Fast Matlab code for computing Isotonic Regression. See the paper *Fast, Provable Algorithms for Isotonic Regression in all ℓ_p -norms* for experiments.

RESEARCH STATEMENT

My research is focused on developing provably fast algorithms. I have studied problems arising in optimization, machine learning, statistics, image analysis, and microscopy. My work draws on a broad range of methods from combinatorics, probability, linear algebra, optimization, and graph theory. In addition to provable guarantees, several of my published works include fast implementations, demonstrating the practicality of the proposed algorithms.