

# Jeremy Kun

## Curriculum Vitae

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### Personal

Name Jeremy Kun  
Thesis Lev Reyzin  
advisor  
Research summary I am a theoretical computer scientist with broad interests, including complexity theory, graph theory and network science, learning theory, combinatorics, and geometry. My research to date focuses on theoretical and applied graph theory.  
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### Education

2011 - Present **University of Illinois at Chicago**, Ph.D in Mathematics., Expected 2016.  
2007 - 2011 **California Polytechnic State University**, B.S. in Mathematics, Minor in Computer Science., Magna Cum Laude.  
2010 **Budapest Semesters in Mathematics**, Graduated with honors.

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### Publications

- 2016 [A Confidence-Based Approach for Balancing Fairness and Accuracy](#), Benjamin Fish, Jeremy Kun, Adam Lelkes, SIAM International Symposium on Data Mining.
- 2015 [On the Computational Complexity of MapReduce](#), Benjamin Fish, Jeremy Kun, Adam Lelkes, Lev Reyzin, Gyorgy Turan, International Symposium on Distributed Computing.
- 2015 [Network Installation Under Convex Costs](#), Alexander Gutfraind, Jeremy Kun, Adam Lelkes, Lev Reyzin, Journal of Complex Networks.
- 2015 [Fair Boosting: a Case Study](#), Benjamin Fish, Jeremy Kun, Adam Lelkes, International Conference on Machine Learning Workshop on Fairness, Accountability, and Transparency in Machine Learning.
- 2015 [Open Problem: Learning Quantum Circuits with Queries](#), Jeremy Kun, Lev Reyzin, Conference on Learning Theory.
- 2014 [A Boosting Approach to Learning Graph Representations](#), Rajmonda Caceres, Kevin Carter, Jeremy Kun, SIAM International Conference on Data Mining Workshop on Mining Networks and Graphs.

- 2014 [On Coloring Resilient Graphs](#), *Jeremy Kun, Lev Reyzin*, Mathematical Foundations of Computer Science.
- 2013 [Anti-Coordination Games and Stable Graph Colorings](#), *Jeremy Kun, Brian Powers, Lev Reyzin*, Symposium on Algorithmic Game Theory.

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## Preprints

[Interception in Distance-Vector Routing Networks](#), David Burstein, Franklin Kenter, Jeremy Kun, Feng Shi.

In review

[Locally Boosted Graph Aggregation for Community Detection](#), Rajmonda Caceres, Kevin Carter, Jeremy Kun.

In review

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## Awards

- 2014 **Dean's Scholar Award**, *To provide the most distinguished, advanced-level graduate students with a period of time dedicated solely to the completion of their programs*, Granted by University of Illinois at Chicago.  
Monetary value of \$25,000
- 2015 **Best Student Poster Award**, *For the poster 'Information Monitoring in Routing Networks'*, Granted by SIAM Network Science 15.  
Monetary value of \$100
- 2011 **Charles J. Hanks Excellence in Mathematics Award**, *Demonstrated excellence and outstanding ability*, Granted by California Polytechnic State University.
- 2010 **Robert P. Balles Mathematics Award**, *Highest GPA in mathematics coursework after three years*, Granted by California Polytechnic State University.
- 2007 **Eagle Scout Award**, *Troop 234 of Moraga, CA*, Granted by Boy Scouts of America.

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## Work Experience

- 2013 - 2014 **Graduate Research Assistant**, *MIT Lincoln Laboratory*.  
Research on graph representation learning, data mining on large networks. Proved theorems, designed algorithms, ran experiments, and wrote technical research papers
- 2011 - 2013 **Graduate Teaching Assistant**, *University of Illinois at Chicago*.  
Taught calculus and introductory computer science
- 2008 - 2009 **Junior Developer**, *CreateSpace On-Demand Publishing*.  
Designed and developed a new accounting gateway infrastructure for a growing tech start-up, including writing thousands of lines of Java and SQL. Completed a technical writing training program

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## Contract Work

- 2014 - 2015 **Technical Reviewer**, *Doing Math with Python*, No Starch Press.  
Publication date: 2015-05-25
- 2012 - Present **Webmaster**, [QED Math Symposium](#), Chicago Public Schools.

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## Professional Programs

- June 2014 **Network Science Week**, *American Mathematical Society Mathematics Research Community*.  
Received mentoring, engaged in research to attack open problems, and developed new collaborations
- Summer **Ph.D Student Intern**, *MIT Lincoln Labs*.  
2013 Research on machine learning in large graphs
- Summer **Ph.D Student Intern**, *Lawrence Livermore National Laboratory*.  
2012 Data mining research in wind energy and plasma physics
- Summer **Software Developer Intern**, *Amazon.com*.  
2009 Worked on the message-passing framework in a million-line service-oriented C++ architecture which regulated inventory in all of Amazon's warehouses

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## Programming

- Portfolio [Github Repository](#).
- Top **Python**.  
Language
- Competent **Python, Java, C, C++, Haskell, Racket, HTML/CSS, Mathematica**.  
Languages
- Familiar **Javascript, Perl, Bash, PHP, SQL, R**.  
Languages
- IDEs **Vim, Eclipse**.
- Version **Git**.  
Control

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## Service

- 2015 **Reviewer**, *ALT 2015*, Algorithmic Learning Theory.
- 2014 **Publicity Co-Chair**, *ISAIM 2014*, International Symposium on Artificial Intelligence and Mathematics.
- 2015 **Organizer**, *Graduate Student Colloquium*, University of Illinois at Chicago.
- 2013 - **Organizer**, *Graduate Student Theoretical Computer Science Seminar*, University of  
Present Illinois at Chicago.
- 2013 **Instructor**, *Website Workshop*, Association for Women in Mathematics, University of Illinois at Chicago.

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## Talks

- 2015 **Resilience and new approaches to approximate graph coloring**, *Theory Seminar*, *North Carolina State University*, Research talk.
- 2015 [What Can Algorithms Tell Us About Life, Love, and Happiness?](#), *Moraine Valley Community College STEM Talks*, General audience talk.
- 2014 **On Resiliently Colorable Graphs**, *Computer Science Seminar*, *University of Illinois at Chicago*, Research talk.
- 2014 **Resilient Coloring and Other Combinatorial Problems**, *Midwest Theory Day*, *Purdue University*, Research talk.

- 2013 **Anti-Coordination Games and Stable Graph Colorings**, *Computer Science Seminar, University of Illinois at Chicago*, Research talk.
- 2015 **A Gentle Introduction to Learning Theory**, *Graduate Student Colloquium, University of Illinois at Chicago*, Graduate student talk.
- 2015 **Information Monitoring in Routing Networks**, *Chicago Area SIAM Student Conference, Illinois Institute of Technology*, Graduate student talk.
- 2014 **How to Combine Graphs**, *Chicago Area SIAM Student Conference, Northwestern University*, Graduate student talk.
- 2013 **Stable Graph Colorings, and Why You Should Care about NP**, *Graduate Student Colloquium, University of Illinois at Chicago*, Graduate student talk.
- 2013 **A Brief Overview of Persistent Homology and its Applications**, *Chicago Area SIAM Student Conference, University of Illinois at Chicago*, Graduate student talk.
- 2015 **Eigenfaces: using linear algebra to recognize faces**, *Undergraduate Math Club, Wheaton College*, Undergraduate student talk.
- 2015 **How to Send Secret Messages (RSA)**, *'Math and Snacks,' University of Illinois at Chicago*, Undergraduate student talk.
- 2014 **Hybrid Images and Fourier Analysis**, *Undergraduate Math Club, University of Illinois at Chicago*, Undergraduate student talk.
- 2014 **Elliptic Curves, Projective Geometry, and Python**, *Stanford Pre-Collegiate Studies*, High school talk.
- 2013 **Classic Nintendo Games are NP-Hard**, *Undergraduate Math Club, University of Illinois at Chicago*, Undergraduate student talk.
- 2012 **PageRank and the Billion-Dollar Eigenvector**, *Undergraduate Math Club, University of Illinois at Chicago*, Undergraduate student talk.
- 2011 **Eigenfaces: Linear Algebra for Facial Recognition**, *Undergraduate Math Club, University of Illinois at Chicago*, Undergraduate student talk.
- 2011 - Present **Guest lectures to high school students**, *Various locations*, High school talk.

## Posters

- 2015 **Information Monitoring in Routing Networks**, *SIAM Workshop on Network Science*.

## Teaching

- Calculus 1 **TA**, *University of Illinois at Chicago*, Fall 2011, Fall 2013, Fall 2015.  
Led a discussion session twice weekly
- Differential Equations **TA**, *University of Illinois at Chicago*, Spring 2016.  
Led a discussion session once weekly
- Introduction to Mathematical Computer Science **TA**, *University of Illinois at Chicago*, Spring 2012, Fall 2012, Spring 2013.  
Wrote a grading robot for all labs and projects

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## Other

Blog [Math Intersect Programming](#), In-depth presentation of technical topics with full implementations in code. As of August 2015: 212 published posts, 2000 word average post length, over 2 million page views since June 2011.