

Jeff Kinne

- CONTACT INFORMATION Dept. of Mathematics and Computer Science Voice: (812) 237-2136
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Terre Haute, IN 47809 WWW: www.kinnejeff.com
- POSITION Assistant Professor of Computer Science, Indiana State University, 2010–
- EDUCATION Ph.D in Computer Science, University of Wisconsin-Madison, May 2010
 - Dissertation: “Deterministic Simulations and Hierarchy Theorems for Randomized Algorithms”
 - Advisor: Professor Dieter van Melkebeek, Minor: mathematicsM.S. in Computer Science, University of Wisconsin-Madison, May 2005
B.S., Xavier University, May 2002
 - Majors in computer science, mathematics, and Spanish
 - Summa cum laude, dean’s list all semesters, University Scholars program
- JOURNAL PUBLICATIONS Note: publications marked ** were authored while at Indiana State University.
** Jeff Kinne, Dieter van Melkebeek, and Ronen Shaltiel. Pseudorandom Generators, Typically-Correct Derandomization, and Circuit Lower Bounds. To appear in the special issue of *Computational Complexity* for selected papers from the *13th International Workshop on Randomization and Computation* (RANDOM), 50 pages, 2011.
Jeff Kinne and Dieter van Melkebeek. Space Hierarchy Results for Randomized and Other Semantic Models. *Computational Complexity*, volume 19(3), pages 423–475, 2010.
- CONFERENCE PUBLICATIONS Note: In Computer Science, conference publications are peer-reviewed and competitive.
Jeff Kinne, Dieter van Melkebeek, and Ronen Shaltiel. Pseudorandom Generators and Typically-Correct Derandomization. In *Proceedings of the 13th International Workshop on Randomization and Computation* (RANDOM), LNCS 5687, pages 574–587, 2009.
Jeff Kinne and Dieter van Melkebeek. Space Hierarchy Results For Randomized Models. In *Proceedings of the 25th Annual Symposium on Theoretical Aspects of Computer Science* (STACS), pages 433–444, 2008.
Jeff Kinne. Exact and Approximation Algorithms for the 3-Dimensional Matching Problem. In *Proc. of the National Conferences on Undergraduate Research*, 8 pages, 2002.
- ACCEPTED FOR PUBLICATION ** George Karakostas, Jeff Kinne, and Dieter van Melkebeek. On Derandomization and Average-Case Complexity of Monotone Functions. Accepted to *Theoretical Computer Science*, 16 pages, 2012.
- IN PREPARATION ** Jeff Kinne. On TC^0 Lower Bounds for the Permanent. 12 pages, 2012.

RESEARCH
INTERESTS

Computational complexity and algorithms. Specifically:

- Allowing access to random bits amazingly can lead to simple and efficient algorithms that are correct with very high probability. Part of my work seeks efficient deterministic simulations of such randomized algorithms and studies the implications and complexity theoretic aspects of these simulations. This area is known as “derandomization”. My work has focused on obtaining new derandomizations (some unconditional, some conditioned on plausible complexity-theoretic assumptions) and on making known derandomizations more efficient.
- Proving lower bounds is important both to determine the precise amount of resources needed to solve a problem, and also because of the connections between lower bounds and areas such as derandomization and randomness extractors. I am interested in lower bounds in many different settings. I have recently focused on lower bounds for the matrix permanent, and have previously worked on hierarchy theorems for randomized and other semantic models of computation.

RESEARCH
PRESENTATIONS

The Joy of Computational Complexity

- Rose-Hulman Institute of Technology, Mathematics Dept. Seminar, April 27, 2011

Algebraic P versus NP

- Indiana State University, Math & CS Dept. Seminar, Feb 11 and 25, 2011

P versus NP and Cryptography

- Wabash College, Invited Lecture, November 2010

Pseudorandom Generators, Typically-Correct Derandomization, and Circuit Lower Bounds

- [The 13th International Workshop on Randomization and Computation \(RANDOM\)](#), Berkeley, California, 2009.
- [Midwest Theory Day](#), DePaul University, 2009

Space Hierarchy Results for Randomized Models

- [The 25th Symposium on Theoretical Aspects of Computer Science \(STACS\)](#), Bordeaux, France, 2008
- [Midwest Theory Day](#), University of Notre Dame, 2007

Theory Reading Group

- Multiple presentations per year, UW-Madison Theory of Computing group, 2004–2009

Exact and Approximation Algorithms for the 3-Dimensional Matching Problem

- National Conferences on Undergraduate Research, UW-Whitewater, 2002

TEACHING
EXPERIENCE

[Indiana State University](#)

CS 658, Advanced Algorithms, Spring 2012

- Exploring integration with CS 620, Advanced Theory of Computation, and integrating analysis/proofs with programming some constructions/algorithms

CS 475/575, Artificial Intelligence, Fall 2011

- Developed new course content and curriculum

CS 695, Computer Science Research, Spring 2011

- Oversaw research experiences of graduating class of 2011

CS 620, Advanced Theory of Computation, Fall 2010, Spring 2011

- Developed new course content and curriculum

CS 151, Introduction to Programming, Fall 2010–

- Piloted the teaching of this course with primary motivation coming from manipulating media (pictures, sounds, videos) and making simple games

University of Wisconsin-Madison

CS 799, Complexity Theory, Fall 2007

- Co-instructed special section of this graduate course with S. Diehl and Professor D. van Melkebeek, supervised by D. van Melkebeek

CS 240, Intro. to Discrete Mathematics, Summer 2007

- Revised curriculum developed in consultation with faculty
- Final course evaluations: highest ever “recommend instructor” and “recommend course” ratings for this course

CS 810, Complexity Theory, Spring 2007

- Teaching assistant for Professor D. van Melkebeek in this graduate course
- Responsibilities: office hours, grading, model homework solutions, managing/editing lecture notes that are now used as a text for the course

CS 310, Problem Solving using Computers, Fall 2003 – Spring 2005

- Teaching assistant for Professor J. Strikwerda and Rebecca Hasti in this junior-level course for engineers focusing on programming and problem solving using Maple and Matlab through guided laboratory explorations and online lectures
- Responsibilities: office hours, grading, online course administration, leading review sessions and lab sections
- First TA of this course to take on responsibilities of giving lectures on programming concepts and leading lab sections

TEACHING
IMPROVEMENT

ACM Technical Symposium on Computer Science Education (SIGCSE), attended 2010–

New Faculty Orientation, Indiana State University, participant, Fall 2010

University of Wisconsin-Madison

- Delta Program: monthly discussions and presentations regarding teaching practices and pedagogy, 2009–2010
- Two-day workshop on Scientific Teaching, 2009
- Tenth Annual Teaching and Learning Symposium: two-day workshop exploring new teaching pedagogy and related topics, 2008

GRANTS AND
FUNDING

Awarded

- Indiana State University, Presidential Student Employment funding, Fall 2011
- Indiana State University, University Research Committee grant “Is NP Hard-on-Average, and is Cryptography Possible?” (URC # 11-07), Fall 2010

Applied for

- NSF Computing and Communication Foundations Core, program 11-557, project title “AF: Small: RUI: The Limits of Derandomization: Upper Bounds and Lower Bounds”, Fall 2011
- Indiana State University, University Research Committee grant proposal “Computational Complexity Theory Meets the Real World”, Fall 2011
- Indiana State University, CIRT IT mini-grant, Spring 2011

SERVICE

Indiana State University

- Assistantships and Fellowships Committee, Graduate Council, Fall 2011–
- Working group exploring a Media Computation/Multimedia program, Summer 2011
- Computer Science faculty liaison to Career Center, Fall 2010–
- Assessment Team member, Fall 2010–
- Consult Dr. Tom Derrick from the English Department on programming aspects of his research, Fall 2010
- Indiana Great Lakes National Girls Collaborative Project conference: Where ARE the Girls?, participant, Fall 2010

Indiana State University, Math & CS Department

- Oversee CS Graduate Assistants, Fall 2011–
- Faculty advisor of SAM CS student club, Spring 2011–
- Oversee department seminar, Spring 2011–
- Admissions Committee for CS master's degree, Fall 2010–
- Computer Science Curriculum Committee, Fall 2010–
- Faculty Search Committee, Fall 2010-Spring 2011
- Graduate assessment plan of Computer Science MS degree, Fall 2010
- Oversee department website, Fall 2010–

Conferences and Journals

- MIGHTY LII, 52nd Midwest Graph Theory Conference, Organizing Committee, April 2012
- Referred for SIAM Journal on Computing, Computational Complexity, Annals of Pure and Applied Logic, Descriptive Complexity of Formal Systems, IEEE Conference on Computational Complexity

Community

- Youth sports coach, 2009, 2011–
- DOE National Science Bowl, Moderator and Scientific Judge, Middle School Terre Haute Regional, 2011–
- James Madison Memorial High School, Madison WI, “Computer Science: Theory and Practice”: multiple guest lectures to Computer Science classes, 2007–2009
- Madison East High School, Madison WI, “Cryptography: Secrets Concealed”: guest lecture for Math Week, 2007

University of Wisconsin-Madison

- “Hot Topics in CS/Theory”: presentation for those on job market, CS Dept., 2009
- Review Committee, Vilas Travel Grant, 2008
- Theory group website administrator, Dept. of Computer Sciences, 2007–2009
- Theory reading group organizer, Dept. of Computer Sciences, 2005–2009

INDUSTRY EXPERIENCE

Constellation Data Systems, Inc., Cincinnati, Ohio USA

Software engineer, 1999–2005

- Develop device drivers and applications for custom hardware
- Worked on projects for many clients, including General Electric, Boeing, LifeSafer Interlock, and QRS Diagnostic
- Technologies used: Microsoft Visual C++, Microsoft Macro-assembler, Install-Shield, INF, ASP, Microsoft Visual Basic, logic analyzer

AWARDS

Indiana State University

- Caleb Mills Distinguished Teaching Award, nominated 2011

University of Wisconsin-Madison

- Cisco Systems Distinguished Graduate Fellowship, 2008–2009
- Vilas Travel Grant, 2007

National Science Foundation

- Graduate Research Fellowship honorable mention, 2002

Mathematical Contest in Modeling

- Meritorious honor, 2002

Xavier University

- Richard J. Wehrmeyr Pi Mu Epsilon Award, John F. Niehaus Computer Science Award, Kramer-Miller Mathematics Award, honorary inductee to American Mathematical Society, 2002
- Thomas P. Savage Scholarship competition winner, honorary inductee to Pi Mu Epsilon Math Honor Society, 2001
- Honorary inductee to Rho Pi Epsilon Spanish Honor Society, 2000

PERSONAL INTERESTS

photography, backyard astronomy, cycling, running (2009 Columbus marathon), volleyball, science fiction, science and other projects with (my three) kids, backyard (organic) vegetable gardening, foreign languages and culture

REFERENCES

Available upon request