John P. May

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Born: August 5th, 1976, Cardston, Alberta Canada

Citizenship: USA and Canada

Education:

Ph.D. Mathematics, North Carolina State University, August 2005

M.A. Mathematics, University of Oregon, August 1999

B.A. (Mathematics Honors and cum laude) University of Oregon, June 1998

Research Areas: Algorithms for Numerical Polynomial Algebra, Polynomial Factorization, Computational Linear Algebra

Dissertation Title: Approximate Factorization of Multivariate Polynomials and Related Problems in Approximate Algebra via Singular Value Decomposition Methods

Ph.D. Advisor: Erich L. Kaltofen

Positions:

Adjunct Assistant Professor, and Post-doctoral Researcher, Department of Computer and Information Sciences, University of Delaware. September 2006 - August 2007.

Post-doctoral Researcher and Instructor, David R. Cheriton School of Computer Science, University of Waterloo. September 2004 to August 2006.

Recent Awards:

2004 International Symposium on Symbolic Algebraic Computation (ISSAC) Distinguished Student Author Award, July 2004.

Lowell S. Winton and Nicholas J. Rose Research Scholarship, April 2004.

Refereed Publications:

Efficient Matrix Rank Computation with Application to The Study of Strong ly Regular Graphs. To appear in *ISSAC 2007 Proceedings 2007 International Symposium on Symbolic Algebraic Computation* ACM Press, New York, N.Y., 2007. With David Saunders and Zhendong Wan.

Approximate factorization of multivariate polynomials via differential equations. In *ISSAC 2004 Proceedings 2004 International Symposium on Symbolic Algebraic Computation* ACM Press, New York, N.Y., 2004, pages 167–174. With Shuhong Gao, Erich Kaltofen, Zhengfeng Yang, and Lihong Zhi.

On approximate irreducibility of polynomials in several variables. In *ISSAC 2003 Proceedings 2003 International Symposium on Symbolic Algebraic Computation* ACM Press, New York, N.Y., 2003, pages 161-168. With Erich Kaltofen.

External Presentations:

Poster, *Space Efficient Computation of the p-Rank of Large Dense Matrices with Very Low Rank*, East Coast Computer Algebra Day (ECCAD), March 2007, Chestertown, MD

Poster, *The Ruppert Matrix: An Overview*, Maple Summer Workshop, July 2006, Waterloo, ON

Invited Conference Talk (20m), *Comparing Heuristics for Solving Problems in Approximate Polynomial Algebra*, MITACS-CAIMS Joint Meeting, June 2006, Toronto, ON

Invited Conference Talk (20m), *A Comparison of Heuristics for Solving Problems in Approximate Polynomial Algebra*, Joint Mathematics Meeting, AMS-SIAM Special Session: Symbolic-Numeric Computation and Applications, January 2006, San Antonio, TX

Conference Talk (30m), *Using Riemannian SVD for Problems in Approximate Algebra*, Symbolic Numeric Computation (SNC) Workshop, July 2005, Xi'an, China

Conference Talk (20m), *Solving Problems in Approximate Algebra via Structured Total Least Squares*, Canadian Mathematical Society Summer Meeting, June 2005, Waterloo, ON

Workshop Talk (20m), *General Strategies for Problems in Approximate Algebra via Structured Total Least Squares*, Mathematics of Computer Algebra and Analysis (MOCAA) Workshop, May 2005, Calgary, AB

Poster, *Using Riemannian SVD for Problems in Approximate Algebra*, ECCAD, March 2005, Ashland, OH

Invited Conference Talk (30m), *Approximate factorization of Noisy Multivariate Polynomials*, Applications of Computer Algebra (ACA), August 2004, Beaumont, TX

Conference Talk (20m), *Approximate factorization of multivariate polynomials via differential equations*, International Symposium on Symbolic and Algebraic Computation (ISSAC), July 2004, Santander, Spain

Poster, *A Generalization of Gao's Factorization Algorithm to Polynomials in Many Variables*, ECCAD, May 2004, Waterloo, ON

Invited Speaker (50m), *Approximate Factorization of Noisy Multivariate Polynomials*, MOCAA Workshop, May 2004, Waterloo, ON

Invited Seminar Talk (50m), *Tackling two problems in polynomial algebra using Ruppert's theorem*, Clemson University Algebra and Discrete Math Seminar, September 2003, Clemson, SC

Conference Talk (20m), *On approximate irreducibility of polynomials in several variables*, ISSAC, August 2003, Philadelphia, PA

Conference Talk (25m), *Bounding the radius of irreducibility of multivariate polynomials*, ACA, July 2003, Raleigh, NC

Poster, *Towards numerical factorization of bivariate polynomials*, ECCAD, April 2003, Clemson University

Poster, *Factoring in* $\mathbb{F}_p[x, y]$ *using zero sum techniques*, ISSAC, July 2002, Lille, France

Poster, *Gao's multivariate polynomial factorization algorithm: a MAPLE implementation*, ECCAD, May 2001, Tallahassee, FL

Other Papers:

Numerical Techniques for Computing the Inertia of Products of Matricies of Rational Numbers. Submitted for publication. With David Saunders and David Wood.

Approximate Factorization of Multivariate Polynomials Using Singular Value Decomposition. Submitted for journal publication. With Erich Kaltofen, Zhengfeng Yang, and Lihong Zhi.

Using Riemannian SVD for Problems in Approximate Algebra. Proceedings of the SNC Workshop, Xi'an, China, July 2005. With Brad Botting, Mark Giesbrecht.

New Algorithms for Exact and Approximate Polynomial Decomposition. Proceedings of the SNC Workshop, Xi'an, China, July 2005. With Mark Giesbrecht.

'Using Maple to grade Maple' Assessment Software from North Carolina State University. In *Proceedings 2002 Maple Workshop*, Waterloo, Canada, 2002. Waterloo Maple Inc. Erich Kaltofen, Michael McLean, and Larry Norris with John May, Dmitriy Morozov, and William Turner.

A Study of the Dynamics of Continuous Piecewise Linear Maps. Undergraduate Thesis at University of Oregon, Eugene, Oregon, 1998.

The Tent Map: Chaos to Chaos, Dust to Dust. Trinity University Research Experience for Undergraduates Report, San Antonio, Texas, 1997. With A. Heap and P. Lynch.

Internal Presentations:

University of Delaware SIG Theory and Algorithms

Numerical Factorization of Polynomials (2 parts), November 2006

Ontario Research Centre for Computer Algebra Joint Lab Meetings:

Poster, *Nearest Polynomials That Factor*, December 2005

Poster, *Using Riemannian SVD for Problems in Approximate Algebra*, June 2005 (with Mark Giesbrecht)

Poster, *Using Iterative Refinement to Improve Approximate Factorizations*, Feburary 2005

Poster, *Exact and Approximate Univariate Polynomial Decomposition via Bivaraiate Factorization*, November 2004 (with Mark Giesbrecht)

NCSU Symbolic Computation Seminar (50m):

Approximate Factorization of Bivariate Polynomials using SVD Methods, Spring 2004

NCSU Graduate Algebra and Computer Algebra Seminar (50m):

Functional Decomposition and Decomposability Testing of Polynomials, Fall 2003
On approximate irreducibility of bivariate polynomials, Spring 2003
Zero sum methods of polynomial factorization, Spring 2002
A practical method of bivariate polynomial factorization, Fall 2001

University of Oregon Undergraduate Mathematics Talks (50m):

Dynamics of the Tent Map on $[0, 1]$, Fall 1997

Service to Field:

External Reviewer

2007 International Symbolic Numeric Computation Workshop (SNC)
2007 International Symposium on Symbolic and Algebraic Computation (ISSAC)
2005 International Symbolic Numeric Computation Workshop (SNC)
2005 International Symposium on Symbolic and Algebraic Computation (ISSAC)
2005 Effective Methods in Algebraic Geometry (MEGA)
SIGSAM Bulletin Communications in Computer Algebra
2003 International Workshop on Computer Algebra in Scientific Computation (CASC)
Journal of Symbolic Computation
2001 International Symposium on Symbolic and Algebraic Computation (ISSAC)

Conference Organization

Local organizer, 2007 East Coast Computer Algebra Day (ECCAD)
Webmaster, 2007 International Symposium on Symbolic and Algebraic Computation (ISSAC)
Web services and local arrangements, 2003 International Conference on Application of Computer Algebra (ACA)
Webmaster, 2001 International Symposium on Symbolic and Algebraic Computation (ISSAC)

Teaching Experience:

University of Delaware, primary instructor of 3 courses (15 weeks)

CISC 220 (Introduction to Data Structures) Fall 2006 (two sections), Spring 2007

University of Waterloo, primary instructor of 4 courses (13 weeks)

CS 234 (Introduction to Algorithms and Data Structures) Fall 2004, Fall 2005

CS 134 (Principles of Computer Science) Winter 2005, Fall 2005

North Carolina State University, primary instructor of 9 courses (15 weeks)

Math 107 (Precalculus) Fall 2002 (two sections), Summer 2003
Math 242 (Vector and Multivariate Calculus with MAPLE) Summer 2001
Math 305 (Linear Algebra) Spring 2000 (internet based course; teaching assistant)
Math 141l, 241l, 242l (Calculus MAPLE Labs) Summer 2000, Summer 2001
Math 141 (Differential Calculus with MAPLE) Fall 1999, Spring 2000, Fall 2000

University of Oregon, primary instructor of 3 courses (10 weeks)

Math 111 (Precalculus) Fall 1998, Winter and Spring 1999
Math 106 (Contemporary Mathematics) Spring and Fall 1997, Winter 1998 (undergraduate teaching assistant)

Other Service:

Co-coordinator, NCSU Graduate Algebra and Computer Algebra Seminar, Fall 2000 – Spring 2001.

Design and administration of the NCSU Symbolic Computation Group's GNU/Linux workstation lab, September 2000 – August 2004.

Undergraduate Peer Advisor, University of Oregon, Mathematics Department, January 1997 – June 1998.

Conferences and Workshops Attended:

2007 East Coast Computer Algebra Day, Chestertown, MD

2006 Maple Summer Workshop, Waterloo, ON

2006 MITACS/CAIMS Joint Meeting, Toronto, ON

2006 East Coast Computer Algebra Day, Philadelphia, PA

2006 American Institute of Mathematics Workshop: The Computational Complexity of Polynomial Factorization, Palo Alto, CA

2006 Waterloo Workshop on Computer Algebra, Waterloo, ON

2006 AMS-MAA Joint Mathematics Meeting, San Antonio, TX

2005 Internation Symposium on Symbolic and Algebraic Computation, Beijing, China

2005 Symbolic-Numeric Computation Workshop, Xi'an, China

2005 CMS Summer 2005 Meeting, Waterloo, ON

2005 MITACS Annual Conference, Calgary, AB

2005 Southern Ontario Numerical Analysis Day, Waterloo, ON

2005 East Coast Computer Algebra Day, Ashland, OH

2004 International Conference on Application of Computer Algebra, Beaumont, TX

2004 International Symposium on Symbolic and Algebraic Computation, Santander, Spain

2004 East Coast Computer Algebra Day, Waterloo, ON

2004 Mathematics of Computer Algebra and Analysis, Waterloo, ON

2003 International Symposium on Symbolic and Algebraic Computation, Philadelphia, PA

2003 International Conference on Application of Computer Algebra, Raleigh, NC

2003 East Coast Computer Algebra Day, Clemson, SC

2002 Internation Symposium on Symbolic and Algebraic Computation (ISSAC), Lille, France

2002 Internet Accessible Mathematical Computation Workshop, Lille, France

2002 MSRI Summer Graduate Program: Excursions in Computational Number Theory - Polynomials with Integer Coefficients, Vancouver, BC

2002 East Coast Computer Algebra Day, New York, NY

2001 East Coast Computer Algebra Day, Tallahassee, FL

2000 MSRI Number-theoretic cryptography workshop, Berkeley, CA

2000 East Coast Computer Algebra Day, London, ON

2000 Southern Ontario Numerical Analysis Day, London, ON

References:

Research:

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Teaching:

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