

Dylan Peifer

CONTACT INFORMATION	Department of Mathematics 310 Malott Hall Cornell University Ithaca, NY 14853-4201 USA	<i>Phone:</i> 828-767-9411 <i>E-mail:</i> djp282@cornell.edu <i>Website:</i> pi.math.cornell.edu/~djp282/ <i>GitHub:</i> www.github.com/dylanpeifer
RESEARCH INTERESTS	The design, analysis, and implementation of algorithms for mathematical and scientific computing, particularly the efficient computation of Gröbner bases in computational commutative algebra and algebraic geometry and the application of reinforcement learning techniques to improve algorithm heuristics.	
EDUCATION	Cornell University , Ithaca, NY Ph.D., Mathematics, expected May 2020 - Advisor: Michael Stillman - Thesis: Reinforcement Learning in Buchberger's Algorithm M.S., Computer Science, December 2017 Carleton College , Northfield, MN B.A., Mathematics, June 2014 - Undergraduate Thesis: Presentations of Arc Algebras	
PUBLICATIONS	<ul style="list-style-type: none">[1] Daniel Halpern-Leistner, Dylan Peifer, and Michael Stillman. Learning Selection Strategies in Buchberger's Algorithm. <i>In preparation</i>.[2] Dylan Peifer. An algorithm for enumerating difference sets. <i>Journal of Software for Algebra and Geometry</i> 9 (2019), 35-41.[3] Omar A. AbuGhneim, Dylan Peifer, and Ken W. Smith. All $(96, 20, 4)$ difference sets and related structures. <i>Bull. Inst. Combin. Appl.</i> 85 (2019), 44-59.[4] Martin Bobb, Stephen Kennedy, Dylan Peifer, and Helen Wong. Roger and Yang's Kauffman bracket arc algebra is finitely generated. <i>J. Knot Theory Ramifications</i> 25:6 (2016).[5] Martin Bobb, Stephen Kennedy, Dylan Peifer, and Helen Wong. Presentations of Roger and Yang's Kauffman bracket arc algebra. <i>Involve, a Journal of Mathematics</i> 9:4 (2016), 689-698.	
CONFERENCE PRESENTATIONS	<ul style="list-style-type: none">[1] <i>Reinforcement Learning in Buchberger's Algorithm</i> (poster), Summer School on Randomness and Learning in Nonlinear Algebra, Max Planck Institute for Mathematics in the Sciences, Leipzig, July 2019.[2] <i>All $(96, 20, 4)$ Difference Sets</i>, Joint Mathematics Meetings, San Diego, January 2018.[3] <i>An Algorithm for Enumerating Difference Sets</i>, Binghamton University Graduate Conference in Algebra and Topology, Binghamton University, October 2017.[4] <i>Generators of the Arc Algebra</i>, Binghamton University Graduate Conference in Algebra and Topology, Binghamton University, November 2015.[5] <i>A Finite Set of Generators for the Arc Algebra</i>, Joint Mathematics Meetings, San Antonio, January 2015.	

San Diego State University, San Diego, CA
Participant, SDSU Mathematics REU

June 2013 – August 2013

Independent University of Moscow, Moscow, Russia
Participant, Math in Moscow

September 2012 – December 2012

PROJECTS	<p>DifSets A package for GAP that efficiently implements an exhaustive search for difference sets using group theory and dynamic programming.</p> <p>GroebnerWalk A package for Macaulay2 that implements the standard and generic Gröbner walk algorithm to quickly compute Gröbner bases.</p> <p>FGLM (with Mahrud Sayrafi) A package for Macaulay2 that implements the FGLM algorithm for computing Gröbner bases of zero-dimensional ideals.</p>
GRADUATE COURSEWORK	<p>Algebra I, Real Analysis, Differentiable Manifolds, Algebra II, Algebraic Geometry, Non-commutative Algebra, Commutative Algebra, Algebraic Number Theory, Homotopical Algebra, Lie Algebras, Topics in Analysis, Topics in Algebraic Geometry</p> <p>Analysis of Algorithms, Matrix Computations, Advanced Programming Languages, Theory of Computing</p>
AWARDS	<p>Cornell University</p> <ul style="list-style-type: none">• Graduate Student Teaching Award, Mathematics Department <p>Carleton College</p> <ul style="list-style-type: none">• <i>summa cum laude</i>• distinction in senior integrative exercises and in major, Mathematics Department• Dean's List 2011-2013• Mortar Board Prize• Phi Beta Kappa first year student prize <p>Other</p> <ul style="list-style-type: none">• member Phi Beta Kappa• National Merit Scholar
SKILLS	<p>Computer Programming:</p> <ul style="list-style-type: none">• C, C++, Python, Scheme <p>Mathematical Software:</p> <ul style="list-style-type: none">• GAP, Macaulay2, Mathematica, MATLAB, Singular
LANGUAGES	English (native), Spanish (basic proficiency), Russian (basic proficiency)
REFERENCES	<p>Michael Stillman, Professor of Mathematics, Cornell University Graduate Advisor</p> <p>Daniel Halpern-Leistner, Assistant Professor of Mathematics, Cornell University Research Advisor</p> <p>Jesús De Loera, Professor of Mathematics, UC Davis Research Advisor</p> <p>Helen Wong, Associate Professor of Mathematics, Claremont McKenna College Undergraduate Research Advisor</p>