

CONTACT INFORMATION	2299 Piedmont Ave., Rm 643 Berkeley, CA 94720-2320	phone: available upon request e-mail: critch@math.berkeley.edu website: http://www.acritch.com/
EDUCATION	PhD in mathematics, UC Berkeley (May, 2013) Visiting scholar in mathematics, Uni Roma Tre (January - July 2010) M.Sc. in Mathematics, University of Toronto (August 2008) B.Sc. (Hons) in Pure Mathematics, Memorial University (May 2006) High school diploma, Clarenville High School (June 2004)	
AREAS OF INTEREST	Algebraic statistics; human cognition and debiasing; applications of algebraic geometry to machine learning and statistical modelling; causal inference; hidden Markov models; graphical models; singular learning theory; tensor network models; parameter identifiability.	
PUBLICATIONS	<p><i>Tensor representations of discrete data</i>, with Shaowei Lin, Luca Weihs, and Piotr Zwiernik. In preparation.</p> <p><i>Polynomial constraints on representing entangled qubits as matrix product states</i>, with Jason Morton (2012). arXiv:1210.2812.</p> <p><i>Binary hidden Markov models and varieties</i> (2012). arXiv:1206.0500. To appear in the Journal of Algebraic Statistics.</p> <p><i>A note on the proportionality between some consistency indices in the AHP</i>, with M. Brunelli, and M. Fedrizzi (2010). arXiv:1203.6431v1. To appear in Applied Mathematics and Computation.</p> <p><i>Resolving the Banach-Tarski paradox: inseparability of rigid bodies</i> (2006). B.Sc. Honors thesis.</p> <p><i>Pushing the limit (generalized limits and limit extrema)</i> (2006), AEJM 1 no. 1, pp. 47-55.</p>	
SOFTWARE	<p><i>Tensors.m2</i>, with Claudiu Raicu (2012), a Macaulay2 package for studying varieties of tensors and tensor networks.</p> <p><i>Credence</i>, with Alexei Andreev and Zachary Alethia (2012), a game for Windows, Mac, Android and iPhones for calibrating reported subjective credence levels to actual success rates.</p>	
INVITED TALKS	<p>Effective Altruism Summit</p> <p>Thiel Foundation Appathon</p> <p>Carnegie Melon statistics seminar</p> <p>Duke University algebraic geometry seminar</p> <p>NCSU symbolic computation seminar</p> <p>McGill University causal inference seminar</p> <p>UC Berkeley algebraic geometry seminar</p> <p>Griffiths cognitive science laboratory</p> <p>RTG Workshop on Tensors and their Geometry at UC Berkeley</p> <p>York University statistics seminar</p> <p>Queen's University algebraic geometry seminar</p> <p>Autonomous electrical engineering and computer science seminar at UC Berkeley</p> <p>Summer Program on Applied Rationality and Cognition in Berkeley</p> <p>CFAR Westminster Retreat in Alamo, California</p> <p>Center for Applied Rationality workshop in Berkeley, California</p> <p>Algebraic Statistics in the Alleghenies at Pennsylvania State University</p> <p>Center for Applied Rationality workshop in Pescadero, California</p> <p>Founders Fund annual business meeting in Maui</p> <p>Stanford student algebraic geometry seminar</p>	<p>July 2013</p> <p>February 2013</p> <p>February 2013</p> <p>January 2013</p> <p>January 2013</p> <p>December 2012</p> <p>November 2012</p> <p>October 2012</p> <p>September, 2012</p> <p>September 2012</p> <p>September 2012</p> <p>August 2012</p> <p>August 2012</p> <p>July 2012</p> <p>June 2012</p> <p>June 2012</p> <p>May 2012</p> <p>May 2012</p> <p>February 2012</p>

	Mathematicians Against Police Violence at UC Berkeley	November 2011
	UC Berkeley algebraic geometry seminar	November, 2011
	UC Berkeley algebraic statistics seminar	September 2011
	UC Berkeley arithmetic geometry seminar	February 2011
HONOURS AND AWARDS	Outstanding Graduate Student Instructor Award	2012/03
	DARPA Graduate Student Research grant – \$24,000	2012/01
	NSERC PGS-Doctoral Scholarship – \$42,000	2008/09
	NSERC CGS-Doctoral Scholarship – \$105,000 (declined after 1 year)	2007/09
	NSERC CGS-Masters Scholarship – \$17,500	2006/09
	NSERC Undergraduate Summer Research Assistantship – \$6,000	2006/05
	Governor General’s Medal for Memorial University, awarded to the overall top undergraduate student across all faculties and departments.	2006/05
	Memorial University Medal for Excellence in Mathematics	2006/05
	Putnam mathematics competition – Honorable Mention (~ 5th in Canada)	2005/12
	Centenary of Responsible Government Scholarship – \$1,000	2005/11
	Memorial University undergraduate mathematics competition – 1st Prize	2005/10
	Memorial University Faculty of Science Dean’s departmental prize, awarded annually to the top non-graduating mathematics student.	2005/10
	APICS (Atlantic Provinces) mathematics team competition – 1st Prize	2005/10
	Memorial University undergraduate mathematics competition – 1st Prize	2005/01
	APICS (Atlantic Provinces) mathematics team competition – 1st Prize	2004/10
	Memorial University Alumni Scholarship – \$25,000	2004/09
PROFESSIONAL SERVICE	Lead curriculum developer for UC Berkeley’s new <i>Sense, Sensibility, and Science</i> course, under physics Nobel laureate Saul Perlmutter, philosophy professor John Campbell, and law professor Robert MacCoun (fall 2012 - present)	
	Signatory for THINK at UC Berkeley, facilitating discussion and implementation of high-impact altruism (fall 2012 - present)	
	Cofounder, Chief of Marketing, and Curriculum Developer for the Center for Applied Rationality (spring 2012 - present)	
	Co-organizer for the UC Berkeley student algebraic geometry seminar, first with Charley Crissman, and later with Andrew Dudzik (spring 2011 - spring 2012)	
	Co-organizer for the COGS Causal Inference Symposium with psychology PhD student Michael Pacer (February, 2012)	
	Co-organizer for the UC Berkeley algebraic statistics seminar with Shaowei Lin (fall 2011)	
	Co-organizer for the Math, Productivity, Happiness and Decision-making seminar at UC Berkeley with Stanford mathematics PhD student Nisan Stiennon (fall 2011)	
	Co-organizer for the Many-Algebro-Geometrically Important Concepts seminar at UC Berkeley (spring 2009)	
PROFESSIONAL QUALIFICATIONS	Freelance consulting experience (solicited by Founders Fund venture capital and MetaMed research)	
	Trilingual fluency in English, French, and Italian.	
	Bertini experience (numerical algebraic geometry package)	
	Macaulay2 experience (commutative algebra package)	
	R experience (statistical computing package)	

EMPLOYMENT HISTORY	<p><i>Postdoctoral research fellow</i> beginning April 2014 Employer: Mathematical Biosciences Institute (NSF) 40 hours per week Work: researching applications of algebraic geometry to neuroscience and machine learning</p> <p><i>Cofounder and Chief of Marketing</i> 2013/05 – present Employer: Center for Applied Rationality 50 hours per week Work: individual and group consulting, corporate training development, marketing strategy</p> <p><i>Graduate Student Instructor</i> 2010/08 – 2011/12 and 2012/08 – 2013/05 Employer: UC Berkeley 20 hours per week Work: classroom instruction, office hours, and grading. (except summer)</p> <p><i>Graduate Student Researcher</i> 2012/01 - 2012/07 Employer: DARPA / UC Berkeley 20 hours per week Research on applications of algebraic geometry to machine learning models under Professor Bernd Sturmfels</p> <p><i>Graduate Student Instructor</i> 2008/08 – 2009/12 Employer: UC Berkeley 10 hours per week Work: classroom instruction, office hours, and grading. (except summer)</p> <p><i>Lecturer (vector calculus)</i> 2009/06 – 2009/08 Employer: UC Berkeley 15-20 hours per week Work: classroom instruction, office hours, and grading.</p> <p><i>Teaching Assistantships</i> 2006/10 – 2008/05 Employer: University of Toronto 5-10 hours per week Work: tutorial classes, tutoring, and grading.</p> <p><i>Research Assistantship (NSERC-USRA)</i> 2006/05 – 2006/08 Employer: NSERC / University of Toronto full time Work: researching division algorithms for analytic and quasi-analytic function classes under Professor Edward Bierstone.</p> <p><i>Mathematics Tutor</i> 2005/05 – 2006/05 Employer: Memorial's Undergraduate Career Experience Program (MUCEP) variable hours Work: Tutoring mathematics regularly to residents of Paton College under Student Affairs and Services.</p> <p><i>Problem Solver/Designer</i> 2003/06 - 2003/08 Employer: Student Work and Service Program (SWASP) full time Work: Creating, solving and typesetting problems for a contest training database under Professor M. Parmenter.</p>
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