Zachary D. Clawson

Contact Information	657 Rhodes Hall, 136 Hoy Rd. Center for Applied Mathematics Cornell University, Ithaca, NY, USA	mobile: (252) 256-1873 e-mail: zc227@cornell.edu homepage: http://cam.cornell.edu/~zc227/	
Research Interests	Hamilton-Jacobi equations, numerical analysis and scientific computing, optimal control, optimal path problems, algorithms, differential equations (PDE and ODE).		
Education	Cornell University, Ithaca, NY		
	PhD, Applied Mathematics	${\bf August} {\bf 2011-present}$	
	 NSF Fellow: August 2011 - August 2014 Minor: Computational Science and Engineering Advisor: Professor Alexander Vladimirsky PhD Committee: Alex Vladimirsky, David Bindel, John Guckenheimer 		
	MS, Applied Mathematics	May 2013	
	North Carolina State University, Raleigh, NC		
	BS, Applied Mathematics	$\mathbf{August} 2007 - \mathbf{May} 2011$	
	 Valedictorian: 4.0 / 4.0 GPA (both major and overall) Caldwell Fellows Program: February 2008 - May 2011 Phi Beta Kappa 		
Programming	C, C++, MATLAB, IAT _E X, T _E X, Shell scripting, Java, Javascript, PHP, HTML, Python, Fortran.		
Publications	Z. Clawson, A. Chacon, & A. Vladimirsky, <i>Causal Domain Restriction for Eikonal Equations</i> , SIAM J. on Scientific Computing 36/5: A2478-A2505 (2014). http://epubs.siam.org/doi/abs/10.1137/130936531		
	R. Takei, Weiyan Chen, Zachary Clawson, Slav Kirov, & Alexander Vladimirsky Optimal control with budget constraints and resets, SIAM J. on Control and Opt 53 (2), 712-744 (2015). http://www.math.cornell.edu/~vlad/papers/b_reset/ http://epubs.siam.org/doi/abs/10.1137/110853182		
Research Presentations	SIAM Meetings		
	Anytime A* for continuous optimal path planning. SIAM Annual Meeting, contributed talk, Chicago, IL; Summer 2014.		
	Optimal Control with Budget Constraints and Resets. SIAM Gator Student Conference; University of Florida; Gainesville, FL; March 29, 2014		
	Domain Restriction for Eikonal Equations. SIAM Conference on Control & Its Applications, Min- isymposium: Causal Algorithms for Optimal Control Problems; San Diego, CA; July 10, 2013.		
	Approximate Methods for Solving Eikonal Equations. SIAM Annual Meeting, Student Invited Speaker (presented in place of Adam Chacon); San Diego, CA; July 8, 2013.		
	New York Conference on Applied Mathematics		
	Causal Domain Restriction for Eikonal Equations. 4 th NY Conference on Applied Mathematics; Cornell University; Ithaca, NY; November 9, 2013		
	Domain Restriction Techniques for Single-Source/Target Optimal Trajectory Problems. 3 rd NY Con- ference on Applied Mathematics; Rensselaer Polytechnic Institute; Troy, NY; October 13, 2012		

Other

Anytime A^{\ast} for Continuous Optimal Path Planning. Applied Math Days; Rensselaer Polytechnic Institute; Troy, NY; April 10, 2015

Domain Restriction Techniques. SCAN Seminar; Cornell University; Ithaca, NY; February 18, 2013 Optimal Control with Budget Constraints and Resets. Applied Math Days; Rensselaer Polytechnic Institute; Troy, NY; March 30, 2012

Optimal Trajectory Problems. SUM Series; North Carolina State University; Raleigh, NC; December 1, 2011

ODEs and Complementarity Problems. SUM Series; North Carolina State University; Raleigh, NC; April 28, 2011

United Technologies Research Center, Hartford, CT

Intern

Work Experience

Intern within UTRC's autonomy group.

Cornell University, Ithaca, NY

Teaching Assistant (Grader)

TA for MATH 3610: "Mathematical Modeling". Grading of weekly homework and exams.

Teaching Assistant (Recitation Leader)

TA for MATH 1920: "Multivariable Calculus for Engineers". Two days a week I hold recitation sections supplement the core course material with quizzes, workshops, examples, and application problems; in addition responsibilities include grading all assignments and holding office hours.

North Carolina State University, Raleigh, NC

Teaching Assistant

TA for undergraduate courses mathematics; specifically: Calculus I, Calculus III, Applied Differential Equations, and Linear Algebra. Responsibilities included attendance, grading, office hours, and holding review sessions.

Dare County IT Department, Manteo, NC

Technical assistant

Assisted county employees with general technical problems, general network and machine maintenance, worked on rollout of new machines each year.

Professional web-design, Manteo, NC

Designed and maintained web sites for businesses on the Outer Banks of NC.

January – May 2015

August 2009 – May 2011 culus III, Applied Differential

May 2007 – August 2009

2004 - 2009

August – December 2015

June – August 2015

PROFESSIONAL EXPERIENCE	Cornell University, Ithaca, NY			
	Personal web site workshop for academics (mainly CAM students)February 27, 2014Held a workshop for students in my graduate program (Center for Applied Mathematics @ Cornell)on how to create a basic HTML web site & spruce it up with CSS.			
	North Carolina State University, Raleigh, NC			
	SAMSI Industrial Math/Stat Modeling Workshop for Graduate Students July		5-23, 2013	
	I worked on a team of 7 graduate students from different areas to solve the problem of <i>Optimal</i> <i>Routing from Aerial Surveillance</i> with John Peach from MIT Lincoln Labs. A technical report is available from SAMSI and we may revise it for publication.			
	Cornell University, Ithaca, NY			
	Parallel Computing on STAMPEDE: Introductory Topics		une 11, 2013	
	Workshop dedicated to learning how to use the STAMPEDE supercomputer at UT-Austin.			
	Cornell University, Ithaca, NY			
	Research Experience for Undergraduates Jun		August 2010	
	Worked on two original research projects. The main project resulted in the publication "Optimal control with budget constraints and resets." As a result of the REU I continued to work on a another project as a graduate student, resulting in the publication "Causal Domain Restriction for Eikonal Equations".			
Memeberships	Society for Industrial and Applied Mathematicians (SIAM) $-$ 2013 - 2015			
Honors and Awards	Special Programs			
	Mathematics Honors Program, North Carolina State University		2008 - 2011	
	Caldwell Fellows Program, North Carolina State University		2008 - 2011	
	University Scholars Program, North Carolina State University		2007 - 2011	
	Phi Beta Kappa, Zeta of North Carolina, North Carolina State University 2010			
	Fellowships and Scholarships			
	Research assistantship from Alexander Vladimirsky under NSF grant $\#$ DMS-1016150 Fall 2014			
	NSF Graduate Research Fellowship Program, Cornell University		2011 - 2016	
	Barr Dean's Scholarship, North Carolina State University		2009 - 2011	
	Linda Balfour and Robert Hill Scholarship, North Carolina State University		2009 - 2011	
	Provost's Academic Scholarship, North Carolina State University		2007 - 2011	
	PAMS Fund for Excellence Scholarship, North Carolina State University PTA Scholarship, Manteo High School		2007 - 2009 2007	
Relevant Coursework	Undergraduate topics course at NCSU: MA 493 – Ranking and Clustering			
	Graduate courses at North Carolina State University			
	• MA 513 – Complex Analysis	• MA 551 – Topology		
	• MA 515 – Functional Analysis	• CS/MA 583 – Parallel Comp	outing	
	• MA 520 – Linear Algebra	• MA 715 – Measure Theory	0	
	• MA 521 – Abstract Algebra I	• <i>MA</i> 732 – ODEs II		
	• <i>MA</i> 532 – ODEs I	• MA 753 – Algebraic Topolog	У	

Graduate Courses at Cornell University

- MATH 4250 Numerical Analysis and Differential Equations (Undergraduate)
- CS 5220 Applications of Parallel Computers
- CS 5780 Machine Learning
- MATH 6140 Topics in Analysis: Differential Games, Optimal Control, Front Pro-

pogation, and Dynamic Programming

- *MATH 6200* PDEs
- CS 6210 Matrix Computations
- ORIE 6300 Mathematical Programming
- CEE 6310 Computational Simulation of Flow and Transport in the Environment
- MATH 7170 Applied Dynamical Systems

Last updated: July 5, 2015