

Henry Adams

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EDUCATION

Stanford University, Ph.D. Mathematics, expected 2013.
Advisor: Gunnar Carlsson.

Stanford University, B.S. Mathematics with honors and distinction, 2007.
Thesis: *Spaces of Range Image Patches*. Minor in Economics.

RESEARCH

I am interested in applied and computational topology.

Papers

On the Nonlinear Statistics of Range Image Patches, with Gunnar Carlsson. SIAM Journal on Imaging Sciences 2 (2009), 110-117.

Morse Theory in Topological Data Analysis, with Atanas Atanasov and Gunnar Carlsson. Submitted December 2011, [arXiv:1112.1993](#).

Presentations

Evasion Paths in Mobile Sensor Networks.

8/12: Special Session on Applied and Computational Topology at MAA MathFest, Madison, WI.

7/12: Algebraic Topology: Applications and New Directions, Stanford University.

7/12: Minisymposium on Applied Algebraic Topology at SIAM Annual Meetings, Minneapolis, MN.

3/12: Schloss Dagstuhl Seminar on Applications of Combinatorial Topology to Computer Science, Dagstuhl, Germany.

1/12: AMS Special Session on Computational and Applied Topology, Joint Meetings, Boston, MA.

10/11: SIAM Conference on Applied Algebraic Geometry, NC State University.

Morse Theory in Topological Data Analysis.

10/11: SIAM Conference on Applied Algebraic Geometry, NC State University.

1/10: CompTop Seminar, Stanford University.

1/10: AMS-SIAM Special Session on Applications of Algebraic Geometry, Joint Meetings, San Francisco, CA.

Introduction to JPLex Software

1/11: AMS Short Course on Computational Topology, Joint Meetings, New Orleans, LA.

8/09: CSRI Workshop on Combinatorial Algebraic Topology, Sandia National Laboratories.

6/09: IMA Short Course on Applied Algebraic Topology, University of Minnesota.

Topology Applied to Data Analysis. 7/11: SUMaC Guest Lecture Series, Stanford University.

Coverage Problems in Sensor Networks. 5/10: SUMO Speaker Series, Stanford University.

Topological Data Analysis: Understanding Optical Flow.

6/09: IMA Short Course on Applied Algebraic Topology, University of Minnesota.

TEACHING

Stanford University

Instructor, Stanford Summer Engineering Academy Math 41 and 51, Summer 2012.

The goal of the Stanford Summer Engineering Academy is to attract a diverse group of incoming freshman to engineering majors. I taught a course on calculus and a course on linear algebra.

Course Assistant, Math 147, Differential Topology, Spring 2012.

Course Assistant, Math 151, Introduction to Probability Theory, Winter 2012.

Teaching Assistant, Math 51, Linear Algebra and Calculus of Several Variables, Spring 2011.

Teaching Assistant, Math 51, Linear Algebra and Calculus of Several Variables, Winter 2011.

Course Assistant, Math 171, Fundamental Concepts of Analysis, Spring 2010.

Course Assistant, Math 171, Fundamental Concepts of Analysis, Fall 2009.

California Institute of Technology

Teaching Assistant, Math 2b, Probability and Statistics, Winter 2009.

Head Teaching Assistant, Math 2a, Differential Equations, Fall 2008.

Teaching Assistant, Math 1c, Calculus of One and Several Variables and Linear Algebra, Spring 2008.

Teaching Assistant, Math 1b, Linear Algebra, Winter 2008.

Teaching Assistant, Math 1a, Calculus of One and Several Variables, Fall 2007.

Additional Teaching

Teaching Assistant and Counselor for the Stanford University Mathematics Camp, Summer 2007.

Teaching Assistant and Head Counselor for the EPGY Summer Institutes High School Program on Mathematical Logic, Summer 2007.

SERVICE

Author of a tutorial for JPlex software, and co-author of a tutorial for javaPlex software.

Organizer of Stanford's Computational Topology Reading Group (Winter 2011 - present).

Reviewer for *IEEE Transactions on Image Processing* and *Symposium on Computational Geometry*.

Teaching Assistant Mentor for the Stanford Mathematics Department (Fall 2011 - present).

Consultant for Stanford's Center for Teaching and Learning. I observed graduate student teachers, served on Q&A panels, and ran mid-quarter student evaluations (Fall 2011 - Spring 2012).

AWARDS AND FELLOWSHIPS

Ric Weiland Graduate Fellowship, Stanford University, 2012-2013.

Stanford Centennial Teaching Assistant Award, 2011.

Undergraduate Research Award, Stanford Mathematics Department, 2007.