CURRICULUM VITAE

AMIT PATEL

School of Mathematics
Institute for Advanced Study
Princeton, NJ 08540

Born: May 24, 1979 in Chicago, IL
Home Address: 14 Earle Lane
Princeton, NJ 08540

Education

Doctor of Philosophy — May 2010
Computer Science, Duke University
Advisor: Herbert Edelsbrunner

Master of Science — May 2003
Computer Science, University of Illinois at Urbana-Champaign
Advisor: Jeff Erickson

Bachelor of Science — May 2001
Computer Science, University of Illinois at Urbana-Champaign

Work History

Member — September 2014 - current
School of Mathematics
Institute for Advanced Study
Under supervision of Robert MacPherson

Postdoctoral Fellow — September 2013 - August 2014
Institute for Mathematics and its Applications
University of Minnesota
Theme: Scientific and Engineering Applications of Algebraic Topology

Postdoc and Coadjunct — September 2011 - June 2013
Rutgers University
Department of Mathematics
Under supervision of Konstantin Mischaikow

Postdoctoral Researcher — September 2010 - August 2011
GEOMETRICA
INRIA-Saclay
Under supervision of Frédéric Chazal

Postdoctoral Researcher — May 2010 - August 2010
Institute of Science and Technology Austria
Under supervision of Herbert Edelsbrunner

Visiting Grad Student — August 2009 - January 2010
Institute of Science and Technology Austria
Under supervision of Herbert Edelsbrunner

Date: November 2014.

Visiting Grad Student — August 2007 - July 2008
Berlin Mathematical School
Under supervision of Herbert Edelsbrunner

Intern — May 2006 - August 2006
Lawrence Livermore National Laboratories
Under supervision of Valerio Pascucci

Software Engineer — May 2000 - December 2001
Texas Instruments

Software Engineer — June 1999 - May 2000
U.S. Army Corps of Engineers

Publications

1. Robert MacPherson, Amit Patel. *Persistent Sheaves*. In preparation.

2. Vin de Silva, Elizabeth Munch, Amit Patel. *Categorified Reeb Graphs*. arXiv:1501.04147.

3. Paul Bendich, Herbert Edelsbrunner, Dmitriy Morozov, Amit Patel. *Homology and Robustness of Level and Interlevel Sets*. In the journal Homology Homotopy Appl., Volume 15, Number 1, 2013, Pages 51 - 72.

4. Frédéric Chazal, Amit Patel, Primoz Skraba. *Computing well diagrams for vector fields on* $\mathbb{R}^n$. In the journal Applied Mathematics Letters, Volume 25, Issue 11, November 2012, Pages 1725 - 1728.

5. Herbert Edelsbrunner, Dmitriy Morozov, Amit Patel. *Quantifying Transversality by Measuring the Robustness of Intersections*. In the journal Foundations of Computational Mathematics, Volume 11, Issue 3, June 2011.

6. Herbert Edelsbrunner, Dmitriy Morozov, Amit Patel. *The Stability of the Apparent Contour of an Orientable 2-Manifold*. In Topological Methods in Data Analysis and Visualization: Theory, Algorithms, and Applications, eds. V. Pascucci, X. Tricoche, H. Hagen, and J. Tierny. Springer-Verlag, Heidelberg, Germany, 2011.

7. Amit Patel. *Reeb Spaces and the Robustness of Preimages*, PhD thesis, Duke University, May 2010.

8. Paul Bendich, Herbert Edelsbrunner, Micheal Kerber, Amit Patel. *Persistent Homology Under Non-Uniform Error*. In Proceedings of the 35th International Symposium on Mathematical Foundations of Computer Science, 2010, pp. 12-23.

9. Paul Bendich, Herbert Edelsbrunner, Dmitriy Morozov, Amit Patel. *Robustness of Level Sets*. In Proceedings of the 18th Annual European Symposium on Algorithms, 2010, 1-10.

10. Herbert Edelsbrunner, John Harer, Amit Patel. *Reeb Spaces of Piecewise Linear Mappings*. In Proceedings of the 24th Annual Symposium on Computational Geometry, 2008, 242-250.

Invited Talks

TBA — June 15 - 20, 2015
Dynamics, Topology, and Computations
Bedlewo, Poland

Persistent Objects — December 15 - 17, 2014
Foundations of Computational Mathematics Conference
Universidad de la República in Montevideo

TBA — December 4, 2014
Topology Seminar
Princeton University

Persistence for Maps to Manifolds — September 15 - 19, 2014
Workshop: Generalized Persistence and Applications
American Institute of Mathematics

The Quillen 2-Construction for Persistence — May 26 - 30, 2014
Algebraic Topology - Methods, Computation and Science 6
Pacific Institute for the Mathematical Sciences

Persistent Sheaves for Stratified Maps — April 14, 2014
Topology Seminar
University of Minnesota

Computing Well Diagrams for the Fixed Points of a Vector Field — April 3, 2014
Geometry and Topology Seminar
Tulane University

Persistent Sheaves — February 28, 2014
Topology, Geometry and Data Seminar
Ohio State University

Connecting Persistent Homology Groups — October 7 - 11, 2013
Workshop on Topological Data Analysis
Institute for Mathematics and its Applications

Multidimensional Persistence and Sheaves (series of lectures) — April - May, 2013
MacPherson Seminar
Institute for Advanced Study

Measuring the Stability of Intersections to C^0 Perturbations — August 1 - 4, 2013
Applied and Computational Topology
2013 SIAM Conference on Applied Algebraic Geometry

The Étalage of a Map — October 14 - 19, 2012
Topological Data Analysis and Machine Learning Theory
Bannf International Research Station

Sheaves and Persistence — July 9 - 11, 2012
Applied Algebraic Topology – The Next Generation
SIAM Financial Mathematics and Engineering

Well Groups June 17 - 20, 2012
Workshop on Computational Topology
Symposium of Computational Geometry

Well Groups for Mappings to Euclidean Spaces November 7 - 11, 2011
Workshop on Computational Topology
Fields Institute

Algebraic Well Groups October 6 - 9, 2011
SIAM Conference on Applied Algebraic Geometry

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Teaching History

Instructor September 2012 - December 2012
Calc II for Engineers
Rutgers University

Instructor January 2012 - May 2012
Calc II for Bio Sciences
Rutgers University

Instructor September 2011 - December 2011
Calc I for Bio Sciences
Rutgers University

Teaching Assistant August 2006 - December 2006
Computational Topology
Duke University

Teaching Assistant August 2005 - December 2005
Computational Geometry
Duke University

Teaching Assistant January 2005 - May 2005
Discrete Math
Duke University

Teaching Assistant January 2003 - May 2003
Intro. Theory of Computation
University of Illinois at Urbana-Champaign

Teaching Assistant August 2002 - December 2002
Discrete Math
University of Illinois at Urbana-Champaign

Teaching Assistant January 2002 - May 2002
Discrete Math
University of Illinois at Urbana-Champaign

Awards

IMA Postdoctoral Fellowship — September 2013 - August 2015

References

Vin de Silva — Associate Professor
vin.desilva@pomona.edu — Pomona College

Herbert Edelsbrunner — Professor
edels@ist.ac.at — Institute of Science and Technology Austria

Robert MacPherson — Professor
rdm@ias.edu — Institute for Advanced Study

Konstantin Mischaikow — Professor
mischaik@math.rutgers.edu — Rutgers University

Referee

Journals

- Association for Computing Machinery
- Discrete and Computational Geometry
- Foundations of Computational Mathematics
- International Journal of Computational Geometry
- Topological Methods in Nonlinear Analysis

Conference Proceedings

- Symposium on Computational Geometry
- Symposium on Discrete Algorithms

Professional Memberships

American Mathematical Society
Association for Women in Mathematics