

CURRICULUM VITAE: OMER BOBROWSKI

PERSONAL INFORMATION

Born 20.04.1981, Ra'anana, Israel
Address 4225 Larchmont Rd., Durham, NC 27707, USA
Phone (1-919)-937-4523
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EDUCATION

2008-2012 Ph.D. in Electrical Engineering
 Technion – Israel Institute of Technology
 Thesis title: “*Algebraic Topology of Random Fields and Complexes*”
 Research advisor: Prof. Robert J. Adler

2009 Non Degree Visiting Student, Department of Mathematics, University of Chicago

2004-2008 M.Sc. in Electrical Engineering, *Summa cum Laude*
 Technion – Israel Institute of Technology
 Thesis title: “*Real time spike train decoding by neural networks*”
 Research advisors: Prof. Ron Meir and Prof. Yonina Eldar

2001-2004 B.A. in Mathematics and Computer Science, *Summa cum Laude*
 The Open University, Israel

ACADEMIC POSITION

2012-Present Assistant Research Professor, Department of Mathematics, Duke University

TEACHING EXPERIENCE

2012-Present Assistant Research Professor, Department of Mathematics, Duke University
 Undergraduate courses: Multivariate Calculus

2005-2012 Teaching Assistant, Department of Electrical Engineering, Technion
 Undergraduate courses: Random Signals, Intro. to Digital Signal Processing
 Graduate Courses: Fundamentals of Stochastic Processes, Topological Methods in
 Electrical Engineering and Networks

2004-2012 Teaching Assistant, Department of Mathematics, Technion
 Undergraduate courses: Complex Functions, Fourier Series and Integral Transforms,
 Introduction to Probability

PROFESSIONAL EXPERIENCE

- 2004** Israeli Defense Forces (IDF) – External consultant for software development
- 2000-2004** Military Service, Intelligence Corps – R&D in the field of software engineering and algorithms. Experience in analysis, development and implementation of complex software systems for a variety of platforms and needs

SCHOLARSHIPS AND AWARDS

- 2012** Muriel and David Jacknow Award for Excellence in Teaching, Technion
- 2010, 2011** Sandor Szego Awards for Excellence in Teaching, Technion
- 2010-2012** Adams Fellowship for Outstanding Doctoral Students
The Israel Academy of Sciences and Humanities
- 2009** Stanford Graduate Fellowship, Stanford University (declined)
- 2009** Henry M. MacCracken Fellowship, Courant Institute, NYU (declined)
- 2008, 2011, 2012** Vivian Konigsberg Award for Excellence in Teaching, Technion
- 2007** Miriam and Aaron Gutwirth Memorial Fellowship, Technion
- 2001, 2002, 2004** President's List (Magna cum Laude), The Open University
- 2003** Dean's List (cum Laude), The Open University

PUBLICATIONS

The Topology of Probability Distributions on Manifolds

O. Bobrowski and S. Mukherjee
Submitted. arXiv: 1307.1123, 2013

Crackle: The Persistent Homology of Noise

R.J. Adler, O. Bobrowski and S. Weinberger
Submitted. arXiv: 1301:1466, 2013

Distance Functions, Critical Points and Topology for Some Random Complexes

O. Bobrowski and R. J. Adler
Submitted. arXiv: 1107:4475, 2011

Euler Integration of Gaussian Random Fields and Persistent Homology

O. Bobrowski and M.S. Borman
Journal of Topology and Analysis, 4(1), 2012

Persistent Homology for Random Fields and Complexes

R.J. Adler, O. Bobrowski, M.S. Borman, E. Subag and S. Weinberger
Borrowing Strength: Theory Powering Applications, A festschrift for Lawrence D. Brown. IMS Collections
Vol. 6, 2010

Bayesian Filtering in Spiking Neural Networks: Noise, Adaptation and Multisensory Integration

O. Bobrowski, R. Meir and Y.C. Eldar
Neural Computation 21(5), 2009

A Neural Network Implementing Optimal State Estimation Based on Dynamic Spike Train Decoding

O. Bobrowski, R. Meir, S. Shoham and Y.C. Eldar.
Neural Information Processing Systems (NIPS), 2007

CONFERENCES AND TALKS

The Topology of Probability Distributions on Manifolds

Annual Meeting of the Canadian Applied and Industrial Mathematics Society (CAIMS), Quebec City, Canada, 2013

The Topology of Noise

The Israel Statistical Association Annual Conference, Netanya, Israel, 2013

The Topology of Noise

Operation Research & Statistics Seminar, Technion, Isarel, 2013

The Topology of Noise

Duke Data RTG Seminar, Duke University, Durham, NC, 2013

Algebraic Topology of Random Geometric Complexes

Duke Algorithm Seminar, Duke University, Durham, NC, 2012

How Noise Crackles

AMS Special Session on Applied Topology, University of Akron, Akron, OH, 2012

Algebraic Topology of Random Fields and Complexes

Seminar in Probability and Stochastic Processes, Technion, Israel, 2012

The Distance Function and the Topology of Random Complexes

Duke Probability Seminar, Duke University, Durham, NC, 2012

The Distance Function and the Topology of Random Complexes

Horowitz Seminar on Probability, Ergodic Theory and Dynamical Systems, Tel Aviv University, Israel, 2012

Distance Functions, Critical Points, and Topology for some Random Complexes

Workshop on Computational Topology, Fields Institute, Toronto, Canada, 2011

The Distance Function and the Topology of Random Geometric Complexes

Students Probability Seminar, Technion, Israel, 2011

The Distance Function and the Topology of Random Complexes

Microsoft Graduate Students Forum, Hertzelya, Israel, 2010

Gaussian Random Fields and Persistent Homology

Seminar in Probability and Stochastic Processes, Technion, Israel, 2010

Euler Integration of Gaussian Random Fields and Persistent Homology

Algebra and Topology: Methods, Computation and Science, Munster, Germany, 2010

Euler Integration of Gaussian Random Fields and Persistent Homology

Workshop in Algebraic and Random Topology, Chicago, IL, 2010

A Neural Network Implementing Optimal State Estimation Based on Dynamic Spike Train Decoding

Neural Information Processing Systems (NIPS), Vancouver, Canada, 2007