

Veniamin I. Morgenshtern

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Research Background

Deep learning and robust statistics. Created a state-of-the-art lane detector for self-driving cars.

Mathematical signal processing, specializing in mathematics of imaging, inverse problems, mathematics of sparsity. Developed a theory of stable super-resolution of sparse sources via convex optimization, designed new algorithms for super-resolved fluorescence microscopy, proposed a new concept of super-resolution radar.

Information theory, specializing in wireless communication. Proposed a novel architecture for interference management in wireless communication networks, performed information-theoretic analysis of linear time-varying channel with implications for pulse design, studied reliable communication in the absence of channel-state information.

Education

- Postdoc, Applied Mathematics and Statistics, Stanford University, U.S.A. May 2012–May 2016
Advisor: Prof. Emmanuel Candès
- Ph.D., Electrical Engineering, ETH Zurich, Switzerland Jul. 2010
Advisor: Prof. Helmut Bölcskei
Thesis: *Crystallization and noncoherence in wireless communication*
Co-examiners: Prof. İ. Emre Telatar and Prof. Amos Lapidot
- Diploma in Mathematics (**with honors**), Saint-Petersburg State University, Russia Jun. 2004
Advisors: Prof. Andrey Terekhov and Prof. Helmut Bölcskei
Diploma Thesis: *Capacity scaling in large wireless networks*
- High school graduation, Anichkov Liceum, Saint-Petersburg, Russia Jun. 1999
Advanced program in Physics and Mathematics

Research Experience

- Professor, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany. Apr. 2018–present
- Researcher, Helm.ai, U.S.A. Feb. 2017–Dec. 2017
- Postdoctoral researcher, Stanford University, U.S.A. May 2012–May 2016
Dept. of Statistics with Prof. Emmanuel Candès
- Postdoctoral researcher, ETH Zurich, Switzerland Jul. 2010–Apr. 2012
Dept. of Information Technology and Electrical Engineering with Prof. Helmut Bölcskei
- Visiting researcher, University of Illinois at Urbana-Champaign, U.S.A. Aug. 2007–Nov. 2007
Coordinated Science Laboratory with Prof. P. R. Kumar
- Researcher, ETH Zurich, Switzerland Sep. 2004–Jun. 2010
Dept. of Information Technology and Electrical Engineering with Prof. Helmut Bölcskei
- Visiting researcher, ETH Zurich, Switzerland Jan. 2004–Jun. 2004
Dept. of Information Technology and Electrical Engineering with Prof. Helmut Bölcskei

Awards

Second Prize in “Thomson Reuters Eikon Text Tagging Challenge”, a machine-learning competition (\$10,000)	2015
Fellowship for Advanced Researchers from the Swiss National Science Foundation (approx. \$130,000)	2012
ETH Zurich Medal for doctoral thesis (CHF 1,500)	2011
ETH Zurich Fellowship for talented students from Eastern Europe (approx. CHF 15,000)	2004
First Prize in Algebra at the Bernstein International Scientific Conference	1998 & 1999
First Prize in Physics at the Saint-Petersburg Regional Olympiad	1997

Teaching and Mentoring Experience

Co-instructor, ETH Zurich (taught one-half of the course)	
Harmonic Analysis: Theory and Applications in Advanced Signal Processing Graduate course, Spring semester, taught in English, 30 students	2009 & 2011
Fundamentals of Wireless Communication Graduate course, Spring semester, taught in English, 30 students	2006 & 2007
Teaching Assistant, ETH Zurich	
Coding for Wireless Channels Graduate course, Spring semester, taught in English, 20 students	2008
Co-supervisor and mentor of Ph.D. students, Stanford & ETH Zurich	
D. A. Barmherzig, <i>Phase retrieval: algorithms and applications</i>	2014–2015
R. Heckel, <i>Super-resolution radar</i>	2011–2014
Supervisor and mentor of graduate and undergraduate students, ETH Zurich	
S. Christen, <i>Analysis of mass-spectrometry data</i>	2011
O. With, <i>Channel estimation and compensation for wireless relaying</i>	2011
E. Pargaetzi, <i>Implementation of hardware for synchronization in the relaying testbed</i>	2010

Industry Employment

Chief Scientist, Mentality.ai, U.S.A.	2017–2018
Researcher, Helm.ai, U.S.A.	2017–2018
Team Leader, Technical Writer’s team, Relativity Technologies Corp., U.S.A. & Russia	2002–2003
Software Developer, real-time control software for rockets, “Karat” design office, Russia	2001–2002

Languages

Russian (native), English (fluent), German (good knowledge).