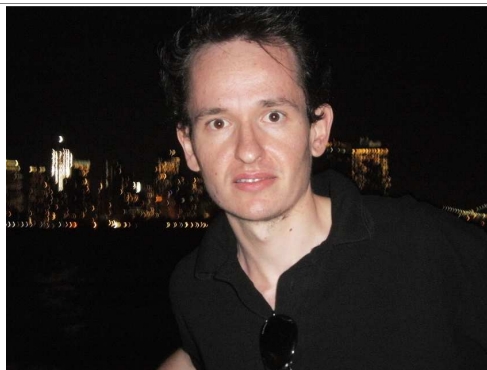


# C u r r i c u l u m V i t a e

# Krzysztof Choromanski

## PERSONAL AND CONTACT INFORMATION

Date of birth: 01.25.1985  
Place of birth: Warsaw, Poland  
Address: Google Research New York  
76 Ninth Avenue  
New York, NY 10011  
Emails: choromanski1@gmail.com  
kchoro@google.com  
kmc2178@columbia.edu  
Status: Permanent Resident of the USA  
Personal website: [www.kchoromanski.com](http://www.kchoromanski.com)



## EDUCATION

- 2013 Ph.D in Operations Research, Department of Industrial Engineering and Operations Research, School of Engineering and Applied Science, Columbia University (GPA: 4.0);  
Ph.D thesis title: "Tournaments With Forbidden Substructures and the Erdos-Hajnal Conjecture"
- 2009 –2013 Doctoral studies in Operations Research at the Department of Industrial Engineering and Operations Research at Columbia University (advisor: Prof. Maria Chudnovsky)
- 2009 Master degree with honors in Computer Science, Department of Mathematics, Computer Science and Mechanics of the University of Warsaw; Master degree thesis title: "Urban Transport Control System - innovative system of managing with city traffic"
- 2008-2009 Master degree studies in Computer Science, Department of Mathematics, Computer Science and Mechanics of the University of Warsaw (advisor: Prof. Krzysztof Diks)
- 2009 Master degree with honors in Mathematics, Department of Mathematics, Computer Science and Mechanics of the University of Warsaw; Master degree thesis title: "Analysis of the random graph evolution with complex vertex structure on the example of Complex Preferential Attachment Scheme Model"
- 2007-2009 Master degree studies in Mathematics, Department of Mathematics, Computer Science and Mechanics of the University of Warsaw (advisor: Prof. Jacek Miekisz)

- 2008 Bachelor of science thesis in Computer Science at the Department of Mathematics, Computer Science and Mechanics of the University of Warsaw: "Urban Transport Control System"
- 2007 Bachelor of science thesis in Mathematics at the Department of Mathematics, Computer Science and Mechanics of the University of Warsaw: "Contemporary models of the development of cancer blood-vascular system in the advanced stage with the emphasis placed on the fractal geometry and invasion percolation theory"
- 2004 - 2009 Double Degree Studies in Computer Science and Mathematics at the University of Warsaw
- 2004 Alumnus of Stefan Batory High School in Warsaw
- 2004 Alumnus of Mieczyslaw Karłowicz Music High School in Warsaw

## **PROFESSIONAL EXPERIENCE**

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- 07.2008 – 10.2008 Summer Internship at IBM, New York WebAhead Team – developing web technologies with emphasis on efficient visualization of large amount of data, exploring and explaining data with Java technologies such as Processing
- 05.2012 – 08.2012 Summer Internship at Google, Mountain View, research on distributed algorithms on large graphs, Pregel Team (focusing on distributed graph partitioning problem). Summer internship research patent disclosure accepted by Google
- 09.2013 – Google Research in NYC (Machine Learning Group)

## **SCHOLARSHIPS AND ACADEMIC HONORS**

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- 2007 The Ministry of Science Scholarship for Achievements In Science
- 2006 The Ministry of Science Scholarship for Achievements In Science
- 2004 - 2005 departmental Scholarship for Achievements in Science
- 2004 Prime Minister Scholarship for Achievements In Science
- 2003 Prime Minister Scholarship for Achievements In Science
- 2002 Prime Minister Scholarship for Achievements In Science

## **INVITED CONFERENCE PRESENTATIONS AND OTHER GIVEN TALKS**

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- 2011 Columbia University Discrete Mathematics Seminar
- 2011 15<sup>th</sup> International Conference on Random Structures and Algorithms (Atlanta, Emory University, May 24-28)
- 2011 Memphis-Budapest Summer, School in Combinatorics (an international study abroad program of the National Science Foundation) at Alfred Renyi Institute in Budapest, Hungary (August 7-20)
- 2011 Second Bertinoro Workshop on Algorithms and Graphs (Bertinoro, Forlì-Cesena, Italy, December 11-16)
- 2011 Charles University Discrete Mathematics Seminar (Prague, Czech Republic, December 20)
- 2012 Princeton University Discrete Mathematics Seminar (February 9)

- 2012 Erdos Memorial Lectures 2012 (University of Memphis, May 17-18)
- 2012 Principles of Database Systems Conference'12 (Scottsdale, Arizona, May 20-24)
- 2012 Google Tech Talk (Mountain View); title: "New classes of tournaments satisfying the Erdos-Hajnal Conjecture" (August 1)
- 2012 Rutgers Discrete Mathematics Seminar (October 2)
- 2012 Yale University Discrete Mathematics Seminar (December 7)
- 2012 Charles University, Prague, Czech Republic (December 11)
- 2013 McGill University, Montreal, Canada (January 21)
- 2013 Charles University, Prague, Czech Republic (Prague Midsummer Combinatorial Workshop XIX, July 29 - August 2)
- 2013 National University of Singapore, Singapore, Algorithmic Learning Theory Conference (October 6 -9)
- 2013 Google Research Machine Learning Seminar (October 17)
- 2013 Tech Talk at Google Research NYC (December 12)
- 2013 Neural Information Processing Systems Conference, Lake Tahoe, Nevada, USA (December 5 - 8)
- 2014 Google Research Algorithms Seminar (January 21)
- 2014 Talk at the Department of Industrial Engineering and Operations Research at Columbia University (February 11)
- 2014 Talk at the ICERM Semidefinite Programming and Graph Algorithms Workshop (Brown University) (February 14)
- 2014 Talk at the Computer Science Department of the UMass Amherst University (February 20)
- 2014 Talk at the City University of New York Graduate Center CS Colloquium (March 27)
- 2014 Talk at the Machine Learning Seminar in New York University (November 4)
- 2014 Talk at the CS Colloquium of New York University (November 21)
- 2014 Talk at Charles University in Prague (December 15)
- 2015 Talk at the Department of Mathematics at Princeton University (March 12)
- 2015 Talk at the Department of Computer Science and Engineering at NYU Polytechnic School of Engineering (March 23)
- 2015 Talk at the City University of New York (March 31)
- 2015 Talk at the IEOR Department at Columbia University (April 10)
- 2015 Talk at Technion - Israel Institute of Technology during "Graph Coloring and Chi -boundedness with Algebra, Topology and Probability Conference" (July 12 - July 16)
- 2015 Talk during 17<sup>th</sup> International Conference on Random Structures and Algorithms (Pittsburgh, PA, July 27-31)
- 2015 Talk during 24th ACM International Conference on Information and Knowledge Management (to be given: CIKM 2015, Melbourne, October 19-23)
- 2015 Talk at Lamsade Laboratory of the Universite Paris Dauphine (Paris, November 26)

## SERVICE AS A REFEREE

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- Journal of Combinatorial Theory Series B
- Journal of Discrete Mathematics
- Israel Journal of Mathematics
- SIAM Journal of Discrete Mathematics (SIDMA)
- Discrete Applied Mathematics
- IEEE Symposium on Foundations of Computer Science (FOCS)
- ACM-SIAM Symposium on Discrete Algorithms (SODA)
- Neural Information Processing Systems Foundation Conference (NIPS)
- Algorithmic Learning Theory Conference (ALT)
- Google's Faculty Research Awards program supporting over \$12 million in academic research projects each year
- member of a program committee of the NIPS'15 workshop:  
*"Learning and privacy with incomplete data and weak supervision"*

## PAPERS

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- E. Berger, K. Choromanski, M. Chudnovsky, J. Fox, M. Loebl, A. Scott, P. Seymour and S. Thomasse.: "Tournaments and coloring", J. Comb. Theory, Ser. B
- K. Choromanski: "Upper bounds for Erdos-Hajnal coefficients of tournaments", Journal of Graph Theory
- K. Choromanski, T. Malkin: "The power of the Dinur-Nissim algorithm: breaking privacy of statistical and graph databases", PODS'12
- K. Choromanski, T. Jebara, K. Tang: "Adaptive anonymity via b-matching", NIPS 2013
- K. Choromanski, M. Matuszak, J. Miekisz: "Scale-free graph with preferential attachment and evolving internal vertex structure", Journal of Statistical Physics
- A. Choromska, K. Choromanski, G. Jagannathan, C. Monteleoni: "Differentially-Private Learning of Low Dimensional Manifolds", 24th International Conference on Algorithmic Learning Theory ALT 2013
- K. Choromanski, M. Chudnovsky, P. Seymour: "Tournaments with near-linear transitive subsets", J. Comb. Theory, Ser. B
- E. Berger, K. Choromanski, M. Chudnovsky: "Forcing large transitive subtournaments", J. Comb. Theory, Ser. B
- K. Choromanski: "EH-suprema of tournaments with no nontrivial homogeneous sets", J. Comb. Theory, Ser. B
- A. Choromska, K. Choromanski, G. Jagannathan, C. Monteleoni: "Differentially-Private Learning of Low Dimensional Manifolds", Theoretical Computer Science (TCS)
- K. Choromanski, A. Rostamizadeh, U. Syed: "An optimal online algorithm for retrieving heavily perturbed statistical databases in the low-dimensional querying model", 24th ACM International Conference on Information and Knowledge Management (CIKM 2015)
- R. Guo, S. Kumar, K. Choromanski, D. Simcha: "Quantization based Fast Inner Product Search", AISTATS 2016
- K. Choromanski, T. Jebara: "Coloring tournaments with forbidden substructures", submitted for publication, 2014, arXiv:1504.01119
- M. Bojarski, A. Choromska, K. Choromanski, Y. LeCun: "Differentially- and non-differentially-private random decision trees", submitted for publication, 2015, arXiv:1410.6973
- K. Choromanski: "The strong EH-property and the Erdos-Hajnal Conjecture",

- submitted for publication, 2013, arXiv:1410.7049
- K. Choromanski: "All known prime Erdos-Hajnal tournaments satisfy  $\epsilon(H) = \Omega(1/|H|^5 \log(|H|))$ ", submitted for publication, 2014, arXiv:1410.7046
- K. Choromanski: "Excluding pairs of tournaments", submitted for publication, 2014, arXiv:1410.7044
- K. Choromanski, D. Falik, A. Liebenau, V. Patel, M. Pilipczuk: "Excluding hooks and their complements", submitted for publication, 2015, arXiv:1508.00634
- E. Berger, K. Choromanski, M. Chudnovsky, "On the Erdos-Hajnal conjecture for six-vertex tournaments", submitted for publication, 2015, arXiv:1508.04992
- K. Choromanski: " $P_k$ -freeness implies small dichromatic number", submitted for publication, 2015, arXiv:1506.08480
- K. Choromanski: "Learning how to rank from heavily perturbed statistics - digraph clustering approach", arXiv:1504.01118
- F. Yu, K. Choromanski, S. Kumar, S. Chang: "On Learning from Label Proportions", arXiv:1402.5902

## ACHIEVEMENTS

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- 2014-2015 Three patent applications regarding new online clustering algorithms and neural networks accepted by Google and submitted to The United States Patent and Trademark Office
- 2012 Summer internship research patent disclosure accepted by Google
- 2012 SIGMOD 2012 Student Travel Award
- 2009 Second Prize in the Contest For The Best Student Paper From The Theory Of Probability And Applications of Mathematics organized by Polish Mathematical Society (paper title: „Analysis of the random graph evolution with complex vertex structure on the example of Complex Preferential Attachment Scheme Model“)
- 2008 One of the inventors of the intelligent gps-based car navigation system (Urban Transport Control System) awarded in the Imagine Cup Competition in the category of Software Design 2008
- 2004 Finalist of the Polish Finals of the Competition for Young Scientists of the European Union
- 2004 Bronze medalist of the 35<sup>th</sup> International Physics Olympiad in Pohang, South Korea
- 2004 Laureate of Polish Physics Olympiad – gold medal
- 2004 Winner of Physics Competition organized by Warsaw University of Technology
- 2004 Laureate of Polish Mathematical Olympiad – silver medal
- 2003 Member of the winning team of the Austrian-Polish Mathematical Competition in Graz, Austria
- 2003 Laureate of Polish Mathematical Olympiad – bronze medal
- 2003 Laureate of Physics Competition organized by the Warsaw University of Technology – bronze medal
- 2003 Finalist of Polish Physics Olympiad
- 2002 Finalist of Polish Mathematical Olympiad

## TEACHING EXPERIENCE

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Columbia University:

Department of Industrial Engineering and Operations Research:

- Spring 2015: adjunct assistant professor (teaching a course on data mining)
- Fall 2015: adjunct assistant professor (teaching advanced IEOR course: "Big Data and Machine Learning, a modern approach")
- Fall 2011: "Graph Theory: Combinatorial View"
- Spring 2010: "Introduction to Deterministic Models"
- Fall 2009: "Introduction to Deterministic Models"
- Spring 2009: "Graph Theory: Combinatorial View"
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Department of Computer Science:

- Fall 2010: "Introduction to Cryptography"

## LANGUAGES

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- English: fluently
- Polish: native speaker
- French: basic

## PROGRAMMING SKILLS

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C, C++, C#, Java, JavaScript, Processing, Smalltalk, Microsoft Visual Studio, .NET Framework, .NET Compact Framework, SQL, SQL Server, Mysql, programming mobile devices, functional programming (Ocaml, Scheme), Linux kernel programming, PHP, Prolog

## INTERESTS

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structural and random graph theory, algorithmics, machine learning, spectral graph theory, combinatorics, number theory and cryptography, percolation theory, dynamical systems and fractals, quantum mechanics, playing piano (Chopin but not only), salsa