

Christos Boutsidis

Affiliation	IBM T.J. Watson Research Center Mathematical Sciences Department Research Staff Member	Aug 2011 - present
Education	Rensselaer Polytechnic Institute Ph.D. in Computer Science Thesis: Topics in Matrix Sampling Algorithms Ph.D. Advisor: Petros Drineas	Aug 2006 - May 2011
	University of Patras BS in Computer Engineering Thesis: Algorithms for Nonnegative Matrix Factorizations Thesis Advisor: Efstratios Gallopoulos	Oct 2001 - July 2006
Research focus	Matrix algorithms, machine learning, optimization, data analytics, business analytics.	
Experiences	Quantitative Analyst WorldQuant, LLC Investment management firm, Old Greenwich, CT	June 2010 - Aug 2010
	Research Intern Mathematical and Computational Sciences Department IBM Zurich Research Laboratory	May 2009 - Oct 2009
	Research Fellow Institute for Pure and Applied Mathematics (IPAM) University of California, Los Angeles (UCLA)	Sep 2008 - Dec 2008
	Research Intern Service Engineering Department IBM Watson Research Lab	May 2008 - Aug 2008
Publications (journals)	<ol style="list-style-type: none">1. <i>Atomic-Level Characterization of the Ensemble of the $A\beta(1-42)$ Monomer in Water Using Unbiased Molecular Dynamics Simulations and Spectral Algorithms.</i> N. Sgourakis, M. Serrano, C. Boutsidis, P. Drineas, Z. Du, C. Wang, and A. Garcia. <i>Journal of Molecular Biology</i>, 405(2):570-83, 2011.2. <i>Random Projections for the Nonnegative Least Squares Problem.</i> C. Boutsidis and P. Drineas. <i>Linear Algebra and its Applications</i>, Volume 431, Issues 5-7, 1 August 2009, pages 760-771.3. <i>SVD-based initialization: A head start on nonnegative matrix factorization.</i> C. Boutsidis and E. Gallopoulos. <i>Pattern Recognition</i>, Volume 41, Issue 4, April 2008, pages 1350-1362.	
Publications (conferences)	<ol style="list-style-type: none">1. <i>Near-Optimal Column-Based Matrix Reconstruction.</i> C. Boutsidis, P. Drineas, and M. Magdon-Ismail. In <i>Proceedings of the 52nd Annual IEEE Symposium on Foundations of Computer Science (FOCS)</i>, Palm Springs, California, October 22-25, 2011.2. <i>Sparse Features for PCA-like Linear Regression.</i> C. Boutsidis, P. Drineas, and M. Magdon-Ismail. In <i>Proceedings of the 25th Annual Conference on Neural Information Processing Systems (NIPS)</i>, Granada, Spain, December 12-15, 2011.3. <i>Random Projections for k-means Clustering.</i> C. Boutsidis, A. Zouzias, and P. Drineas. In <i>Proceedings of the 24th Annual Conference on Neural Information Processing Systems (NIPS)</i>, Vancouver, B.C., Canada, December 6-9, 2010.	

4. *Unsupervised Feature Selection for the k-means Clustering Problem*. C. Boutsidis, M.W. Mahoney, and P. Drineas. In Proceedings of the *23rd Annual Conference on Neural Information Processing Systems (NIPS)*, Vancouver, B.C., Canada, Dec 7-10, 2009.
5. *An Improved Approximation Algorithm for the Column Subset Selection Problem*. C. Boutsidis, M.W. Mahoney, and P. Drineas. In Proceedings of the *20th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, New York, NY, USA, January 4-6, 2009.
6. *Clustered Subset Selection and its Applications on IT Service Metrics*. C. Boutsidis, J. Sun, and N. Anerousis. In Proceedings of the *ACM Conference on Information and Knowledge Management (CIKM)*, Napa Valley, California, USA, October 26-30, 2008.
7. *Unsupervised Feature Selection for Principal Components Analysis*. C. Boutsidis, M.W. Mahoney, and P. Drineas. ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Las Vegas, Nevada, USA, August 24-27, 2008.

Invited talks

1. *Data Analytics Solutions through Stochastic, Sampling-based Matrix Algorithms*, IBM T.J. Watson Research Lab, Yorktown, NY, USA, Sept. 2010.
2. *Data Analytics Solutions through Stochastic, Sampling-based Matrix Algorithms*, IBM T.J. Watson Research Lab, Hawthorne, NY, USA, Sept. 2010.
3. *Randomized Matrix Algorithms and Applications to the Column Subset Selection Problem*, SIAM Conference on Parallel Processing and Scientific Computing, Seattle, WA, USA, Feb. 2010.
4. *Unsupervised Feature Selection for the K-means Clustering Problem*, GAMM Workshop Applied and Numerical Linear Algebra, ETH Zurich, Switzerland, Sept. 2009.
5. *Clustered Subset Selection and its Applications on IT Service Metrics*, Institute of Pure and Applied Mathematics (IPAM), UCLA, CA, USA, Nov. 2008.
6. *Effective Initializations for NMF Algorithms*, SIAM Conference on Optimization, Boston, MA, USA, May 2008.
7. *An Improved Approximation Algorithm for the Column Subset Selection Problem*, Theory Seminar, Computer Science Department, RPI, Troy, NY, USA, Feb. 2008.
8. *A Randomized Algorithm for Rank-revealing QR Factorizations*, 4th Montreal Scientific Computing Days, Centre de Recherches Mathematiques, Universite de Montreal, Montreal, Canada, April 2007.

Patents

1. *Method and Apparatus for Automatic Summary and Insight on Data Matrices and Cubes*, with J. Sun and N. Anerousis (filed with IBM, 2008).
2. *Method for Clustering Numerical Data with Extra Categorical Constraints*, with J. Sun and N. Anerousis (filed with IBM, 2008).
3. *Matrix Reordering and Visualization in the Presence of Data Hierarchies*, with M. Vlachos and A. Labbi (filed with IBM, 2010).

Awards

1. Robert McNaughton Prize, given annually to an outstanding graduate student in the Computer Science Department of Rensselaer Polytechnic Institute, 2011.
2. Travel Award (\$500), Conference on Neural Information Processing Systems (NIPS), 2010.
3. NSF Student Travel Award (\$500), ACM-SIAM Symposium on Discrete Algorithms (SODA), Austin, TX, January 17-20, 2010.
4. Gerondelis Foundation Grant (\$5000), given annually to limited outstanding graduate students of Greek nationality who study in a Institution in the USA, 2009.
5. IBM Student Travel Award (\$500), ACM-SIAM Symposium on Discrete Algorithms (SODA), New York, NY, January 4-6, 2009.
6. NSF Travel Award (\$500), 2nd Western Conference in Mathematical Finance, University of Texas at Austin, Austin, Texas, October 31 - November 2, 2008.
7. Travel Award (\$500), ACM Conference on Information and Knowledge Management (CIKM), Napa Valley, California, October 26-30, 2008.

8. Fellowship (\$6000), Institute for Pure and Applied Mathematics (IPAM), University of California Los Angeles (UCLA), to participate in the program “Internet Multi-Resolution Analysis: Foundations, Applications and Practice”, Sept 8 - Dec 12, 2008.
9. Travel Award (\$1500), Institute for Pure and Applied Mathematics (IPAM), University of California Los Angeles (UCLA), to attend “Mathematics of Knowledge and Search Engines, Workshops II: Numerical Tools and Fast Algorithms for Massive Data Mining, Search Engines and Applications”, October 22 - 26, 2007.
10. Travel Award, Institute for Pure and Applied Mathematics (IPAM), University of California Los Angeles (UCLA), to attend “Mathematics of Knowledge and Search Engines: Tutorials”, September 11 - 20, 2007.
11. Travel Award (\$1000). Institute for Pure and Applied Mathematics (IPAM), University of California Los Angeles (UCLA), to attend “Short Course on Sparse Representations and High Dimensional Geometry”, May 30 - June 1, 2007.
12. Research Fellowship. Computer Science Department, University of Toronto, Fall 2006 (declined).

Teaching Experience

Fall 2007: Teaching Assistant, Computability and Complexity (CSCI-6050/4050)
 Computer Science Department, Rensselaer Polytechnic Institute
 Instructor: Prof. Mark Goldberg
 Duties: Teaching (occasionally), proctoring exams, grading, holding office hours

Spring 2008: Teaching Assistant, Models of Computation (CSCI 2400)
 Computer Science Department, Rensselaer Polytechnic Institute
 Instructor: Prof. Petros Drineas
 Duties: Proctoring exams, grading, holding office hours

Society Membership

Computer Science Department, Rensselaer Polytechnic Institute
 - Colloquium Committee (2006-2007)
 - Graduate Admissions Committee (2008-2009)

SIAM, member since 2006
 - SIAM Activity Group on Linear Algebra, member since 2006
 - SIAM Activity Group on Optimization, member since 2008

ACM, member since 2008

Society Service

Program Committee Member: Low-rank Matrix Approximation for Large-scale Learning, NIPS 2010 Workshop, Whistler, Canada, December 11, 2010

Invited reviewer for the following journals: Journal of Machine Learning Research, IEEE Transactions on Neural Networks, IEEE Transactions on Knowledge and Data Engineering, IEEE Signal Processing Letters, ACM Transactions on Knowledge Discovery from Data, Machine Learning, Pattern Recognition, Journal of Computational and Applied Mathematics, Theory of Computing Systems, Computational Intelligence and Neuroscience, Neurocomputing, Pattern Analysis and Machine Intelligence.

Invited reviewer for the following conferences: SODA 2010, ECML-PKDD 2009, STOC 2009, SDM 2008, KDD 2006,2007,2009.

Biographical Information

Date of Birth: August 1983
Nationality: Greek

Citizenship: Greek
Current US Visa status: F-1

Last update on: December 1st, 2011.