Evgenia-Maria S. Kontopoulou

Contact Information

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Objective

Aiming for a **Research & Development** position on **managing Big Data**.

Research Interests

Randomized (Computational/Numerical) Linear Algebra, Scientific Computing, Big Data, Optimization, Data Mining, Information Retrieval, (Social) Network Analysis, Machine Learning, Databases, Data Analysis.

Education

Doctor of Philosophy (Ph.D.)
Computer Science, Purdue University **2016 - today**
Advisor: Petros Drineas

Bachelor of Engineering (BEng) & Master in Engineering (MEng)
Computer Engineering & Informatics, University of Patras **2006 - 2012**
Advisor: Efstratios Gallopoulos

Working Experience

Software Engineer Intern, MathWorks Inc.	**2018-today**
Research Assistant, Purdue University	**2016-today**
Research Assistant, Rensselaer Polytechnic Institute	**2016**
Teaching Assistant, Rensselaer Polytechnic Institute	**2015 - 2016**
Webpage Design, University of Patras	**2014 - 2015**
Teaching Assistant, University of Patras	**2013 - 2015**
Assistant for the Open Courses Project, University of Patras	**2013 - 2015**
External Partner, Greek Research & Technology Network (GRNET)	**2013 - 2014**

Research Projects

TeraPCA **C/C++, OpenMP, MPI**

A library that computes the top Principal Components (PCs) of tera-scale matrices using Randomized Singular Value Decomposition (RandSVD). Our implementation is based on multithreaded libraries such as LAPACKE, BLAS and MKL, and it can handle datasets which might exceed the amount of available system memory by performing out-of-core computations.

Large Scale Genetic Data Simulator **C/C++, OpenMP**

A software that enables fast generation of simulated large scale genetic data using sophisticated random distributions to simulate the genetic patterns.

Text-to-Matrix Generator Version 7.8 **MATLAB**

Version 7.8 introduces a new set of operations. More specifically we implemented deterministic and partially randomized algorithms for skeleton matrix decomposition. The skeleton matrix decomposition methods (e.g. CUR, CX, RRQR e.t.c.) utilize scaled parts of the initial matrix to derive highly accurate and interpretable approximations of the term-by-document matrix.

Text-to-Matrix Generator Version 6.7 **MATLAB, Perl**
http://scgroup20.ceid.upatras.gr:8000/tmg/

The highlights of version 6.7 are the incorporation of filters that enable parsing and prepossessing non-ASCII documents and additional options that rule the construction of the dictionary. Users can process a variety of data formats (e.g., pdf, docx, doc, ps e.t.c.) and select among many more options on how to construct the dictionary (e.g., exclude alphanumerics, numerics e.t.c.).

Qualifications & Information

Programming Languages
MATLAB, C++, C, OPENMP, MPI, Java, Python, PHP, HTML, CSS, Javascript, Perl
Languages
Greek (native), English (proficient), German (intermediate)

Publications

E. Kontopoulou, A. Grama, W. Szpankowski, P. Drineas, *"Randomized Linear Algebra Approaches to Estimate the Von Neumann Entropy of Density Matrices"*, in Proceedings of the 2018 IEEE International Symposium on Information Theory (ISIT), pp. 2486-2490, 2018

P. Drineas, I. Ipsen, E. Kontopoulou, M. Magdon-Ismail, *"Structural Convergence Results for Low-Rank Approximations from Block Krylov Spaces"*, in SIAM Journal on Matrix Analysis and Applications, 39(2):567-586, 2018

C. Boutsidis, P. Drineas, P. Kambadur, E. Kontopoulou, A. Zouzias, *"A Randomized Algorithm for Approximating the Log Determinant of a Symmetric Positive Definite Matrix"*, in Linear Algebra and its Applications, 533:95-117, 2017

K. Fountoulakis, A. Kundu, E. Kontopoulou, P. Drineas, *"A Randomized Rounding Algorithm for Sparse PCA"*, in the ACM Transactions on Knowledge Discovery from Data, 11(3):38, April 2017

E. Kontopoulou, M. Predari, E. Gallopoulos, *"Onomatology and Content Analysis of Ergodic Literature"*, in Proceedings of the 3rd ACM Narrative and Hypertext Workshop, Paris, FR, May 2013

E. Kontopoulou, M. Predari, T. Kostakis, E. Gallopoulos, *"Graph and Matrix Metrics to Analyze Ergodic Literature for Children"*, in Proceedings of the 23rd ACM Conference on Hypertext and Social Media, Milwaukee, WI, June 2012

Additional Information

Date of Birth: January 13, 1989
Citizenship: Greek & Australian
Nationality: Greek
USA Visa Status: F1