

ROSANNE VETRO

PERSONAL INFORMATION

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OBJECTIVE

Work as part of a team on meaningful and important projects, while leveraging my machine learning and data mining expertise. Broaden my knowledge in new application domains.

EDUCATION

Doctor of Philosophy 2011-2015 University of Massachusetts Boston, USA
GPA: 4.0/4.0 · Department of Computer Science, Data Mining Lab
Thesis: *Utilizing Ultrametric Properties, Projections and Entropy in Data Mining*
Description: Conducted research on ultrametrics, ultrametricity and their influence on clustering and classification. Performed analysis of DNA data from next generation sequencing platforms and designed algorithms for detecting genomic mutations. Developed a method for characterizing intermediate conformations in protein conformational space using parallel coordinates.
Advisor: Prof. Dan SIMOVICI

Master of Science 2008-2011 University of Massachusetts Boston, USA
GPA: 4.0/4.0 · Department of Computer Science, Data Mining Lab
Thesis: *Mining for High Complexity Regions using Entropy and Box Counting Dimension Quadtrees*
Description: Addressed the problem of finding complex regions in 2D image domains, where the targeted complexity corresponds to the presence of variation and randomness of the pixel values in areas of an image. Two different methods were developed: one that performs an information-theoretic analysis based on the Shannon entropy, and a second that applies a variation of the concept of box-counting dimension related to fractal geometry.
Advisor: Prof. Dan SIMOVICI

Bachelor of Science 1994-2000 Federal University of Rio de Janeiro, Brazil
Department of Mathematics and Computer Science

INDUSTRY EXPERIENCE

NHK 2002-2003 Visiting Researcher, NHK SCIENCE & TECHNICAL RESEARCH LABORATORIES · TOKYO, JAPAN
Developed an application for converting information stored in NHK databases into an exchangeable metadata format compliant to the ISO/IEC MPEG-7 standard. Proposed a Video Program Profile for broadcast applications to the standard, which was adopted.
Reference: Masanori SANO · sano.m-fo@nhk.or.jp

TV Globo 2000-2003 Software Engineer and Team Leader, TV GLOBO · RIO DE JANEIRO, BRAZIL
Developed a system to ensure that commercials were being fully transmitted by affiliate stations. Analyzed automation data from several locations and compared to data in a centralized database. Participated in

the development of a media asset management system for television broadcast that includes ingesting, logging, editing and playout components. Main responsibility was to architect database and to create related interfaces to store, search and access metadata and multimedia content.

Reference: Silvio PEREIRA · silvio.pereira@tvglobocom.br

ACADEMIC EXPERIENCE

Teaching Assistant

2014 · Applied Discrete Mathematics

2012, 2014 · Formal Languages

2011 · Analysis of Algorithms

2008-2012 · Theory of Computation

PUBLICATIONS

R. Vetro, R. Farhoodi, R. Kotla, N. Haspel, D. Weisman, J. Rosen, D. Simovici, "TIDE: Inter-chromosomal Translocation and Insertion Detection using Embeddings," *2014 IEEE International Conference on Big Data*, Washington DC, USA, October 2014.

D. Simovici, R. Vetro, K. Hua, "Ultrametricity of Dissimilarity Spaces and Its Significance for Data Mining," *15th Conference on Knowledge Extraction and Management - EGC 2015*, Luxembourg, January 2015.

R. Vetro, N. Haspel, and D. Simovici, "Characterizing Intermediate Conformations in Protein Conformational Space," *9th International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics*, Houston, TX, July 2012.

R. Vetro, D. A. Simovici and W. Ding, "Entropy Quad-Trees for High Complexity Regions Detection", *International Journal of Software Science and Computational Intelligence (IJSSCI)*, in press, 2011.

R. Vetro and D. Simovici, "Entropic Quad-trees and Mining Mars Craters," *10th Industrial Conference on Data Mining*, Berlin, Germany, July 2010.

R. Vetro, W. Ding, and D. Simovici, "Mining for High Complexity Regions Using Entropy and Box Counting Dimension Quad-Trees," *9th IEEE International Conference on Cognitive Informatics*, Beijing, China, July 2010.

D. Simovici, D. Pletea, and R. Vetro, "Information Theoretical Mining of Determining Sets for Partially Defined Functions," *40th International Symposium on Multiple-Valued Logic*, Barcelona, Spain, May 2010.

D. Simovici, D. Pletea, and R. Vetro, "Mining Determining Sets for Partially Defined Functions," *9th Industrial Conference on Data Mining*, Leipzig, Germany, July 2009.

OTHER PRESENTATIONS

R. Vetro, D. Simovici, N. Haspel, D. Weisman, J. Rosen, and R. Farhoodi "Inter-Chromosomal Translocation and Insertion Detection using Embedding," *International Academy of Life Sciences, Biomedical Sciences Exchange Program*, University of Massachusetts, Boston, MA, May 2014.

R. Vetro, D. Simovici, N. Haspel, D. Weisman, J. Rosen, R. Farhoodi, and R. Kotla, "TILSH: A Method to Detect Interchromosomal Translocations and Interchromosomal Insertions using Sliding Window Fingerprints and

Locality Sensitive Hashing," *Computational Aspects of Biological Information*, Microsoft Research, Cambridge, MA, Dec. 2013.

R. Vetro, "Locality-Sensitive Hashing for the Approximate Nearest Neighbor Search," *Women in Science Seminar*, University of Massachusetts, Boston, MA, Dec. 2013.

R. Vetro, "Academic Reading and Writing," *Women in Science Seminar*, University of Massachusetts, Boston, MA, April 2013.

TOP SKILLS

<i>Advanced</i>	MACHINE LEARNING - CLUSTERING, CLASSIFICATION, REGRESSION; DISSIMILARITIES, METRICS AND ULTRAMETRICS; ALGORITHMS; DATABASES
<i>Advanced</i>	JAVA, R, C, C++, SAMTOOLS, SQL
<i>Intermediate</i>	MATLAB, HADOOP, CUDA

OTHER INFORMATION

<i>Status</i>	US Citizen
<i>Awards</i>	2013 · The Randall Malbone Scholarship award from the Department of Computer Science, University of Massachusetts Boston 2011 · The Award for Outstanding Achievement in Computer Science, University of Massachusetts Boston 2010 · Best paper award: Mining for High Complexity Regions Using Entropy and Box Counting Dimension Quad-Trees, 9 th IEEE International Conference on Cognitive Informatics 2002 · Outstanding Engineer Award, TV Globo
<i>Languages</i>	ENGLISH · Fluent PORTUGUESE Native GERMAN · Basic
<i>References</i>	Prof. Wei DING · ding@cs.umb.edu Prof. Carl OFFNER · offner@cs.umb.edu Prof. Dan SIMOVICI · dsim@cs.umb.edu