Matthew Saltz

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EDUCATION

Erasmus Mundus Master of Data Mining and Knowledge Management Sept 2013-June 2015

· **Université Lumière Lyon 2**, Lyon, France, *Data Mining & Complex System Modeling in Social Science* 2013-2014
· **Universitat Politècnica de Catalunya**, Barcelona, Spain, *Statistical Modeling & Data Mining* 2014-2015

University of Georgia August 2009-2013
B.S. in Computer Science, *GPA: 4.0, completed May 2013* SAT: 1510/1600 (Q: 750, V: 760)
M.S. in Computer Science, *GPA: 3.96, completed August 2013* GRE: 330/340 (Q: 163, V: 167)
Thesis: "A Fast Algorithm for Subgraph Pattern Matching on Large Labeled Graphs"

Oxford University, Course: Modernist Literature, *GPA: 4.0/4.0* May-June 2010

HONORS & AWARDS

Erasmus Mundus Category A Scholarship Sept 2013-August 2015

· Awarded the Category A scholarship (1 of 7 to receive the award in my program) of Erasmus Mundus, an organization sponsored by the E.U. to encourage international cooperation in a variety of specialized, cross-university master's programs
· Includes full tuition, living stipend, personal travel budget

Foundation Fellowship, University of Georgia August 2009-May 2013

· Awarded Foundation Fellowship (1 of 11), university's highest academic scholarship
· Included full tuition, living stipend, group travel, individual travel-study grants, conference/research grants

Others: First Honor Graduate (1 of 14 students graduating with a 4.0), Outstanding Undergraduate Student Award for Computer Science (only recipient), Phi Beta Kappa, Computer Science representative on the Dean's Student Advisory Board

RELEVANT EXPERIENCE

Master's Thesis Research, Universitat Politècnica de Catalunya February 2015-Present

· Investigating applying the 'kernel trick' to a variety of associative memory neural networks to explore its effect on performance
· Networks being studied include Hopfield networks, bidirectional associative memories, and Boltzmann machines

Data Management (DAMA) Group, Universitat Politècnica de Catalunya, *Research intern* July-August 2014

· Designed and developed in Java a distributed vertex-centric community detection algorithm based on the WCC metric using Apache Giraph, taking advantage of advanced features such as custom aggregators, combiners, and message types
· Performed scalability tests on several real life graphs. The implemented algorithm scales best with the largest graphs and obtains all communities for a graph of 1.8 billion edges in just over an hour using 32 worker machines
· Publication (author): *Distributed Community Detection with the WCC Metric*, accepted to the 2015 ACM SIMPLEX workshop (a companion to the WWW 2015 conference)

Master's Thesis Research, University of Georgia May 2013-August 2013

· Created and implemented in Scala a novel algorithm for subgraph isomorphism that outperformed two well-known algorithms by up to several orders of magnitude on on synthetic graphs of up to 10M nodes and 250M edges and on two real life datasets
· Publication (author): *DualIso: An Algorithm for Subgraph Pattern Matching on Very Large Labeled Graphs*, industrial track of 2014 IEEE International Congress on Big Data

Graph Research with Dr. John A. Miller, University of Georgia August 2012-August 2013

· Implemented in Java and Scala centralized sequential and parallel versions of strong simulation, an algorithm that uses various topological criteria to find matches of a query graph in a data graph
· Publication (co-author): *A Distributed Vertex-Centric Approach for Pattern Matching in Massive Graphs*, 2013 IEEE International Conference on Big Data

The Home Depot, Atlanta, GA, *IT Intern* May-August 2012

· Created and developed a novel technique for the segmentation of customers based on their transaction histories. Wrote SQL, bash scripts and custom Java code to implement the full processing pipeline using Apache Mahout on a Hadoop cluster
· Designed and implemented a novel security solution for connecting to Apache Hive via JDBC. Wrote Java code to create an authentication Tomcat service which spawned Hive servers, allowing the use of Hive's built-in authorization methods

Envoc, Baton Rouge, LA, *Software Development Intern* May-August 2011

· Created management portal using JavaScript, HTML, SQL, and ASP.NET to present metrics on employee performance
· Designed and implemented a management portal for a background-check company, eliminating redundancy in their processes

LANGUAGES & SKILLS

Languages (ordered by proficiency) Scala, Java, Python, R, Prolog, SQL, Bash, C/C++
Skills Apache Hadoop, Mahout, Hive, Giraph, Typesafe's Akka, Linux