

Hossam S. Sharara

CONTACT INFORMATION

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RESEARCH INTERESTS

Machine Learning, Data Mining, Relational Learning, Social Network Analysis, Group Detection, Relational Clustering, Dynamic Network Analysis, Viral Marketing and Information Diffusion.

EDUCATION

Ph.D. in Computer Science

University of Maryland, College Park, MD (Fall 2007 – Present)

- *GPA*: 4.0
- *Research Area*: Relational Learning and Dynamic Network Analysis
- *Expected graduation date*: Spring 2012
- *Advisor*: Prof. Lise Getoor

Masters of Science in Computer Science

University of Maryland, College Park, MD (Fall 2007 – Spring 2010)

- *GPA*: 4.0
- *Research Area*: Machine Learning and Data Mining
- *Advisor*: Prof. Lise Getoor

Masters of Science in Computer Science

Alexandria University, Alexandria, Egypt (Fall 2004 – Summer 2007)

- *Research Area*: Data Mining and Bioinformatics
- *Thesis Title*: α CORR and BISOFT: Novel Algorithms for Clustering Gene Expression Data
- *Advisor*: Prof. Mohamed A. Ismail

Bachelor of Science in Computer Science

Alexandria University, Alexandria, Egypt (Fall 1999 – Spring 2004)

- *GPA*: 3.96
- *Distinction*: Ranked 1st on the CS department (80 Students)
- *Graduation Project*: A Mobile Reservation System

HONORS AND ACTIVITIES

Best Paper Award, IEEE International Conference on Communications, ICC 2011.

Dean's Fellowship Award, University of Maryland, College Park, 2010.

Graduate Fellowship for PhD program in Computer Science, University of Maryland, College Park, 2007-2009.

Award for Academic Excellency, Ranked first in Undergraduate Studies in Computer Science Department, Alexandria University, Alexandria, Egypt, 2004.

Certificate of Merit, Syndicate of Engineering, Alexandria, Egypt, 2004.

PC Member, ICWSM'12

PUBLICATIONS

JOURNAL ARTICLES

Hossam Sharara, Lisa Singh, Lise Getoor, and Janet Mann, "Understanding Actor Loyalty to Event-Based Groups in Affiliation Networks". *Journal of Advances in Social Networks Analysis and Mining*, 2010.

BOOK CHAPTERS &
ARTICLES

Galileo Namata, **Hossam Sharara**, and Lise Getoor, “A Survey of Link Mining Tasks for Analyzing Noisy and Incomplete Networks”. Book chapter in *Link Mining: Models, Algorithms and Applications*, Philip S. Yu, Christos Faloutsos, and Jiawei Han (Editors), 2010.

Hossam Sharara and Lise Getoor, “Group Detection”. Article in *Encyclopedia of Machine Learning*, Claude Sammut and Geoffrey I. Webb (Editors), 2010.

CONFERENCE
PAPERS

Hossam Sharara, Awalin Sopan, Galileo Namata, Lise Getoor and Lisa Singh, “G-Pare: A Visual Analytic Tool for Comparative Analysis of Uncertain Graphs”. In Proceedings of *IEEE Conference on Visual Analytics Science and Technology (VAST)*, Providence, RI, 2011.

Hossam Sharara, William Rand, and Lise Getoor, “Differential Adaptive Diffusion: Understanding Diversity and Learning whom to Trust in Viral Marketing”. In *Proceedings of the fifth International AAAI Conference on Weblogs and Social Media (ICWSM)*, Barcelona, Spain, 2011.

Hossam Sharara, Lise Getoor, and Myra Norton, “Active Surveying: A Probabilistic Approach for Identifying Key Opinion Leaders”. In *Proceedings of the 22nd International Joint Conference On Artificial Intelligence (IJCAI)*, Barcelona, Spain, 2011.

Hossam Sharara, Cedric Westphal, Svetlana Radosvac, and Ulas Kozat, “Utilizing Social Influence in Content Distribution Networks”. In *Proceedings of IEEE International Conference on Communication (ICC)*, Kyoto, Japan, 2011 (**Best Paper Award**).

Hossam Sharara, Daniel Halgin, Lise Getoor, and Steve Borgatti, “Multi-dimensional Trajectory Analysis for Career Histories”. *International Sunbelt Social Networks Conference XXXI*, St. Pete Beach, FL, 2011.

Hossam Sharara, Myra Norton, and Lise Getoor, “Active Surveying for Leadership Identification”. *The International Sunbelt Social Networks Conference XXX*, Trento, Italy, 2010.

Elena Zheleva, **Hossam Sharara**, and Lise Getoor, “Co-evolution of social and affiliation networks”. In *Proceedings of the 15th ACM SIGKDD Conference On Knowledge Discovery and Data Mining (KDD)*, Paris, France, 2009.

Hossam Sharara, Lisa Singh, Lise Getoor, and Janet Mann, “The Dynamics of Actor Loyalty to Groups in Affiliation Networks”. In *Proceedings of the International Conference on Advances in Social Network Analysis and Mining (ASONAM)*, Athens, Greece, 2009.

Hossam S. Sharara and Mohamed A. Ismail, “BISOFT: A Semi-Fuzzy Approach for Bi-Clustering Gene Expression Data”. In *Proceedings of the 2008 International Conference on Bioinformatics and Computational Biology (BIOCOMP)*, Las Vegas, NV, 2008. Volume I, Pages: 151 - 157.

Hossam S. Sharara and Mohamed A. Ismail, “ α CORR: A novel algorithm for clustering gene expression data”. In *Proceedings of the 7th IEEE International Conference on Bioinformatics and Bioengineering*, 2007. Pages: 974 - 981.

WORKSHOP
PAPERS

Hossam Sharara, Lise Getoor, and Myra Norton, “Active Surveying”. *NIPS 2010 Workshop on Networks Across Disciplines in Theory and Applications*, Whistler, BC, Canada.

Hossam Sharara, Lise Getoor, and Myra Norton, “An Active Learning Approach for Identifying Key Opinion Leaders”. *The 2nd workshop on Information in Networks (WIN)*, New York, NY, 2010

WORK IN
PROGRESS

Hossam Sharara, Stanley Kok, and Lise Getoor, “Multi-relational Clustering”.

RESEARCH
EXPERIENCE

University of Maryland, College Park, MD

Research Assistant

Fall 2008 – Present

Reasoning in multi-modal, dynamic networks: Analyzing how different modes of the network affect each other in both evolution and clustering aspects. More specifically, I have worked on studying the coupled evolution dynamics of overlapping social and affiliation networks, and proposed a model for the evolution of such heterogeneous network as a coupled operation of developing both the social and the affiliation aspects of the network. The proposed model was able to capture some of the properties we observed in such type of networks, whereas other models that describe the evolution of each aspect independently were not able to capture these properties. In addition to studying the evolution process, I also worked on studying how the user's affiliation groups guide her interactions with other actors inside and outside these groups, as well as studying the users' participation pattern and stability within these groups. For the clustering aspect, I am currently working on developing a model for multi-relational clustering, where various effects of different network modalities are taken into consideration to output a more robust clustering.

Influence Propagation: Analyzing different influence propagation models in social networks with applications in viral marketing and leadership identification. I have worked on studying the effect of viral marketing on the underlying social network and proposed a model that takes these effects into consideration for enhancing different products spread over the network. I have also studied different ways of incorporating noisy data from secondary sources that are usually available off the web, with more expensive data from surveys or other primary sources about a given network to build better models for leadership identification.

Alexandria University, Alexandria, Egypt

Graduate Assistant

Fall 2004 – Spring 2007

Semi-fuzzy approaches for clustering gene expression data: Recent advances in biotechnology allow researchers to measure expression levels for thousands of genes simultaneously, across different conditions and over time. A key step in the analysis of gene expression data is the detection of groups of genes that manifest similar expression patterns. The corresponding algorithmic problem is to cluster multi-condition gene expression patterns. My research was focused upon designing tailored clustering techniques that takes into account the specific nature of gene expressions, and allow the user to get different insights into the data.

TEACHING
EXPERIENCE

University of Maryland, College Park, MD

Teaching Assistant

Fall 2007 – Spring 2008

CMSC 212: Introduction to Low-Level Programming Concepts

CMSC 250: Discrete Structures

Alexandria University, Alexandria, Egypt

Graduate Assistant

Fall 2004 – Spring 2007

Introduction to Programming, Data Structures, Advanced Data Structures, Artificial Intelligence, Systems Programming, Operating Systems, Technical Writing

PROFESSIONAL
EXPERIENCE

Palo Alto Research Center (PARC), Palo Alto, CA

Research Intern

Summer 2011

Utilizing both social and individual behavioral patterns for identifying anomalous and malicious activities. The project aimed at analyzing the dynamics of different users' behavioral patterns and interactions at multiple levels and within different networks to characterize and isolate malicious behavior and help uncover future threats.

DOCOMO USA Labs, Palo Alto, CA

Research Intern

Summer 2010

Investigating the social dimension in service adoption over cellular networks. The project aimed at understanding the dynamics of user-interactions on the social level to design more efficient network optimization strategies. Responsibilities included deploying multiple facebook applications, analyzing the social influence between different users over online social networks, and designing a model for controlling the users exposure to different services to achieve a target utilization based on their previous behavior. One of the direct applications for the designed model was slowing down the propagation of suspicious applications/services until they are verified, without impacting their future growth if they turn out to be non-malicious.

CATT Lab - University of Maryland, College Park, MD

Application Developer

Summer 2008

Developing a traffic control system inside Olive virtual incident management training system. Responsibilities included creating co-ordinate maps and routing paths for roads in different scenes, developing intelligent vehicles that can act according to various incidents on the road, and adding different functionalities to existing objects in the system.

IT-Chain, Alexandria, Egypt

Project Manager

Mar. 2006 – Apr. 2007

Administration of Development Section of IT-Chain. Responsibilities include general development of mobile applications using J2ME and WAP technologies, and Building and maintenance of the company Application and Web Server (Windows 2003 Server), DB Server, and Exchange Server.

COMPUTER
SKILLS

Programming: C/C++, Perl, Java, Matlab, Assembly, Pascal, and VB
Database Systems: MySQL, SQL Server, Oracle, and MS Access
Scripting: HTML, ASP, ASP.NET, JSP, PHP and Java Script

RELEVANT
COURSEWORK

Link Mining and Dynamic Network Analysis, Advanced Machine Learning: Combining Statistical and Logical Approaches, Machine Learning, Complex Systems in Business, Advanced Numerical Optimization, Pattern Recognition, Information-Centric Design of Systems, Computational Gene finding and Genome Assembly, Fundamentals of Software Testing, Computer Vision, Advanced Machine Learning: Combining Statistical and Logical Approaches

REFERENCES

Prof. Lise Getoor, Associate Professor
Computer Science Department - University of Maryland, College Park
E-mail: getoor@cs.umd.edu

Prof. Lisa Singh, Associate Professor
Computer Science Department - Georgetown University, Washington DC
E-mail: singh@cs.georgetown.edu

Prof. William Rand, Assistant Professor
Robert H. Smith School of Business - University of Maryland, College Park
E-mail: wrand@umd.edu

Dr. Ulas Kozat, Project Manager and Senior Research Engineer
Docomo USA Labs - Palo Alto, CA
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Dr. Oliver Brdiczka, Research Scientist
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