

email: shario@ieee.org
Tel: (+971)4-367-1964
Fax: (+971)4-366-4698
Address: British University in Dubai
Knowledge Village, Block 17
Dubai, United Arab Emirates
URL: <http://www.cs.umass.edu/~shario>

Education

- 2003-2006, **PhD** in Computer Science(Artificial Intelligence), **University of Massachusetts**, Amherst, USA. GPA 4.0
Thesis Topic: "Scalable Multi-agent Reinforcement Learning"
Committee: Victor Lesser (Advisor), Shlomo Zilberstein, Sridhar Mahadevan, and Abhi Deshmukh.
Courses: Advanced Algorithms, Artificial Intelligence, Advanced Network Systems, Computation Theory, Computer Networking, Cyberlaw, Challenges in Collaborative Algorithms, Multi-agent Problem Solving, Multi-agent Organizations, Operating Systems, Reinforcement Learning, Robot Intentionality, System Building for Mobile Devices
- 2001-2003, **MS** in Computer Science(Artificial Intelligence), **University of Massachusetts**, Amherst, USA. GPA 4.0
Project Topic: "Extending Q-Fabric QoS Architecture with a Learning Component"
Advisors: Victor Lesser and Jim Kurose
- 1998-2001, **MS** in Computer Engineering, Cairo University, Egypt. GPA 3.6.
Thesis Topic: "Monitoring and synchronization for teamwork in GPGP"
Advisors: Neveen Darwish, Osman Hegazy, and Ihab Talkhan.
- 1993-1998, **BE** in Computer Engineering, **Cairo University**, Egypt. Distinction with Honour Degree (90.35%, with GPA equivalent of 3.82).
Graduation Project: "JAVANET: Network Management and Monitoring Software"

Achievements Summary

- Flawless GPA of 4.0 in both M.S. and Ph.D.
- H-index of 13 with 125 citations (c.f. Google Scholar) < 4 years after graduation
- 20+ papers in most competitive journals and conferences in my field.
- Runner-up for "Best Paper Award" for work on adaptive networks

Affiliations

- **Lecturer, 2006 – present** *British University in Dubai, Institute of Informatics, Dubai, United Arab Emirates*
- **Honorary Fellow, 2006 – present** *University of Edinburgh, Institute of Informatics, United Kingdom*
- **Research Assistant, 2001 - 2006** *University of Mass., Department of Computer Science, MAS Lab, USA*
- **Teaching Assistant, 2006 - 2006,** *University of Mass., Department of Computer Science, USA*
- **Assistant Lecturer, 2001 - now,** *Cairo University, Faculty of Computers and Information, Egypt*
- **Teaching Assistant, 1998 - 2001,** *Cairo University, Faculty of Computers and Information, Egypt*
- **Course Instructor, 1998 - 1999,** *Cairo University, Faculty of Engineering, Egypt*
- **Independent Developer, 1998 – 2001,** *Egypt*

Awards and Honors

- First author of the runner-up for Best Paper Award (out of 531 submitted papers) at Sixth International Joint Conference on Autonomous Agents and Multi-Agent Systems, May 2007.
 - 2001-2006 MS/PhD scholarship from University of Massachusetts, Amherst, USA (offered scholarship from University of Toronto and University of McMaster but declined).
 - 1998-2001 MS scholarship from Cairo University, Egypt
 - 1998 Graduated with distinction with honour (ranked 3rd), Cairo University
 - 1998 Egyptian Engineers Syndicate Award of Excellence
 - 1993-1998 (annually awarded) Cairo University Award of Excellence
-

Personal Information

- Born 2/1976, Cairo, Egypt
- Visa Status: Permanent Resident of United States (Green Card). Resident of UAE.
- Languages: English, Arabic
- Hobbies: chess (used to play in the Egyptian national league), squash, ping pong, and soccer.

Teaching

Course	University	Dates	Role
Data Mining	British University in Dubai	Spring 2006, Spring 2007, Spring 2008, Fall 2009	Lecturer
Learning from Data	British University in Dubai	Fall 2006, Fall 2007, Fall 2008	Lecturer
Multi Agent Systems	University of Mass. Amherst	Fall 2005	Teaching Assistant
Database Systems Operating Systems Computer Architecture	Cairo University	Spring 2001	Teaching Assistant
Programming Languages Artificial Intelligence Expert Systems	Cairo University	Fall 2000	Teaching Assistant

Research Funding

Completed

Date	Source	Grant Title	Role	Awarded Fund
1/2010	British University in Dubai	An Experimental Platform for Argumentation	Co-PI	47000 AED
6/2009	University of Massachusetts	International expert travel grant	PI	30,000 AED
6/2009	British University in Dubai	Multi-agent Learning in a Self-Organizing Network	PI	37,000 AED
01/2008	Int. Foundation of Autonomous Agents and Multi Agent Systems	Dubai Agent-based Systems School (DASS)	Co-PI	30,000 AED

Secured

Date	Source	Grant Title	Role	Awarded Fund
2/2010	British University in Dubai	Comparative Study of Multi-agent Learning in Networks Using Network Analysis	PI	44,000

Under evaluation

Source	Grant Title	Role	Asked Fund
Emirates Foundation	Applying graph Data Mining Techniques to Self-Organizing Network of Agents	PI	350,000 AED
Emirates foundation	A pilot study of the potential benefit of persuasive computing in promoting healthier eating habits and lifestyle among Emirati youth	PI	670,000 AED
(UAE) National Research Foundation	Game-Theoretic Foundations of Argumentation in Multi-Agent Systems	Co-PI	1,000,000

Academic Service and Activities

Supervision

Supervised 7 MSc students to completion. Currently supervising 6 students (as main supervisor).

Conference/Workshop Organization

- First agent school in the Middle East, 2008
- Fourth SNA-KDD Workshop on Social Network Mining and Analysis (Chair)

Senior Program Committee

- International Joint Conference on Autonomous Agents and Multi-agent Systems, AAMAS (2011)

Program Committee

- International Joint Conference on Autonomous Agents and Multi-agent Systems, AAMAS (2008-2010)
- International Conference on Artificial Intelligence (AAAI 2008, 2010)
- Workshop on Multi-Agent Systems: Theory and Applications
- Workshop on Adaptive and Learning Agents (AAMAS 2010)

Refereeing

- International Journals
 - Journal of Machine Learning Research
 - Journal of Artificial Intelligence Research
 - ACM Transactions on Autonomous and Adaptive Systems
 - Journal of Autonomous Agents and Multi-Agent Systems
 - IEEE transactions on Systems, Man, and Cybernetics
- Conferences

- IEEE/RSJ International Conference on Intelligent Robots and Systems.

Invited Talks

- “Multi-agent Reinforcement Learning”, Nagoya Institute of Technology, Japan, 2009
- “Mining a network of adaptive agents”, Cairo University, Egypt, 2009
- "To PhD and Beyond", part of the international doctoral mentoring program in the 6th International Joint Conference on Autonomous Agents and Multi-agent Systems, U.S.A., 2007
- "Coordination and Negotiation using GPGP", Universidade Federal do Rio Grande do Sul, Brazil, 2002

Selected Developed Software

- Optimizing performance of a distributed radar network for detecting tornadoes and severe weather conditions, implemented in Java.
- First Java implementation of SOAR, a cognition programming language.
- P2P Game API written for Java-enabled PDAs. The system was tested on 4 real PDAs (Sharp Zaurus) and up to 200 simulated PDAs.
- Software controller of large LED displays, implemented in C.
- Network management software using SNMP with automatic detection of network topology and user-defined MIB objects. Implemented in Java

Publications

Analyzing Networked Systems

- [1] S. Abdallah. *A New Methodology for Generalizing Unweighted Network Measures* (under review, Machine Learning Journal)
- [2] S. Abdallah. *Understanding the Dynamics of Multi-agent Learning in Networks* (under review, AAAI'10)
- [3] S. Abdallah (2010). Using *Graph Analysis to Study Networks of Adaptive Agents*. In: Proceedings of 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS) (*acceptance rate 23%*)
- [4] S. Abdallah. *Generalizing Unweighted Network Measures Using the Effective Cardinality*. Proceedings of the 3rd workshop on Social Network Mining and Analysis (SNA), International Conference on Knowledge Discovery and Data Mining, 2009 (*acceptance rate 29%*)

Coordinating Networked Systems

- [5] F. Jahedpari, I. Rahwan, S. Abdallah, *Cognitive Modeling of Human-based Local Heuristics for Global Coordination* (under review, AAAI'10)
- [6] C. Zhang, S. Abdallah, and V. Lesser (2010). *Self-Organization for Coordinating Decentralized Reinforcement Learning*. In: Proceedings of 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS) (*acceptance rate 23%*)
- [7] C. Zhang, Sherief Abdallah, and Victor Lesser (2009). *Integrating Organizational Control into Multi-Agent Learning*. In: Proceedings of 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS) (*acceptance rate 22%*)
- [8] S. Abdallah and V. Lesser. *Multiagent Reinforcement Learning and Self-organization in a Network of Agents*. In Proceedings of 6th International Joint Conference on Autonomous Agents and Multi-agent Systems, AAMAS, 2007 (*acceptance rate 22%*) **Runnerup for "Best Paper Award"**.
- [9] Chongjie Zhang, Sherief Abdallah, and Victor Lesser (2008). *Efficient Multi-Agent Reinforcement Learning through Automated Supervision*. In: Proceedings of 7th International Conference on Autonomous Agents and Multiagent Systems (AAMAS). Estoril, Portugal. (*acceptance rate 37%*)
- [10] S. Abdallah and V. Lesser. *Learning Task Allocation via Multi-Level Policy Gradient Algorithm with Dynamic Learning Rate*. Workshop on Planning and Learning in A Priori Unknown or Dynamic Domains, the International Joint Conference on Artificial Intelligence, IJCAI 2005.
- [11] S. Abdallah and Victor Lesser. *Learning Scalable Coalition Formation in an Organizational Context*. Book chapter in "Challenges in the Coordination of Large Scale Multiagent Systems", published by Springer. 2005

- [12] S. Abdallah and V. Lesser. *Organization-Based Cooperative Coalition Formation*. In Proceedings of Intelligent Agent Technology, IAT, 2004 (*acceptance rate 16%*).

Applying Agent Technologies to Networked Systems

- [13] A. Alshamsi, S. Abdallah and I. Rahwan (2009). *Multiagent Self-Organization for a Taxi Dispatch System*. In: Proceedings of the 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS) (industrial track)
- [14] J. Ostwald, V. Lesser, and S. Abdallah. *Combinatorial Auctions for Resource Allocation in a Distributed Sensor Network*. In proceedings of the 26th IEEE International Real-Time Systems Symposium, (RTSS'05), IEEE Computer Society Press. December 2005 (*acceptance rate 21%*).
- [15] M. Zink, D. Westbrook, S. Abdallah, et al. *Meteorological Command and Control: An End-to-end Architecture for a Hazardous Weather Detection Sensor Network*. Proceedings of the ACM Workshop on End-to-End, Sense-and-Respond Systems, Applications, and Services (EESR 05), pp. 37-42. June 2005.
- [16] S. Abdallah, H. Zhang, and V. Lesser. *The Role of an Agent Organization in a Grid Computing Environment*. In Proceedings of ICAPS'04 workshop on planning and scheduling for web and grid services, June 2004.

Adaptive Systems & Non-Linear Dynamics

- [17] S. Abdallah and V. Lesser (2008) "A Multiagent Reinforcement Learning Algorithm with Non-linear Dynamics". **Journal of Artificial Intelligence Research**, Volume 33, pages 521-549.
Impact Factor = 1.79
- [18] Sherief Abdallah and Victor Lesser (2008). *Non-linear Dynamics in Multiagent Reinforcement Learning Algorithms*. In: Proceedings of 7th International Conference on Autonomous Agents and Multiagent Systems (AAMAS). Estoril, Portugal. (*acceptance rate 37%*)
- [19] S. Abdallah and V. Lesser. *Modeling Task Allocation Using a Decision Theoretic Model*. In Proceedings of 4th International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS, 2005 (*acceptance rate 24%*).
- [20] S. Abdallah and V. Lesser. *Learning the Task Allocation Game*. In Proceedings of 5th International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS, 2006 (*acceptance rate 24%*).

Negotiation and Argumentation

- [21] I. Rahwan, M. I. Madakkatel, J. F. Bonnefon, R. N. Awan and S. Abdallah (#####). *Behavioural Experiments for Assessing the Abstract Argumentation Semantics of Reinstatement*. **Cognitive Science**. (accepted)
Impact Factor = 2.383

- [22] Rahwan, B. Banihashemi, C. Reed, D. Walton and S. Abdallah (in press). *Representing and Classifying Arguments on the Semantic Web*. **The Knowledge Engineering Review**.
Impact Factor = 1.588
- [23] Y. Gal, S. D'souza, P. Pasquier, I. Rahwan and S. Abdallah (2009). *The Effects of Goal Revelation on Computer-Mediated Negotiation*. In: Proceedings of the Annual meeting of the Cognitive Science Society (CogSci), Amsterdam, The Netherlands.
- [24] M. I. Madakkatel, I. Rahwan, J. F. Bonnefon, R. N. Awan and S. Abdallah (2009). *Formal Argumentation and Human Reasoning: The Case of Reinstatement*. In: Proceedings of the AAAI Fall Symposium on The Uses of Computational Argumentation, Washington DC, USA.
- [25] XiaoQin Zhang, Victor Lesser, Sherief Abdallah. *Efficient Management of Multi-Linked Negotiation Based on a Formalized Model*. **Journal of Autonomous Agents and Multi-Agent Systems**, Volume 10, Number 2, March 2005.
Impact Factor = 2.125
- [26] XQ Zhang; V. Lesser; and S. Abdallah. *Efficient Ordering and Parameterization of Multi-Linked Negotiation*. In Proceedings 2nd International Joint Conference on Autonomous Agents and Multiagent Systems. (Extended abstract), July, 2003. Full version available as UMASS Computer Science Tech. Report #02-42.
- [27] S. Abdallah and et al. *Monitoring and Synchronization for Teamwork*. In Proceedings of 17th ACM Symposium on Applied Computing (the Special Track of Coordination Models, Languages and Applications). March, 2002 (*acceptance rate 42%*).

Statement of Research

My primary research goal is *to develop a suit of techniques and tools that facilitate the building of large-scale networked systems*. These techniques will be applicable to variety of networked systems including sensor networks, the Internet, the Web, and peer-2-peer file sharing. Towards this goal, I am interested in developing learning frameworks that are scalable; and data mining techniques that are helpful in understanding such complex systems.

Analyzing Networks. I have developed a novel generalization of (traditional) graph mining measures that takes into account the amount of interaction between network nodes. I applied this generalization to variety of social networks and discovered interesting new patterns. I also verified the benefit of this contribution in detecting the hidden instability in networks of adaptive agents. I am currently studying how the underlying network structure affects the performance of different multi-agent learning algorithms.

Scalable Learning. I proposed an extension to a well-known Markovian model and showed (both theoretically and experimentally) that this extension lead to exponential savings in space and time. I also developed a new learning algorithm that stabilized faster than the-state-of-the-art algorithms with better transient performance. I also developed the first framework that integrates learning with self-organization in a network of agents. This research was very positively received by the other researchers and was runner-up for best paper award in the premier conference in multi-agent systems. I am currently investigating the use of supervising agents, on top of the adaptive agent network, to coordinate the learning process. Preliminary results are very promising (showing significant improvement when compared to the-state-of-the-art).

Applied Research. While theoretical analysis is useful in providing some guarantee of performance, applying advanced technologies to real problems introduces new challenges. I studied the application of my techniques to address real problems, including:

- peer-2-peer networks,
- grid computing,
- atmospheric studies,
- sensor networks, and
- intelligent transportation systems.

Statement of Teaching

My passion to teaching started at an early age, as a tutor for my younger siblings. I particularly enjoyed tutoring mathematics and physics. This passion for teaching continued and evolved through the years as I joined the computer engineering department, Cairo University. I graduated with distinction with honors and was offered a tenure position (starting as a teaching assistant) in Cairo University from 1998 to 2001. My responsibilities included designing lab experiments, designing course projects, and illustrating challenging course materials. I also volunteered for tutoring students that have difficulties in understanding courses. I taught a variety of courses including: Programming Languages (VB, Java and VC++), Artificial Intelligence (Prolog), Expert Systems (CLIPS), Database Systems (Oracle), Operating Systems (Linux), and Computer Architecture.

In 2001 I joined the Master/PhD program in UMass as a research assistant. During this time I tutored several junior PhD students and held sessions for discussing difficult problem sets. I guided junior lab members through lab research and software tools. I have also taught with Professor Victor Lesser a course in multi-agent systems, where I gave lectures in multi-agent reinforcement learning and designed course assignments (problem sets and a programming project).

I have been a lecturer in the British University in Dubai since September 2006. During this time I taught variety of courses with very positive (anonymous) feedback from my students, such as **"the prof spent a great deal of time explaining concepts using examples on the board rather than relying only on the slides. This contributed to the success of the course."** and **"The lecturer has given the lectures with passion. Presentation both orally and written were very good"**

My unique experiences in dealing with students with different backgrounds and levels of training gave me a solid background in teaching all computer science subjects. Having background in both Computer Engineering and Computer Science (MSc in both, BSc in computer engineering) allows me to teach a variety of courses, including Operating Systems, Networks, Computer Graphics, Microelectronics, and Computer Architecture.

References

- Professor Victor Lesser (advisor), Computer Science Department, University of Massachusetts, Amherst, MA 01003
- Professor Shlomo Zilberstein, Computer Science Department, University of Massachusetts, Amherst, MA 01003
- Professor Sridhar Mahadevan, Computer Science Department, University of Massachusetts, Amherst, MA 01003
- Professor Nevin Darwish, Computer Engineering Department, Cairo University, Cairo, Egypt.
- Professor Samir Shaheen, Computer Engineering Department, Cairo University, Cairo, Egypt.
- David Westbrook (team leader in the CASA project), CASA, LGRC, University of Massachusetts, Amherst, MA 01003