

Malik Magdon-Ismail, PhD

Professor, Department of Computer Science
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Rensselaer Polytechnic Institute (RPI), Troy, NY.
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EDUCATION

- 1993-1998 **Ph.D., California Institute of Technology**, Electrical Engineering/Physics
Thesis: Supervised Learning in Probabilistic Environments
Wilts Prize for best Ph.D. thesis in EE
Advisor: Professor Yaser S. Abu-Mostafa
- 1993-1995 **M.S., California Institute of Technology**, Physics
- 1989-1993 **B.S., Yale University**, Physics
summa cum laude with Honors in Physics
Thesis: Field Theories for Tachyonic Particles

ACADEMIC APPOINTMENTS

- 2012-date **Professor, Rensselaer Polytechnic Institute.**
Computer Science Department
Lally School of Management (courtesy joint appointment)
- 2006-2012 **Associate Professor, Rensselaer Polytechnic Institute.**
Computer Science Department
Lally School of Management (courtesy joint appointment, 2010-2012)
- 2000-2006 **Assistant Professor, Rensselaer Polytechnic Institute.**
Computer Science Department
- 1998-2000 **Postdoctoral Research Scholar, California Institute of Technology.**
Electrical Engineering Department

PROFESSIONAL

- 2017-date **President & Co-founder, CollegeAI.com**
AI/MachineLearning for college search.
- 2011-2015 **Co-founder/CTO, SINE Management Ltd. (Sold to Noble)**
Hedge fund: fully automated, data driven medium & high frequency trading.
- 2003-2011 **Co-founder/CTO, Goldfinger Management Ltd. (absorbed into SINE)**
Hedge fund: fully automated high frequency trading.
- 2006-2016 **Co-founder/CTO, Swooge™ LLC, an Internet startup.**
Launched pingstr.com in 2013.
- 1998-1999 **Consultant, Simplex Risk Management, Hong Kong & Tokyo.**
Developed efficient strategies for yield curve calibration and statistical arbitrage.
- 1996-2000 **Collaborations with Honeywell Inc. and Caxton Corporation.**
Automated learning systems and prediction of intraday FX-rates.

References: Available upon request.

I. Scholarly Activity

(I-A) SELECTED RECENT PAPERS

All papers can be downloaded at: http://www.cs.rpi.edu/~magdon/talks_pubs.html

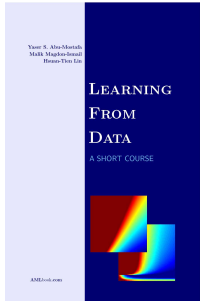
All publications in journals and peer reviewed conference proceedings are listed in Section V.

- [1] M. Magdon-Ismail and A. F. Atiya. Maximum drawdown. *Risk*, 17(10):99–102, 2004.
- [2] J. Baumes, M. Goldberg, and M. Magdon-Ismail. Efficient identification of overlapping communities. In *ISI*, 2005.
- [3] A. Civril and M. Magdon-Ismail. On selecting a maximum volume sub-matrix of a matrix and related problems. *Theoretical Computer Science*, 410(47-49):4801–4811, 2009.
- [4] M. Magdon-Ismail and Konstantin Mertsalov. A permutation approach to validation. *Statistical Analysis and Data Mining*, 3(6):361–380, 2010. (*invited*, best papers of SDM).
- [5] C. Boutsidis, P. Drineas, and M. Magdon-Ismail. Near-optimal column based matrix reconstruction. In *Symp. on Foundations of Computer Science (FOCS)*, 2011. (*invited* to SIAM J. Computing).
- [6] S. Adali, X. Lu, M. Magdon-Ismail, and J. Purnell. Prominence ranking in graphs with community structure. In *Conf. on Weblogs and Social Media (ICWSM)*, 2011.
- [7] P. Drineas, M. Magdon-Ismail, M. Mahoney, and D. Woodruff. Fast approximation of matrix coherence and statistical leverage. *J. Machine Learning Research (JMLR)*, 13:3441–3472, 2012.
- [8] C. Boutsidis and M. Magdon-Ismail. Deterministic feature selection for k -means clustering. *IEEE Transactions on Information Theory*, 59(10), 2013.
- [9] A. Brahma, M. Chakraborty, S. Das, A. Lavoie, and M. Magdon-Ismail. A Bayesian market maker. In *Conference on Electronic Commerce (EC)*, June 2012.
- [10] S. Das and M. Magdon-Ismail. A model for information growth in collective wisdom processes. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 6(12), 2012.
- [11] E. Anshelevich, A. Hate, and M. Magdon-Ismail. Seeding influential nodes in non-submodular models of information diffusion. In *12th AAMAS*, 2013.
- [12] C. Boutsidis, P. Drineas, and M. Magdon-Ismail. Near-optimal coresets for least-squares regression. *IEEE Transactions on Information Theory*, 59(10), 2013.
- [13] S. Paul, M. Magdon-Ismail, and P. Drineas. Column selection via adaptive sampling. In *NIPS*, 2015.
- [14] S. Paul, M. Magdon-Ismail, and P. Drineas. Feature selection for linear SVM with provable guarantees. *Pattern Recognition*, 60:205–214, 2016.
- [15] M. Magdon-Ismail and C. Boutsidis. Optimal sparse linear encoders and sparse PCA. In *NIPS*, 2016.
- [16] K. Clarkson, P. Drineas, M. Magdon-Ismail, M. Mahoney, X. Meng, and D. Woodruff. The fast Cauchy transform and faster robust linear regression. *SIAM Journal on Computing*, 45(3):763–810, 2016.
- [17] A. Kundu, P. Drineas, and M. Magdon-Ismail. Recovering PCA and sparse PCA via hybrid- (ℓ_1, ℓ_2) sparse sampling of data elements. *Journal of Machine Learning Research (JMLR)*, 18(75):1–34, 2017.
- [18] P. Drineas, I. Ipsen, E-M. Kontopoulou, and M. Magdon-Ismail. Structural convergence results for approximation of dominant subspaces from block krylov spaces. *SIAM J. Matrix Anal. & Appl. (SIMAX)*, 39(2):567–586, 2018.

Current Interests: Precision health;
Fast linear algebraic algorithms for big, incomplete data;
Privacy in learning on large distributed data.

(I-B) PEDAGOGY

Books and Articles.



Learning From Data: A Short Course

Yaser S. Abu-Mostafa
Malik Magdon-Ismael
Hsuan-Tien Lin
amlbook.com, March 2012.

#1 amazon.com bestseller in CS
(March-April 2012)

ML text at 23+ universities:

Wash. U., St. Louis,
Univ. of Toronto,
USC,
Vanderbilt,
GeorgiaTech,
etc.

- [1] Hsuan-Tien Lin, M. Magdon-Ismael, and Y. Abu-Mostafa. Teaching machine learning to a diverse audience: the foundation-based approach. In *Teaching Machine Learning Workshop at the 25th International Conference on Machine Learning (ICML)*, June 2012.
- [2] M. Magdon-Ismael. *A Course in Discrete Mathematics and Computing*. mmibook.com, forthcoming.

Courses. Developed 6 new courses spanning a mix of theory/foundations and applications.

Introduction to Computer Science	(Freshman)
Problem solving introduction to CS.	
Foundations of Computer Science	(Sophomore)
Discrete mathematics and theory of computing.	
Introduction to Algorithms	(Sophomore)
Algorithms and theory focused course.	
Machine Learning	(Senior/Graduate)
Learning from data course, based on our book.	
Introduction to Computational Finance	(Senior/Graduate)
Emphasis on algorithmic aspects of finance.	
Computational Analysis of Social Processes	(Senior/Graduate)
Algorithms and mathematics for analysis of social processes.	

(I-C) ADVISING

2000-date: Undergraduate advisor to 30-50 students per year.

Bachelors Theses: 6.

Masters Theses: 11.

Doctoral Theses: 14

(I-D) TENURE/PROMOTION COMMITTEES

Chair of 1 tenure committee.

Chair of 2 promotion to full professor committees.

II. Sponsored Research

PI or Co-PI on more than **US\$ 26.85 million** in sponsored research.

(II-A) ACTIVE FUNDED PROJECTS

1. K. Bennett (**PI**), M. Magdon-Ismail (**Co-PI**), “Value-based Precision Health for Managed Care using Machine Learning and Data Analytics”, **Capital District Physicians Health Plan (CDPHP)** \$750,000. 2018–2021.
2. M. Magdon-Ismail (**Co-PI** task leader), B. Szymanski (**PI**), with 8 other Co-PIs, “Social Cognitive Network Academic Research Center”, **ARL** \$9,750,000. 2015–2019.

(II-B) PRIOR FUNDED PROJECTS

1. S. Bringsjord, M. Goldberg, W.R. Franklin, M. Magdon-Ismail (**PI**), B. Szymanski, “Simulation and Analysis of large Scale Complex Systems”, 2003. 3 years; \$155,969, **NSF**.
2. M. Goldberg, M. Magdon-Ismail (**PI**), W. Wallace, “Locating hidden Groups in Communication Networks”, 2003. $1\frac{1}{2}$ years; \$57,026, **NSF**.
3. M. Goldberg (**PI**), M. Krishnamoorthy, M. Magdon-Ismail, W. Wallace, B. Yener, “ITR: Study of Dynamically Evolving Social Groups in Communication Networks”, 2003. 4 years; \$550,000, **NSF**.
4. H. Newberg (**PI**) and M. Magdon-Ismail, “Data Mining The Galactic Sky” NSF 03-2 # 0307571. 2003. 3 years, \$306,512, **NSF**.
5. M. Goldberg, M. Magdon-Ismail (**PI**), W. Wallace “Detecting Hidden Groups in Communication Networks”, 2005. 1 year, \$143,400, **KDD** (awarded as **NSF** supplement to ITR award).
6. M. Goldberg, M. Magdon-Ismail (**PI**), W. Wallace “SGER: Using Global Communication Systems as Early Warning Systems for Natural Disasters”, 2005. 1 year, \$95,308, **NSF**.
7. M. Goldberg, M. Magdon-Ismail, B. Szymanski (**PI**), W. Wallace, “Uncovering the Hidden Networks that Support IED activity”, 2006, 3 years, \$884,060, **ONR**.
8. M. Goldberg, M. Magdon-Ismail (**PI**), W. Wallace “Social Communication Networks for Early Warning in Disasters”, 2006. 1 year, \$70,789, **NSF**.
9. M. Goldberg (**PI**), M. Magdon-Ismail, W. Wallace, “Algorithms and Software Tools for Discovering Coalitions and Identifying Leaders in the Blogosphere”, 2006. 1 year \$193,000, **NSF**.
10. M. Magdon-Ismail, H. Newberg (**PI**), “Revealing the Structure of the Galactic Halo through Statistical Analysis - Middle School Teacher Training”, 2006. 3 years \$317,676, **NSF**.
11. DHS Center Proposal, **participating faculty** “The DIMACS Center for Homeland Security Research and Education”, 3 years \$12,000 (RPI portion) **DHS**.
12. M. Goldberg (**PI**), M. Magdon-Ismail, W. Wallace, “Developing Software Tools for Detecting Groups in the Russian Blogosphere”, 2006. 4 months \$150,000 **CIA**.
13. M. Magdon-Ismail (**PI**), H. Newberg, B. Szymanski, C. Varela, “SEI(AST): A Dynamic Grid for Astroinformatics: Data-Driven Discovery of the Milky Way Origin and Evolution from the Sloan Digital Sky Survey”, 2006. 3 years \$757,700, **NSF**.

14. M. Magdon-Ismail (**PI**), H. Newberg, B. Szymanski, C. Varela, “SEI(AST): A Dynamic Grid for Astroinformatics: Data-Driven Discovery of the Milky Way Origin and Evolution from the Sloan Digital Sky Survey” (supplement), **NSF** \$53,004. 1 year. 2009.
15. M. Goldberg, M. Magdon-Ismail, W. Wallace (**PI**) “Dynamic Structure in Evolving Data Networks”, **NSF**, 1 year (subcontract to DIMACS-DYDAN center). \$42,819. 2009.
16. M. Goldberg, M. Magdon-Ismail, W. Wallace (**PI**) “Dynamic Structure in Evolving Data Networks”, **DHS**, 1 year (subcontract to DIMACS-DYDAN center). \$28,000. 2010; 1 year.
17. M. Magdon-Ismail , L. Newberg, B. Szymanski (**PI**), “Citizens Science: Enabling Computational Probabilistic Methods for Organism’s Transcriptional Regulatory Network Using Voluntary Computing Platforms” (EAGER), **NSF** \$241,714. 2009; 2.5 years.
18. M. Magdon-Ismail, J. Adams (**PI**), “Knowledge, Networks, and the Productivity of Scientists and Engineers: Individual Research Histories and Social Capital”, **NSF**, \$ 812,821. Start date: Sept 2011. 3 years. (Through NBER)
19. S. Das, M. Goldberg (**PI**), M. Magdon-Ismail, W. Wallace, “Network Identification in Large Semantic Databases Using Incomplete Information”, **IARPA**, \$ 242,185. March 2012. 1 year.
20. M. Goldberg, M. Magdon-Ismail (**PI**), W. Wallace, “Search and Analysis in Linked Data”, **IARPA**, \$ 195,822. Jan 2013. 1 year.
21. S. Das, J. Holguin-Veras (**PI**), M. Magdon-Ismail J. Mitchell, “Collaborative CDI-Type II: Cyber Enabled Discovery System for Advanced Multidisciplinary Study of Humanitarian Logistics for Disaster Response”, **NSF**, \$ 1,747,660. Start date: Aug 2011. 4 years.
22. M. Magdon-Ismail (**Co-PI** task leader), B. Szymanski (**PI**), with 8 other Co-PIs, “Social Cognitive Network Academic Research Center”, **ARL** \$9,045,000. 2009–2014.

III. Honors

(III-A) AWARDS

- Phi-Beta-Kappa, Yale University, 1992.
- Physics Prize, Yale University, 1993.
- Wilts Prize for Best PhD Thesis in EE, Caltech, 1998.
- Faculty Early Career Research Recognition Award, RPI, 2004.
- Best talk, financial services cluster, INFORMS, 2005.
- Best paper award (top-3), Conference on Intelligence and Security Informatics (ISI), 2006.
- Best paper award (top-2), International Conference on e-Science and Grid Computing, 2007.
- Best paper award, Conference on Agent Directed Simulation (ADS), 2010.
- Best paper award (top-3), SIAM Data Mining Conference (SDM), 2010.

(III-B) INVITED PAPERS AND BOOK CHAPTERS

- [1] M. Magdon-Ismail, A. Nicholson, and Y. S. Abu-Mostafa. Financial markets: very noisy information processing. *Proceedings of the IEEE*, 1998.
- [2] K. Busch, M. Magdon-Ismail, M. Mavronicolas, and P. Spirakis. Direct routing: Algorithms and Complexity. *Algorithmica*, 2006. (Special Issue of ESA 2004).
- [3] J. Baumes, M. K. Goldberg, M. Magdon-Ismail, and W. Wallace. Identification of hidden groups in communications. *Handbooks in Information Systems*, 2 (National Security), 2005.
- [4] J. Baumes, M. K. Goldberg, M. Magdon-Ismail, and W. Wallace. Discovering hidden groups in communication networks. In *Security Informatics and Terrorism: Patrolling the Web*. 2008.
- [5] C. Hui, M. Goldberg, M. Magdon-Ismail, and W. Wallace. Simulating the diffusion of information: An agent-based modeling approach. *Int. J. of Agent Tech. and Sys.*, 2010. (special issue of ADS).
- [6] M. Magdon-Ismail and K. Mertsalov. A permutation approach to validation. *Statistical Analysis and Data Mining*, 3(6):361–380, 2010. (best papers of SDM).
- [7] M. Magdon-Ismail and J. Purnell. Approximating the covariance matrix of GMMs with low-rank perturbations. *Int. J. Data Mining Mod. and Management*, 2011. (best papers of IDEAL).
- [8] K. Busch, M. Magdon-Ismail, and J. Xi. Oblivious routing for sensor network topologies. In *Theoretical Aspects of Distributed Computing in Sensor Networks*, chapter 13. 2011.
- [9] S. Kelley, M. Goldberg, M. Magdon-Ismail, K. Mertsalov, and William Wallace. Defining and discovering communities in social networks. In *Handbook of Optimisation in Complex Networks*, chapter 6. 2011.
- [10] K. Busch and M. Magdon-Ismail. Optimal oblivious routing in hole-free networks. In *Conference on Heterogeneous Networking for Quality, Reliability, Security, and Robustness (QShine)*, 2010.
- [11] C. Boutsidis, P. Drineas, and M. Magdon-Ismail. Near-optimal column based matrix reconstruction. In *Proc. Symp. on Foundations of Computer Science (FOCS)*, 2011. (invited to SIAM J. Computing).

IV. Service

(IV-A) CONFERENCE AND WORKSHOP PROGRAM COMMITTEES

2001–date Regularly served on ML/AI and Comp. Finance committees including: NIPS, UAI, AAAI, IJCAI, CIKM, KDD, ACML, ICDM, ICONIP, CIFE_r, IDEAL.
Current AAAI, UAI, ICDM, ACML, MILCOM, ICONIP;

(IV-B) JOURNAL EDITORSHIP

2001 Guest Editor, Special Issue on Financial Engineering,
IEEE Transactions on Neural Networks
2004 – 2008 Associate Editor,
Neurocomputing
2006 Guest Editor, Special Issue for IDEAL 05,
International Journal of Neural Systems (IJNS)
2008 Guest Editor, Special Issue for IDEAL 07,
International Journal of Neural Systems (IJNS)
2009 – 2013 Associate Editor, IEEE Transactions on Neural Networks.

(IV-C) REVIEWER FOR JOURNALS, CONFERENCES AND FUNDING PANELS

Funding agencies:

National Science Foundation
Hong Kong University Grants Committee
Airforce Office of Sponsored Research

Journals:

IEEE Transactions:

Information Theory, Neural Computing, Knowledge and Data Engineering, Information Technology Systems, Computers, Parallel and Distributed Systems, Wireless Communications, Systems Man and Cybernetics.

Machine Learning/AI:

Neural Computation, Machine Learning, Neural Networks Journal, Knowledge and Information Systems, Neurocomputing, Computational Statistics and Data Analysis, Data Mining and Knowledge Discovery, International Journal of Neural Systems, The Open Statistics and Probability Journal.

Networks/Distributed Systems:

Distributed Processing and Data Mining Journal, Transactions on Parallel and Distributed Systems, Scientific Programming, Distributed Computing, Wireless Sensor Networks, Signal Processing Letters, Journal of Experimental Algorithmics, Journal of Computational Science, Social Network Analysis and Mining, Networks.

Theory:

Algorithmica, Journal of Combinatorial Optimization, Information Processing Letters.

Finance:

Journal of Banking and Finance, Quantitative Finance.

V. Publications

(V-A) BOOKS, MONOGRAPHS

- [1] *Learning From Data*, Yaser Abu-Mostafa, Malik Magdon-Ismael, Hsuan-Tien Lin, amlbook.com, March 2012.
- [2] *A Course in Discrete Mathematics and Computing*, Malik Magdon-Ismael, mmibook.com, forthcoming. (Preliminary draft available upon request.)

(V-B) BOOK CHAPTERS

- [1] Jeffery Baumes, Mark K. Goldberg, Malik Magdon-Ismael, and William Wallace. *Identification of Hidden Groups in Communications*, volume 2 (National Security) of *Handbooks in Information Systems*, chapter 9, pages 209–242. Elsevier, 2007. Invited book chapter.
- [2] Nate Cole, Travis Desell, Daniel Lombraaa Gonzlez, Francisco Fernandez de Vega, Malik Magdon-Ismael, Heidi Newberg, Boleslaw Szymanski, and Carlos Varela. Evolutionary algorithms on volunteer computing platforms: The milkyway@home project. In F Fernandez de Vega and E. Cant-Paz, editors, *Parallel and Distributed Computational Intelligence.*, volume 6 of *Studies in Computational Intelligence*, pages 63–90. Springer-Verlag, Berlin, 2010.
- [3] Costas Busch, Malik Magdon-Ismael, and Jing Xi. Oblivious routing for sensor network topologies. In Sotiris Nikolettseas and Jos D.P. Rolim, editors, *Theoretical Aspects of Distributed Computing in Sensor Networks*, chapter 13, pages 381–400. Springer, 2011.
- [4] Stephen Kelley, Mark Goldberg, Malik Magdon-Ismael, Konstantin Mertsalov, and William Wallace. Defining and discovering communities in social networks. In My Thai and Panos Pardalos, editors, *Handbook of Optimization in Complex Networks*, chapter 6. 2011.

(V-C) JOURNAL ARTICLES

- [1] Malik Magdon-Ismael and Yaser S. Abu-Mostafa. Validation of volatility models. *Journal of Forecasting*, 17:349–368, September 1998.
- [2] Zehra Cataltepe, Yaser S. Abu-Mostafa, and Malik Magdon-Ismael. No free lunch for early stopping. *Neural Computation*, 11(4):995–1010, May 1998.
- [3] Malik Magdon-Ismael, Alexander Nicholson, and Yaser S. Abu-Mostafa. Financial markets: Very noisy information processing. *Proceedings of the IEEE: Special Issue on Information Processing*, 86(11):2184–2195, November 1998. (invited paper).
- [4] Malik Magdon-Ismael. No free lunch for noise prediction. *Neural Computation*, 12(3):547–565, 2000.
- [5] Malik Magdon-Ismael and Amir F. Atiya. The early restart algorithm. *Neural Computation*, 12(6):1303–1313, June 2000.
- [6] Eric Breimer, Mark K. Goldberg, Brian T. Kolstad, and Malik Magdon-Ismael. On the height of a random set of points in a d-dimensional unit cube. *Experimental Mathematics*, 10(4):583–597, 2001.
- [7] Malik Magdon-Ismael. The equivalent martingale measure: An introduction to pricing using expectations. *IEEE Transactions on Neural Networks*, 12(4):684–693, July 2001.
- [8] Malik Magdon-Ismael and Amir F. Atiya. Density estimation and random variate generation using multi-layer networks. *IEEE Trans. on Neural Networks*, 13(3):497–520, May 2002.
- [9] Malik Magdon-Ismael and Amir F. Atiya. A maximum likelihood approach to volatility estimation of a Brownian motion using the high, low and close. *Quantitative Finance*, 3:376–384, August 2003.

- [10] Malik Magdon-Ismail, Amir F. Atiya, Amrit Pratap, and Yaser S. Abu-Mostafa. On the maximum drawdown of a Brownian motion. *Journal of Applied Probability*, 41(3):147–161, March 2004.
- [11] Malik Magdon-Ismail and Amir F. Atiya. Maximum drawdown. *Risk*, 17(10):99–102, October 2004.
- [12] Malik Magdon-Ismail, Costas Busch, and Mukkai Krishnamoorthy. Hardness results for cake-cutting. *Bulletin of the European Association for Theoretical Computer Science*, 86:85–106, June 2005.
- [13] Malik Magdon-Ismail, Fikret Sivrikaya, and Bulent Yener. Joint problem of power optimal connectivity and coverage in wireless sensor networks. *Wireless Networks*, 13(4):537–550, 2006.
- [14] Costas Busch, Malik Magdon-Ismail, Marios Mavronicolas, and Paul Spirakis. Direct routing: Algorithms and Complexity. *Algorithmica*, 45(1):45–68, 2006. Invited for Special Issue from European Symposium on Algorithms (ESA) 2004.
- [15] Victor Boyarshinov and Malik Magdon-Ismail. Linear time isotonic and unimodal regression in the L_1 and L_∞ norms. *Journal of Discrete Algorithms*, 4(4):676–691, December 2006.
- [16] Victor Boyarshinov and Malik Magdon-Ismail. Efficient optimal linear boosting of a pair of classifiers. *IEEE Transactions on Neural Networks*, 18(2):317–328, 2007.
- [17] Costas Busch, Malik Magdon-Ismail, and Marios Mavronicolas. Universal bufferless packet switching. *SIAM Journal on Computing*, 37(4):1139–1162, 2007. Preliminary version appears in Workshop on Approximate and Online Algorithms (WAOA) 2004.
- [18] Sibel Adali, Brandeis Hill, and Magdon-Ismail. Information vs. robustness in rank aggregation: models, algorithms and a statistical framework for evaluation. *Journal of Digital Information Management*, 5(5), 2007. [11].
- [19] Malik Magdon-Ismail and Joseph Sill. A linear fit gets the correct monotonicity directions. *Machine Learning*, 70(1):21–43, 2008. Online First. Preliminary version appears in COLT 2003.
- [20] Costas Busch, Malik Magdon-Ismail, and Marios Mavronicolas. Efficient bufferless packet switching on trees and leveled networks. *Journal of Parallel and Distributed Computing*, 67:1168–1186, 2007. Preliminary versions appear in EURO-PAR 2004,2005.
- [21] Volkan Isler and Malik Magdon-Ismail. Sensor selection in arbitrary dimensions. *IEEE Tran. Automation Science and Engineering*, 5(4):651–660, 2008.
- [22] Costas Busch, Malik Magdon-Ismail, Fikret Sivrikaya, and Bulent Yener. Contention-free mac protocols for wireless sensor networks. *Distributed Computing*, 21(1):23–42, 2008. Preliminary version appears in DISC 2004.
- [23] Costas Busch, Malik Magdon-Ismail, and Jing Xi. Optimal oblivious path selection on the mesh. *IEEE Transactions on Computers*, 57(5):660–671, 2008.
- [24] Nathan Cole, Heidi Joe Newberg, Malik Magdon-Ismail, Travis Desell, Kristopher Dawsey, Warren Hayashi, Xinyang (Fred) Liu, Jonathan Purnell, Boleslaw Szymanski, Carlos Varela, and James Wisniewski. Maximum likelihood fitting of tidal streams with application to the sagittarius dwarf tidal tails. *The Astrophysical Journal*, 683:750–766, 2008.
- [25] Jeff Baumes, Hung-Ching Chen, Matthew Francisco, William Wallace, Malik Magdon-Ismail, and Mark Goldberg. ViSAGE: A virtual laboratory for simulation and analysis of social group evolution. *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, 3(3):1–35, August 2008.
- [26] Hung-Ching (Justin) Chen, Mark Goldberg, Malik Magdon-Ismail, and Al Wallace. Reverse engineering a social agent-based hidden Markov model - ViSAGE. *International Journal of Neural Systems*, 18(6):491–526, December 2008.
- [27] Costas Busch and Malik Magdon-Ismail. Atomic routing games on maximum congestion. *Theoretical Computer Science*, 410(36):3337–3347, 2009.
- [28] Ali Civril and Malik Magdon-Ismail. On selecting a maximum volume sub-matrix of a matrix and related problems. *Theoretical Computer Science*, 410(47-49):4801–4811, 2009.

- [29] Cindy Hui, Mark Goldberg, Malik Magdon-Ismael, and William A. Wallace. Simulating the diffusion of information: An agent-based modeling approach. *Special Issue on Agent-Directed Simulation, International Journal of Agent Technologies and Systems*, 2(3):31–46, 2010. (invited).
- [30] Malik Magdon-Ismael and Konstantin Mertsalov. A permutation approach to validation. *Statistical Analysis and Data Mining, Special Issue on Best Papers from SDM10 (invited)*, 3(6):361–380, 2010.
- [31] Malik Magdon-Ismael and Jonathan Purnell. Approximating the covariance matrix of GMMs with low-rank perturbations. *International Journal of Data Mining, Modelling and Management Special Issue of Best Papers from IDEAL 2010 (invited)*, page to appear, 2011.
- [32] S. Das and M. Magdon-Ismael. A model for information growth in collective wisdom processes. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 6(2):article 6, July 2012.
- [33] M. Goldberg and Malik Magdon-Ismael. Embedding a forest in a graph. *Electronic Journal of Combinatorics (EJC)*, 18(1, P99), 2011.
- [34] Ali Civril and Malik Magdon-Ismael. Exponential inapproximability of selecting a maximum volume sub-matrix. *Algorithmica*, 65(1):159–176, 2013.
- [35] Ali Civril and Malik Magdon-Ismael. Column subset selection via sparse approximation of SVD. *Theoretical Computer Science*, 421:1–14, 2012.
- [36] Sibel Adali, Tina Liu, and Malik Magdon-Ismael. An analysis of optimal link bombs. *Theoretical Computer Science*, 437:1–20, 2012.
- [37] Petros Drineas, Malik Magdon-Ismael, Michael Mahoney, and David Woodruff. Fast approximation of matrix coherence and statistical leverage. *Journal of Machine Learning Research (JMLR)*, 13:3441–3472, 2012.
- [38] Sibel Adali, Malik Magdon-Ismael, and Xiaohui Lu. iHypR: Prominence ranking in networks of collaborations with hyperedges. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 7(4):Article 16, 2013.
- [39] Christos Boutsidis and Malik Magdon-Ismael. Deterministic feature selection for k -means clustering. *IEEE Transactions on Information Theory*, 59(9), September 2013.
- [40] Christos Boutsidis, Petros Drineas, and Malik Magdon-Ismael. Near optimal coresets for least-squares regression. *IEEE Transactions on Information Theory*, 59(10):6880–6892, October 2013.
- [41] Matthew Newby, Nathan Cole, Heidi Jo Newberg, Travis Desell, Malik Magdon-Ismael, Boleslaw Szymanski, Carlos Varela, Benjamin Willett, and Brian Yanny. A spatial characterization of the sagittarius dwarf galaxy tidal tails. *The Astronomical Journal*, 145(6), 2013.
- [42] S. Adali, X. Lu, and M. Magdon-Ismael. Local, community and global centrality methods for analyzing networks. *Social Network Analysis and Mining (SNAM)*, 4(1), 2014.
- [43] C. Boutsidis, P. Drineas, and M. Magdon-Ismael. Near-optimal column-based matrix reconstruction. *SIAM Journal on Computing*, 43(2), 2014.
- [44] C. Boutsidis and M. Magdon-Ismael. A note on sparse least-squares regression. *Information Processing Letters*, 115(5):273–276, 2014.
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VI. Miscellaneous

Data of Birth: 14 December, 1971.

Citizenship: USA, Sri Lanka. (Zimbabwe for 12 years.)

Extracurricular: Competed at the national level in Bridge (NCAA champions (1993), represented USA in World Juniors (1995), NAOP B 2nd place (2016,2018)), Squash, Badminton.