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Education

PhD	Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, Illinois, 1983.
Thesis	On the Connectivities of Networks with Application to Multiple Processor Systems
Advisor	Professor S. Louis Hakimi
MS	Department of Computer, Information, and Control Engineering, University of Michigan, Ann Arbor, Michigan, 1977.
BS	Department of Electrical Engineering, University of Michigan, Ann Arbor, Michigan, 1975.

Academic Career

11/19 – Present	Chairperson, CSE Department, MSU.
7/20 – present	Professor, CSE Department, MSU
8/17 – 11/19	Interim Chair, CSE Department, MSU.
5/09 – 08/17	Associate Chair, CSE Department, MSU.
1994 – 2004	Graduate Director, CSE Department, MSU.
9/83 – present	Assistant Professor (1983), Associate Professor with tenure (1990), Professor (2021), CSE Department, MSU.
9/83 – 6/90	Assistant Professor, CSE Department, MSU.
9/86 – 9/88	Faculty Affiliate, A.H. Case Center for Computer Aided Design, MSU.

Research Interests

- Graph Theory Applications in Computer Science
- Data Mining, Computer Networks
- Design and Analysis of Algorithms, Fault-Tolerant Computing

Recognitions

- Recipient of The Withrow Teaching Excellence Award, College of Engineering, MSU, 2015.
- Recipient of The Withrow Teaching Excellence Award, College of Engineering, MSU, 2005.
- Recipient of The Withrow Exceptional Service Award, College of Engineering, MSU, 1998.
- Undergraduate Scholarship, University of Michigan, 1973.

Major Software Packages Developed/Supervised

- *PG*, A Graph Manipulation Package written in Python, 2010-present.
- *GMPX*, A Graph Manipulation Package written in C#, 2004.
- *TMS*, a Tutorial Management System, a .NET C# capstone project, 2002.

- *Enhanced Student Information System*, an MS Access based Application, 1995- 2004.
- *The Shuffler*, Software for a World-Wide-Web Based Form Routing System (with Matthew Pfeiffer and Daniel Dapkus), 1997.
- *GPM2000*, A Graph Manipulation Package written in Visual Basic (with Matthew P. Stabile), 1997.
- *GMP*, An X-Windows based Graph Manipulation Package for Unix (with Guy Zimmerman), 1989 – 1996.

Publications

Journal Articles

1. M.H. Khalifeh and Abdol-Hossein Esfahanian, "Discrete Integral and Discrete Derivative on Graphs and Switch Problem of Trees, " *Mathematics 2023, 11, 1678,* Pages 1-18. Pdf
2. M.H. Khalifeh and Abdol-Hossein Esfahanian, "Some results about the inset edge and average distance in trees," *Discrete Applied Mathematics*, Volume 325, January 2023, Pages 186-199. Pdf
3. Alireza Ameli Renaniy, Jun Huangz, Guoliang Xing, Abdol-Hossein Esfahanian, "Harnessing Hardware Defects for Improving Wireless Link Performance," *IEEE/ACM Transactions on Networking,* Vol. 28, Issue 5, Oct 2020, pp. 1913-1924. Pdf
4. Chin-Jung Liu, Pei Huang, Li Xiao, and Abdol-Hossein Esfahanian, "Inter-femtocell Interference Identification and Resource Management," *IEEE Transactions on Mobile Computing,* Vol. 19, No. 1, January 2020, pp. 116-129. Pdf
5. Rana Forsati, Iman Barjasteh, Abdol-Hossein Esfahanian, and Hayder Radha, "Network Completion by Leveraging Similarity of Nodes," *Social Network Analysis and Mining (SNAM),* Springer, Vol. 6, No. 1, pp. 102-124, 2016. Pdf
6. Iman Barjasteh, Rana Forsati, Dennis Ross, Abdol-Hossein Esfahanian, and Hayder Radha, "Cold-start Recommendation with Provable Guarantees: A Decoupled Approach," *IEEE Transactions on Knowledge and Data Engineering*, Vol. 26, Issue 6, pp. 1462-1474, June 2016. Pdf
7. Matthew R. Herman, A. Pouyan Nejadhashemi, Fariborz Daneshvar, Dennis M. Ross, Sean A. Woznicki, Zhen Zhang, and Abdol-Hossein Esfahanian, "Optimization of conservation practice implementation strategies in the context of stream health, "*Journal of Ecological Engineering*, Vol 84, pp. 1 – 12, 2015. Pdf
8. Sean A. Woznicki, A. Pouyan Nejadhashemi, Dennis M. Ross, Zhen Zhang, LizhuWang, and Abdol-Hossein Esfahanian, "Ecohydrological model parameter selection for stream health evaluation," *Science of the Total Environment*, Vol 511, pp. 341-353, 2015. Pdf
9. Dennis Ross, Bruce Sagan, Ronald Nussbaum, and Abdol-Hossein Esfahanian, "On Constructing Regular Distance-Preserving Graphs, "*Congressus Numerantium*, Vol. 219, pp. 129-138, 2014. Pdf
10. Ronald Nussbaum and Abdol-Hossein Esfahanian, "Preliminary Results on Distance-Preserving Graphs, "*Congressus Numerantium*, Vol. 211, pp. 141-149, 2013. Pdf
11. Abhishek Patil, Abdol-Hossein Esfahanian, Li Xiao, and Yunhao Liu, "Resource Allocation using Multiple Edge-Sharing Multicast Trees, "*IEEE Transactions on Vehicular Technology*, Vol. 57, pp. 3178-3186, September 2008. Pdf

12. Abhishek Patil, Yunhao Liu, Li Xiao, Abdol-Hossein Esfahanian, and Lionel M Ni, "SOLONet: Sub-optimal location-aided overlay network for MANETs," *Journal of Wireless Networks*, pp. 415-433, January 2008. Pdf
13. Andrew Chen and Abdol-Hossein Esfahanian, "On The Construction of Graphs with Large Numbers of Spanning Trees, "*Congressus Numerantium*, Vol. 172, pp. 123-148, 2005. Pdf
14. Li Xiao, Abhishek Patil, Yunhao Liu, Lionel M Ni, and Abdol-Hossein Esfahanian, "Prioritized Overlay Multicast in Ad-hoc Environments," *IEEE Computer Magazine*, pp. 67-74, Feb 2004. Pdf
15. Barbara D. Gannod, Abdol-Hossein Esfahanian, and Eric Torng, "Source-Limited Inclusive Routing: A New Paradigm for Multicast Communication," *NETWORKS*, Vol. 35, No. 1, pp. 40-55, 2000. Pdf
16. X. Lin, Abdol-Hossein Esfahanian, and A. Burago, "Adaptive Wormhole Routing in Hypercube Multicomputers," *Journal of Parallel and Distributed Computing*, Vol. 48, pp. 165-174, 1998. Pdf
17. Barbara D. Birchler, Abdol-Hossein Esfahanian, and Eric Torng, "Software Multicast Techniques: A Survey," *Journal of Scientia Iranica*, Vol. 3, No. 4, pp. 159-174, winter 1997.
18. X. Lin, P.K. McKinley, and Abdol-Hossein Esfahanian, "Adaptive Multicast Wormhole Routing in 2D Mesh Multicomputers," Journal *of Parallel and Distributed Computing*, Vol. 28, pp. 19-31, 1995. Pdf
19. P.K. McKinley, H. Xu, Abdol-Hossein Esfahanian, L.M. Ni, "Unicast-Based Multicast Communication in Wormhole-Routed Networks", *IEEE Transactions on Parallel and Distributed Systems*, Vol. 5, No. 12, pp. 1252-1265, December 1994. Pdf
20. Abdol-Hossein Esfahanian and Ortrud R. Oellermann, "Distance-Hereditary Graphs and Multidestination Message-Routing in Multicomputers," *Journal of Combinatorial Mathematics and Combinatorial Computing*, Vol. 13. pp. 213-222, April 1993. Pdf
21. A. Duksu Oh, H.-A. Choi, and Abdol-Hossein Esfahanian, "Some Results on Generalized Connectivity With Applications to Topological Design of Fault-Tolerant Multicomputers," *Journal of Combinatorial Mathematics and Combinatorial Computing*, Vol. 13, pp. 39-56, April 1993.
22. H.-A. Choi and Abdol-Hossein Esfahanian, "A Message-Routing Strategy for Multicomputer Systems," *NETWORKS*, Vol. 22, pp. 627-646, 1992. Pdf
23. G. Zimmerman and Abdol-Hossein Esfahanian, "Chordal Rings as Fault-Tolerant Loop Networks," *Journal of Discrete Applied Mathematics*, 37/38, pp. 563-573, 1992. Pdf
24. Abdol-Hossein Esfahanian, L.M. Ni, and B. Sagan, "The Twisted *n*-Cube with Application to Multiprocessing," *IEEE Transactions on Computers*, Vol. 40, pp. 88-94, January 1991. Pdf
25. Y. Lan, Abdol-Hossein Esfahanian, and L.M. Ni, "Multicast in Hypercube Multiprocessors," *Journal of Parallel and Distributed Computing*, Vol. 8, pp. 30-41, January 1990. Pdf
26. Abdol-Hossein Esfahanian, "Generalized Measures of Fault-Tolerance with Application to *n*-Cube Networks," *IEEE Transactions on Computers*, Vol. 38, pp. 1586-1591, November 1989. Pdf
27. Y. Lan, L.M. Ni, and Abdol-Hossein Esfahanian, "A VLSI Router Design for Hypercube Multiprocessors," *INTEGRATION, the VLSI Journal*, Vol. 7, pp. 103-125, July 1989. Pdf

28. Abdol-Hossein Esfahanian and S.L. Hakimi, "On Computing a Conditional Edge-connectivity of a Graph," *Journal of Information Processing Letters*, Vol. 27, pp. 195-199, April 1988. Pdf
29. Abdol-Hossein Esfahanian, "Lower-Bounds on the Connectivities of a Graph," *Journal of Graph Theory*, Vol. 9, No. 4, pp. 503-511, 1985. Pdf
30. Abdol-Hossein Esfahanian and S.L. Hakimi, "Fault-Tolerant Routing in De Bruijn Communication Networks," *IEEE Transactions on Computers*, Vol. 34, No. 9, pp. 777-789, September 1985.
31. Abdol-Hossein Esfahanian and S.L. Hakimi, "On Computing the Connectivities of Graphs and digraphs," *NETWORKS*, Vol. 14, pp. 355-366, 1984. Pdf

Book Chapters

32. Ronald Nussbaum, Abdol-Hossein Esfahanian, and Pang-Ning Tan, "Clustering Social Networks Using Distance-preserving Subgraphs," *The Influence of Technology on Social Network Analysis and Mining*, TanselÖzyer et al. (eds.), Springer, pp. 331-350, March 2013. Pdf
33. Abdol-Hossein Esfahanian, "Connectivity Algorithms," *Structural Graph Theory*, Robin Wilson and Lowell Beineke, (Eds.), Cambridge University Press, pp. 268-281, 2013. Pdf
34. Jerry Scripps, Ronald Nussbaum, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "Link-based Network Mining," *Structural Analysis of Networks*, Dehmer M. (Eds.), pp. 403-420, Birkhäuser Publishing, 2010. Pdf
35. Swamy K. Sitarama and Abdol-Hossein Esfahanian, "Designing Distance-Preserving Fault-Tolerant Topologies," *Lecture Notes in Computer Science*: *Graph-Theoretic Concepts in Computer Science,* G. Goos, J. Hartmanis and J. van Leeuwen (Ed.), Vol. 1197, pp. 352-366, Springer-Verlag, 1996. Pdf
36. Barbara D. Birchler, Abdol-Hossein Esfahanian, and Eric Torng, "Toward a General Theory of Unicast-Based Multicast Communication," *Lecture Notes in Computer Science*: *Graph-Theoretic Concepts in Computer Science,* Manfred Nagl (Ed.), Vol. 1017, pp. 237-251, Springer-Verlag, 1995. Pdf
37. Y. Lan, Abdol-Hossein Esfahanian, and L.M. Ni, "Multicast in Hypercube Multiprocessors," *Interconnection Networks for High Performance Parallel Computers*, I.D. Scherson and A.S. Youssef (Eds.), IEEE Computer Society Press, pp. 383-394, 1994. Pdf
38. Abdol-Hossein Esfahanian and S.L. Hakimi, "Fault-Tolerant Routing in De Bruijn Communication Networks,"*Interconnection Networks for High Performance Parallel Computers*, I.D. Scherson and A.S. Youssef (Eds.), IEEE Computer Society Press, pp. 668-379, 1994. Pdf
39. G. Zimmerman, Abdol-Hossein Esfahanian, and D. Vasquez, "GMP/X, An X-Windows based Graph Manipulation Package," *Computational Support for Discrete Mathematics (DIMACS 15)*, N. Dean and G. E. Shannon (Eds.), Volume 15, pp. 245-254, American Mathematical Society, 1992.
40. H.-A. Choi and Abdol-Hossein Esfahanian, "On Complexity of a Message-Routing Strategy for Multicomputer Systems," *Lecture Notes in Computer Science: Graph-Theoretic Concepts in Computer Science*, R.H. Mohring (Ed.), Vol. 484, pp. 170-181, Springer-Verlag, 1991. Pdf

41. H.-A. Choi, Abdol-Hossein Esfahanian, and B. Houck, "Optimal Communication Trees with Application to Hypercube Multiprocessors," *Graph Theory, Combinatorics, and Applications*, Y. Alavi, G. Chartrand, O.R. Oellermann, and A.J. Schwenk (Eds.), Vol. 1, pp. 245-264, 1991.

Conference Articles

42. Farzan Masrour, Francisco Santos, Pang-Ning Tan, and Abdol-Hossein Esfahanian. "Fairness-Aware Graph Sampling for Network Analysis," *Proc of the 22nd IEEE International Conference on Data Mining*, Orlando, FL (2022).
43. Francisco Santos, Junke Ye, Farzan Masrour, Pang-Ning Tan, and Abdol-Hossein Esfahanian. "FACS-GCN: Fairness-Aware Cost-Sensitive Boosting of Graph Convolutional Networks," *Proc of IEEE International Joint Conference on Neural Networks* (IJCNN-2022), Padova, Italy (2022)
44. Farzan Masrour, Tyler Wilson, Heng Yan, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "Bursting the Filter Bubble: Fairness-Aware Network Link Prediction," *The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20)*, pp. 841-848. Pdf
45. Farzan Masrour, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "OPTANE: An OPtimal Transport Algorithm for NEtwork Alignment," *The 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2019), pp. 448 – 451, Vancouver, Canada, 2019.
46. Farzan Masrour, Pang-Ning Tan, Abdol-Hossein Esfahanian, and Courtland VanDam, "Attributed Network Representation Learning Approaches for Link Prediction," *The 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2018), pp. 560 – 563, Barcelona, Spain, 2018.
47. Alireza Ameli Renani, Jun Huang, Guoliang Xing, and Abdol-Hossein Esfahanian, "Harnessing hardware defects for improving wireless link performance: Measurements and applications," *INFOCOM*, pp. 1-9, 2017.
48. Rana Forsati, Iman Barjasteh, and Abdol-Hossein Esfahanian, "Semi-supervised Collaborative Ranking with Push at the Top," *The 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2017), pp. 401 – 408, Sydney, Australia, 2017.
49. Rana Forsati, Iman Barjasteh, Dennis Ross, and Abdol-Hossein Esfahanian, "Learning the Implicit Preference of Users for Effective Recommendation," *The 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2017), pp. 636 – 639, Sydney, Australia, 2017.
50. Emad Zahedi, Masoud Mirmomeni, and Abdol-Hossein Esfahanian, "An Evolutionary Framework for Analyzing the Distance Preserving Property of Weighted Graphs," *The 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2017), pp. 577 – 584, Sydney, Australia, 2017.
51. Rana Forsati, Iman Barjasteh, Abdol-Hossein Esfahanian, and Hayder Radha, "Semi-supervised Collaborative Ranking with Push at Top," *SIAM MLRec, International Workshop on Machine Learning Methods for Recommender Systems, 2016.*

52. Farzan Mansour, Iman Barjasteh, Rana Forsati, Abdol-Hossein Esfahanian, and Hayder Radha, "Network Completion with Node Similarity: A Matrix Completion Approach with Provable Guarantees," *The 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2015), pp. 302 – 307, Paris, France, 2015.
53. Rana Forsati, Iman Barjasteh, Farzan Mansour, Abdol-Hossein Esfahanian, and Hayder Radha, "PushTrust: An Efficient Recommendation Algorithm by Leveraging Trust and Distrust Relations," *The 9th ACM Conference on Recommender Systems*, pp. 51 – 58, Vienna, Austria, 2015.
54. Iman Barjasteh, Rana Forsati, Farzan Mansour, Abdol-Hossein Esfahanian, and Hayder Radha, "Cold-Start Item and User Recommendation with Decoupled Completion and Transduction," *The 9th ACM Conference on Recommender Systems*, Vienna, Austria, 2015.
55. Chin-Jung Liu, Pei Huang, Li Xiao, Abdol-Hossein Esfahanian, "Interference identification and resource management in OFDMA femtocell networks," *2014 IFIP Networking Conference,* pp 1-9, Trondheim, Norway.
56. Claudia Elena Vergara, Mark Urban-Lurain, Abdol-Hossein Esfahanian, et al. "Towards Improving Computational Competencies for Undergraduate Engineering Students," *ASEE Conference*, Indianapolis, IN, June 2014.
57. Claudia Elena Vergara, Mark Urban-Lurain, Abdol-Hossein Esfahanian, Daina Briedis, Neeraj Buch, "Integrating computation across engineering curricula: Preliminary impact on students," *Frontiers in Education*, pp. 1-2, Seattle WA, 2012.
58. Claudia Elena Vergara, Mark Urban-Lurain, Abdol-Hossein Esfahanian, Daina Briedis, Neeraj Buch, Thomas F. Wolff, Jon Sticklen, Cindee Dresen, Kysha L. Frazier, and Louise Paquette, "Computational Expertise in Engineering: Aligning Workforce Computing Needs with Computer Science Concepts," *ASEE 2011*, Vancouver BC, AC 2011-1050.
59. Ronald Nussbaum, Abdol-Hossein Esfahanian, and Pang-Ning Tan, "Clustering Social Networks Using Distance-preserving Subgraphs," *Proceedings of the 2010 International Conference on Advances in Social Networks Analysis and Mining (ASONAM'10),* pp. 380-385, Odense, Denmark, August 9-11, 2010.
60. Claudia E. Vergara, Mark Urban-Lurain, Cindee Dresen, Tammy Coxen, Taryn MacFarlane, Kysha Frazier, Daina Briedis, Neeraj Buch, Abdol-Hossein Esfahanian, Louise Paquette, Jon Sticklen, Jeannine LaPrad, and Thomas F. Wolff, "Aligning Computing Education with Engineering Workforce Computational Needs: New Curricular Directions to Improve Computational Thinking in Engineering Graduates," *The 39th ASEE/IEEE Frontiers in Education Conference*, pp. (W2H)1-6, October 18 - 21, 2009, San Antonio, TX.
61. Ronald Nussbaum, Abdol-Hossein Esfahanian, and Pang-Ning Tan, "History-based Email Prioritization," *Proceedings of the 2009 International Conference on Advances in Social Networks Analysis and Mining (ASONAM'09),* pp. 364-365, Athens, Greece, July 20-22, 2009
62. Jerry Scripps, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "Measuring the Effects of Preprocessing Decisions and Network Forces in Dynamic Network Analysis," *Proceedings of ACM SIGKDD International Conference on Data Mining (KDD-2009)*, Paris, France 2009.
63. Jerry Scripps, Pang-Ning Tan, Feilong Chen, and Abdol-Hossein Esfahanian, "A Matrix Alignment Approach for Collective Classification," *Proceedings of the 2009 International Conference on Advances in Social Networks Analysis and Mining (ASONAM'09)*, pp.155-159, Athens, Greece, July 20-22, 2009.

64. Jerry Scripps, Pang-Ning Tan, Feilong Chen, and Abdol-Hossein Esfahanian, "A Matrix Alignment Approach for Link Prediction," *Proceedings of the 19th International Conference on Pattern Recognition (ICPR-08)*, pp. 1-4, Tampa, Florida, December 8-11, 2008. Nominated for IBM best student paper award.
65. Jerry Scripps, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "Node Roles and Community Structure in Networks," *KDD 2007 Workshop on Web Mining and Social Network Analysis*, pp. 26 - 36, August 2007.
66. Jerry Scripps, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "Exploration of Link Structure and Community-based Node Roles in Network Data," *Proc of IEEE Int'l Conf. on Data Mining (ICDM-07)*, Omaha, Nebraska, pp. 649 - 654, Oct 2007.
67. Andrew Chen and Abdol-Hossein Esfahanian, "A Demography of t-Optimal (n, m) Graphs Where $n \leq 12$," *Proceedings of The 2005 International Conference on Algorithmic Mathematics and Computer Science*, pp. 121-127.
68. Abhishek Patil, Abdol-Hossein Esfahanian, Li Xiao and Yunhao Liu, "Resource Allocation using Multiple Edge-Sharing Multicast Trees," *Proceedings of the 2nd IEEE International Conference on Mobile Ad-hoc and Sensor Systems* (*IEEE MASS* 2005), Washington D.C., November 2005.
69. Yunhao Liu, Li Xiao, Abdol-Hossein Esfahanian, and Lionel M. Ni, "Approaching Optimal Peer-to-Peer Overlays," *Proceedings of the 13th IEEE International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems* (*MASCOTS* 2005), Atlanta, Georgia, September 2005, pp.407-414.
70. Abhishek Patil, Yunhao Liu, Li Xiao, Abdol-Hossein Esfahanian, and Lionel M. Ni, "SOLONet: Sub-Optimal Location-Aided Overlay Network for MANETs", *IEEE International Conference on Mobile Ad-hoc and Sensor Systems* (*IEEE MASS* 2004), Fort Lauderdale, Florida, October 2004.
71. Abhishek Patil, Yunhao Liu, Lionel Ni, Li Xiao and Abdol-Hossein Esfahanian, "POMA: Prioritized Overlay Multicast in Ad Hoc Environments", proceedings of the *2003 International Conference on High Performance Computing, LNCS 2913*, (228-237), Hyderabad, India, December, 2003.
72. Baijian Yang, Abdol-Hossein Esfahanian, Lionel Ni, and P. Mohapatra, "A Tree Building Technique for Overlay Multicasting in DiffServ Domain," *International Conference on Internet Computing*, USA, 2003.
73. Boris Gelfand, Abdol-Hossein Esfahanian, and Matt Mutka, "An Agent-Based Approach to Enforcing Fairness in Peer-to-Peer Distributed File Systems," *The Ninth International Conference on Parallel and Distributed Systems* (CPADS 2002), pp. 157-162, Taiwan, December 2002.
74. Boris Gelfand, Matt Mutka, and Abdol-Hossein Esfahanian, "A-DFS: An Agent-Based Serverless Distributed File System," *The 15th International Conference on Parallel and Distributed Computing Systems* (PDCS 2002), pp. 545-551, Louisville, Kentucky, September 2002.
75. F. Du, L. M. Ni and Abdol-Hossein Esfahanian, "HOPOVER: A New Handoff Protocol for Overlay Networks," *IEEE ICC2002*, pp. 3234 – 3239, New York, New York, May 2002.
76. W.K. Liao, Abdol-Hossein Esfahanian and L.M. Ni, "Flow Control for ABR Dispersity Multicasting," *IEEE ICCCN2000*, pp. 598 – 603, Oct. 2000, Las Vegas, Nevada.

77. W. Tang, F. Du, M. W. Mutka, L. M. Ni, Abdol-Hossein Esfahanian, "Supporting Global Replicated Services by a Routing-Metric-Aware DNS," *The Second International Workshop on Advanced Issues of E- commerce and Web-based Information Systems*, pp. 67-72, June 2000.
78. F. Du, L. M. Ni and Abdol-Hossein Esfahanian, "Towards Solving Multicast Key Management Problem," *The Eighth International Conference on Computer Communications and Networks*, pp. 232-236, October 1999.
79. Matthew Pfeiffer, Daniel Dapkus, Abdol-Hossein Esfahanian, and Charles B. Owen, "The Shuffler: Software for a World-Wide-Web Based Form Routing System," *WebNet99*, Honolulu, Hawaii, October 1999.
80. Barbara D. Birchler, Abdol-Hossein Esfahanian, and Eric Torng, "Sufficient Conditions for Optimal Multicast Communication," *Proceedings of the International Conference on Parallel Processing*, pp. 390-393, 1997.
81. Barbara D. Birchler, Abdol-Hossein Esfahanian, and Eric Torng, "Information Dissemination in Restricted Routing Networks," *The International Symposium on Combinatorics and Applications*, (Tianjin China), pp. 33-43, June 1996.
82. X. Lin, Abdol-Hossein Esfahanian, P.K. McKinley, and A. Burago, "Adaptive Wormhole Routing in Hypercube Multicomputers," *The Fifth IEEE Symposium on Parallel and Distributed Processing*, pp. 72-79, December 1993.
83. X. Lin, P.K. McKinley, and Abdol-Hossein Esfahanian, "Adaptive Multicast Wormhole Routing in 2D Mesh Multicomputers," *Proceedings of the Parallel Architecture and Languages*, pp. 228-241, June 1993.
84. P.K. McKinley, H. Xu, Abdol-Hossein Esfahanian, L.M. Ni, "Unicast-Based Multicast Communication in Wormhole-Routed Networks", *Proceedings of the 1992 International Conference on Parallel Processing*, Vol. II, pp. 10-19, 1992.
85. G. Zimmerman and Abdol-Hossein Esfahanian, "Fault Tolerance in Chordal Rings", *Proceedings of The Second Great Lakes Computer Science Conference*, Kalamazoo, MI, September 1991.
86. G. Zimmerman and Abdol-Hossein Esfahanian, "Fault Tolerant Properties of Some Chordal Rings", *Proceedings of The First International Conference on Computer Applications in Science, Technology, and Medicine*, Isfahan, Iran, pp. 63-67, December 1991.
87. A. Duksu Oh, H.-A. Choi, and Abdol-Hossein Esfahanian, "Some Results on Generalized Connectivity," *Proceedings of The Twenty-second Southeastern International Conference on Combinatorics, Graph Theory and Computing*, January 1991.
88. A. Duksu Oh, H.-A. Choi, and Abdol-Hossein Esfahanian, "On the Complexity of a Fault-Tolerance Model," *First Great Lakes Symposium on VLSI*, Western Michigan University, January 1991.
89. Abdol-Hossein Esfahanian and H.-A. Choi, "A Message-Routing Strategy for Multicomputer Systems," *Proceedings of The International Conference on Control and Modeling*, Tehran, Iran, pp. 508-512, July 1990.
90. H.-A. Choi and Abdol-Hossein Esfahanian, "Restricted Vertex-Connectivity with Application to Fault-Tolerant Computing," *Proceedings of The International Conference on Operations Research*, Vienna, Austria, August 1990.
91. H.-A. Choi and Abdol-Hossein Esfahanian, "Steiner Tree Problem is NP-Complete for Planar Cube Graphs," *The Fifth SIAM Conference on Discrete Mathematics*, June 1990.

92. G. Zimmerman and Abdol-Hossein Esfahanian, "A New Approach to System-Level Fault-Tolerance in Message-Passing Multicomputers," *Proceedings of First Great Lakes Computer Science Conference*, September 1989.
93. Abdol-Hossein Esfahanian and G. Zimmerman, "A New Fault Tolerance Analysis for *n*-Cube Networks," *Proceeding of the International Symposium on Mini and Microcomputers*, December 1988.
94. Abdol-Hossein Esfahanian, L.M. Ni, and B. Sagan, "On Enhancing Hypercube Multiprocessors," *Proceeding of The 1988 International Conference on Parallel Processing*, pp. 86-89, August 1988.
95. B. McMillin, Abdol-Hossein Esfahanian, and L.M. Ni, "Limitations of System Level Diagnosis by Fault Model Considerations," *Proceedings of the 3rd Annual International Conference on Supercomputing*, pp. 258-264, May 1988.
96. Y. Lan, L.M. Ni, and Abdol-Hossein Esfahanian, "Relay Approach Message Routing in Hypercube Multiprocessors," *Proceedings of the 3rd International Conference on Supercomputing*, pp. 174-183, May 1988.
97. Abdol-Hossein Esfahanian, and G. Zimmerman, "A Distributed Broadcast Algorithm for Binary De Bruijn Networks," *Proceedings of the 7th Annual Phoenix Conference on Computers and Communications*, pp. 318-322, March 1988.
98. Y. Lan, Abdol-Hossein Esfahanian, and L.M. Ni, "Multicast in Hypercube Multiprocessors," *Proceedings of the 7th Annual Phoenix Conference on Computers and Communications*, pp. 26-30, March 1988.
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100. Abdol-Hossein Esfahanian and S.L. Hakimi, "Computing a Conditional Edge-Connectivity," *Proceedings of the 25th Annual Allerton Conference on Communications, Control, and Computing*, pp. 34-36, October 1987.
101. H.-A. Choi, Abdol-Hossein Esfahanian, and L.M. Ni, "One-to-*k* Communication in Distributed-Memory Multiprocessors," *Proceedings of the 25th Annual Allerton Conference on Communications, Control, and Computing*, pp. 268-270, October 1987.

Technical Papers

102. R. Nussbaum, Abdol-Hossein Esfahanian, and Pang-Ning Tan, "Graph-based Email Prioritization," *Tech report* MSU-CSE-08-33, Michigan State University, December 2008.
103. Abhishek Patil, Abdol-Hossein Esfahanian, Yunhao Liu, and Li Xiao, "Resource Allocation using Multiple Edge-Sharing Multicast Trees," *Tech report* MSU-CSE-07-195, Michigan State University, November 2007.
104. Jerry Scripps, Pang-Ning Tan, and Abdol-Hossein Esfahanian, "Exploration of Link Structure and Community-based Node Roles in Network Analysis," *Tech report* MSU-CSE-07-191, Michigan State University, August 2007.
105. Jerry Scripps, Pang-Nig Tan, and Abdol-Hossein Esfahanian, Yunhao Liu, and Li Xiao, "Exploration of Link Structure and Community-based Node Roles in Network," *Tech report* MSU-CSE-07-191, Michigan State University, August 2007.

106. Abhishek Patil, Yunhao Liu, Li Xiao, Abdol-Hossein Esfahanian and Lionel M. Ni, "SOLONet: Sub-Optimal Location-Aided Overlay Network for MANETs," *Tech report* MSU-CSE-05-3, Michigan State University, January 2005.
107. Andrew Chen, and Abdol-Hossein Esfahanian, "A Demography of t-optimal (n,m) graphs where n ≤ 12," *Tech report* MSU-CSE-04-50, Michigan State University, December 2004.
108. Abhishek Patil, Yunhao Liu, Lionel Ni, Li Xiao and Abdol-Hossein Esfahanian, "SOMA: Security Using Overly Multicast in Ad-hoc Environment," *Technical Report*, MSU-CSE-03-21, Michigan State University, August 2003.
109. William Wilson and Abdol-Hossein Esfahanian, "Adobe Form Modification through XML in a Mobile Environment," *Technical Report*, MSU-CSE-02-15, Michigan State University, May 2002.
110. Lei Wang and Abdol-Hossein Esfahanian, "Recent Advances and Challenges in Wireless Networking Technologies: A Survey", *Technical Report*, MSU-CSE-01-15, Michigan State University, May 2001.
111. Xiaohui Xiong and Abdol-Hossein Esfahanian, "Graph Connectivity Algorithms: A Survey", *Technical Report*, MSU-CSE-01-16, Michigan State University, May 2001.
112. Nasrollah Seyed Alavi and Abdol-Hossein Esfahanian, "Guidelines for Developing Wed-Based Database Applications," *Technical Report*, CPS-98-41, Michigan State University, December 1998.
113. Dmitri Perkins, Eric Torng, and Abdol-Hossein Esfahanian, "Internet and Web Security," *Technical Report*, CPS-98-40, Michigan State University, December 1998.
114. Matthew Pfeiffer, Abdol-Hossein Esfahanian, "The Shuffler: Software for a World Wide Web based Form Routing System", *Technical Report*, CPS-98-19, Michigan State University, June 1998.
115. Daniel Dapkus, and Abdol-Hossein Esfahanian, "The Shuffler: Design & Implementation of the Installation Utility and the Database", *Technical Report*, CPS-98-20, Michigan State University, June 1998.
116. Lynn Kubinec and Abdol-Hossein Esfahanian, "Understanding Asynchronous Transfer Mode," *Informatic Newsletters*, No. 59, pp. 186-208, April 1995.
117. Barbara D. Birchler, Abdol-Hossein Esfahanian, and Eric Torng, "Toward a General Theory of Unicast-Based Multicast Communication," *Technical Report*, CPS-95-03, Michigan State University, March 1995.
118. C.C. Chiu, C.G. Venkatesh, Abdol-Hossein Esfahanian, and J.R. Deller, "An Algorithm for finding a Cycle in Planar Graph Subpartitioning," *Technical Report*, CPS-94-49, Michigan State University, September 1994.
119. Lynn Kubinec, M. W. Mutka, and Abdol-Hossein Esfahanian, "Introduction to the ASX-100 Switch Source Code," *Technical Report*, CPS-94-45, Michigan State University, September 1994.
120. Lynn Kubinec and Abdol-Hossein Esfahanian, "Understanding Asynchronous Transfer Mode," *Technical Report*, CPS-94-11, Michigan State University, February 1994.
121. Swamy K. Sitarama and Abdol-Hossein Esfahanian, "Designing Distance-Preserving Fault-Tolerant Topologies," *Technical Report*, CPS-94-12, Michigan State University, February 1994.

122. P.K. McKinley, H. Xu, Abdol-Hossein Esfahanian, L.M. Ni, "Unicast-Based Multicast Communication in Wormhole-Routed Networks," *Technical Report*, MSU-CPS-ACS-48, Michigan State University, 1993.
123. H.-A. Choi and Abdol-Hossein Esfahanian, "A New Complexity Result on Steiner Tree Problem," *Technical Report*, MSU-CPS-ACS-19, October 1989.
124. H.-A. Choi and Abdol-Hossein Esfahanian, "The Complexity of Optimal Distance-Preserving Trees," *Technical Report*, MSU-CPS-ACS-18, October 1989.
125. G. Zimmerman and Abdol-Hossein Esfahanian, "A New Approach to System-Wide Redundancy in Designing Fault-Tolerant Topologies," *Technical Report*, MSU-CPS-ACS-019, Department of Computer Science, Michigan State university, February 1989.
126. B. McMillin, Abdol-Hossein Esfahanian, and L.M. Ni, "Incompleteness of Syndrome Testing and its Impact on Byzantine Diagnosis," *Technical Report*, MSU-ENGR-88-020, Department of Computer Science, Michigan State university, November 1988.
127. G. Zimmerman, and Abdol-Hossein Esfahanian, "GMP: A Graph Manipulation Software Package for SUN Workstations," *Technical Report*, MSU-ENGR-88-019}, Department of Computer Science, Michigan State university, October 1988.
128. B. McMillin, L.M. Ni, and Abdol-Hossein Esfahanian, "Design of a Reliable Parallel Environment through Constraint Predicate Specification," *Technical Report*, MSU-ENGR-87-023, Department of Computer Science, Michigan State University, 1987.
129. G. Zimmerman, and Abdol-Hossein Esfahanian, "On Some Properties of Minimum Broadcast Trees," *Technical Report*, MSU-ENGR-86-012, Department of Computer Science, Michigan State university, July 1986.

Grants

1. "FAI: Fairness-Aware Algorithms for Network Analysis," (Jointly with Pang-Ning Tan (PI)), *National Science Foundation and Amazon*, $636,000, 1/2020 – 12/2022.
2. "CPATH-2: CPACE II: Implementing Constituency-driven Curricular Change that Integrates Computational Thinking Across Engineering Disciplines," (Jointly with Jon Sticklen, Neeraj Buch, Mark Urban-Lurain, and Daina Briedis), *National Science Foundation*, $799,796, 9/2009 - 9/2013.
3. "The Sloan Engineering Program: A Research & Education Program to Increase the Number of Underrepresented Minority Doctoral Graduates in ECE and CSE at MSU," (Jointly with P. Pierre, B. O'Kelly, and M. Shanblatt), Alfred P. Sloan Foundation, $210,000, 1/1/01 – 12/31/03.
4. "The Sloan Engineering Program: A Research and Education Program to Increase the Number of Underrepresented Minority Doctoral Graduates in Electrical & Computer Engineering and Computer Science & Engineering at Michigan State University," (Jointly with P. Pierre, B. O'Kelly, and M. Shanblatt), Alfred P. Sloan Foundation, $180,000, 1/1/01 – 12/31/03.
5. "EMPOWER: EMulate the PerfOrmance of WidE aRea networks," (Jointly with M. Mutka, and Lionel Ni), NSF, $101,490 (NSF $65,968, MSU $35,522) 3/00 – 3/01.
6. "ESIS and ERCIS Database Projects," *College of Engineering*, MSU, $18000, 7/99-7/00.

7. "ESIS and ERCIS Database Projects," *College of Engineering*, MSU, $18000, 7/98-7/99.
8. "ESIS and ERCIS Database Projects," *College of Engineering*, MSU, $20000, 7/97-7/98.
9. "Engineering Student Information System," *College of Engineering*, MSU, $12000, 7/96-7/97.
10. "Engineering Student Information System," *College of Engineering*, MSU, $10988, 7/95-7/96.
11. "Enhancements to the High-Speed Network and Performance Laboratory," (Jointly with H. Hughes, P. McKinley, M. Mutka), *AT&T Foundation*, $50000, 10/94 - 10/95.
12. "Research Experiences for Undergraduates," (Jointly with P. McKinley and L.M. Ni), *National Science Foundation*, $13000, 5/94 - 3/96.
13. "Research Experiences for Undergraduates," (Jointly with P. McKinley and L.M. Ni), *National Science Foundation*, $13000, 5/93 - 3/96.
14. "Equipment Proposal for High-Speed Local Area Networks," (Jointly with H. Hughes, P. McKinley, M. Mutka), *National Science Foundation*, $100000, 1/93 - 6/94.
15. "Multicast Communication in Multicomputers," (Jointly with L.M. Ni and P. McKinley), *National Science Foundation*, $331914, 8/92 - 1/96.
16. "Designing Fault-Tolerant Topologies for Multicomputers," *AURIG*, Michigan State University, $10000, 7/92 - 7/93.
17. "Communication and Topological Issues Concerning Multicomputers," *National Science Foundation*, $25249, 9/89 - 8/91.
18. "One-to-*k* Communication in Distributed-Memory Multiprocessor," *AURIG*, Michigan State University, $4000, 1/89 - 1/90.
19. "Equipment Proposal for Advanced Computing Laboratory," (Jointly with L.M. Ni), *National Science Foundation*, $60000, July 1987.
20. "NSF Travel Grant," to attend NSF-CBMS Regional Conference on Algorithm and Complexity, $1000, August 1988.
21. "A CAD tool for Graph Manipulation," *General Electric faculty development program in CAD*, $5776, April 1986.
22. "New Measures of Fault-Tolerance for Large Scale Multiple Processor Systems," *Division of Engineering Research*, $4850, April 1985.
23. "NSF Travel Grant", to attend NSF-CBMS Regional Conference on *Applied Algorithms Design*, $600, July 1984.
24. "Identifying the Isolated Components of Certain Fault Diagnosable Systems after Having Sustained Some Failures," *Division of Engineering Research*, $8400, March 1984.

Presentations

- "Network Completion with Node Similarity: A Matrix Completion Approach with Provable Guarantees, " *The 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (ASONAM 2015) Paris, France, 2015.
- "PushTrust: An Efficient Recommendation Algorithm by Leveraging Trust and Distrust Relations," *The 9th ACM Conference on Recommender Systems*, Vienna, Austria, 2015.
- "Cold-Start Item and User Recommendation with Decoupled Completion and Transduction," *The 9th ACM Conference on Recommender Systems*, Vienna, Austria, 2015.
- "On Graph-theoretic Formulations of Information-dissemination Models, Wayne State University," November 1995. (invited)
- "Information-dissemination Models," Hope College, Michigan, November 1994.

- "On Graph-theoretic Formulations of Information-dissemination Models," The 25th Annual Iranian Mathematics Conference, Tehran, Iran, March 1994.
- "An overview of LAN Architectures," Iran Argham Corporation, Tehran, Iran, May 1994. (invited)
- "Lectures on Computer Networks," Azad University, Kashan campus, Kashan, Iran, May 1994. (invited)
- "Designing Fault-Tolerant Topologies for Multicomputers," Isfahan University of Technology, Isfahan, Iran, May 1994. (invited)
- "Understanding Asynchronous Transfer Mode," High Council of Informatic of Iran, Tehran, Iran, April 1994. (invited)
- "X.25 Protocol and its Applications," High Council of Informatic of Iran, Tehran, Iran, April 1994. (invited)
- "Computer Networks," Smithsonian Institute, Washington, D.C., May 1991.
- "On the Evolution of Connectivity Algorithms," George Washington University, Washington, D.C., May 1991. (invited)
- "Research in Computer Science," Isfahan University of Technology, Isfahan, Iran, August 1990.
- "A Message-Routing Strategy for Multicomputer Systems," University of Tehran, Tehran, Iran, July 1990.
- "On Complexity of a Message-Routing Strategy for Multicomputer Systems," The 16th International Workshop on Graph- Theoretic Concepts in Computer Science, West Berlin, West Germany, June 1990.
- "Fault-tolerant Topologies for Multicomputers," CPS Department, MSU, November 1989.
- "A New Approach to System-Level Fault-Tolerance in Message-Passing Multicomputers," First Great Lakes Computer Science Conference, September 1989.
- "Graph Connectivity Algorithms," Sharif University of Technology, Tehran, Iran, August 1989. (invited)
- "Graph Manipulation Package," Midwest Graph Theory Conference, MSU, March 1989.
- "On Some Topological Issues of Multicomputers," CPS Department, MSU, February 1989.
- "On Distance-Preserving Minimum-Traffic Communication Trees," *The Sixth International Conference on the Theory and Applications of Graphs*, Western Michigan University, May 1988. (invited)
- "On the Evolution of Connectivity Algorithms," Western Michigan University, October 1987. (invited)

PhD Dissertations Supervised

1. Youran Lan, *Interprocessor Communication in Distributed-Memory Multiprocessors*, July 1988. (jointly with Lionel Ni).
2. Guy W. Zimmerman, *On Some Topological Issues in Message-Passing Multicomputer Architectures*, August 1990. Currently with Computer Science Department, Bowling Green State University.
3. Swamy K. Sitarama, *Designing Distance-Preserving Graphs*, December 1996. Currently with Lucent Technologies.

4. Barbara Birchler, *Toward a General Theory of Multicast Communication*, August 1997. (jointly with Eric Torng). Currently with Computer Science Department, Arizona State University.
5. Wei Kuo Liao, *Multiple Multicast Problems*, December 1999. (jointly with Lionel Ni). Currently with Department of Communication Engineering, National Chiao Tung University, Taiwan.
6. Fan Du, *Supporting Real-Time and Multimedia Applications in Wireless Networks*, December 2001. (jointly with Lionel Ni).
7. Baijian Yang, Supporting Multicast in Scalable QOS Frameworks, December 2002. (jointly with Prasant Mohapatra). Currently with The Ball State University, Indiana.
8. Boris Gelfand, A Self-Moderating Peer-To-Peer File System, May 2003 (jointly with Matt Mutka). Currently with Lockheed Martin Corporation.
9. Andrew Chen, On Graphs with Large Number of Spanning Trees, August 2005, Currently with Minnesota State University.
10. Abhishek Pramod Patil (Jointly with Lionel Ni), Overlay Multicast In Manets, December 2005. Currently with Sony Inc, CA.
11. Ronald Nussbaum, Distance-preserving Graphs, December 2014.
12. Dennis Ross, Edge Impact in Graphs and Social Network Matrix Completion. August 2016.
13. Emad Zahedi, Applied Graph Theory, August 2017.
14. Farzan Masrour, Fairness in Social Network Analysis: Measures and Algorithms, August 2021.
15. Husain Khalifeh, Graph Theory and Machine Learning, Expected graduation date May 2022.

Master's Projects Supervised

1. Lynn Kubinec, *Understanding Asynchronous Transfer Mode*, February 1994.
2. Matthew P. Stabile, *GPM2000, A Graph Manipulation Package written in Visual Basic*, May 1997.
3. Daniel Dapkus, *The Shuffler: Design & Implementation of the Installation Utility and the Database*, December 1997.
4. Matthew Pfeiffer, *The Shuffler: Software for a World Wide Web based Form Routing System*, December 1997.
5. Naser Alavi, "Guidelines for Developing Web-based Database Applications", December 1998.
6. Xiaohui Xiong, "Graph Connectivity Algorithms: A Survey", May 2001.
7. Lei Wang, "Recent Advances and Challenges in Wireless Networking Technologies: A Survey", May 2001.
8. William Wilson, "Adobe Form Modification through XML in a Mobile Environment," May 2002.
9. Ronald Nussbaum, "Email Mining," August 2008.

Courses Taught

- Fundamentals of Information Technology (CSE 201)
- Discrete Structures in Computer Science (CSE 260)
- Design and Analysis of Algorithms (CSE 830)
- Algorithmic Graph Theory (CSE 835)
- Computer Networks (CPS Q812)
- Computer Communications (CSE 422)
- Theory of Computing (CPS Q322)
- Computer Architectures (CPS Q423)
- Digital Design (CPS Q410)

Membership in Professional Societies

- Institute of Electrical and Electronics Engineering (senior member, May 1991)
- Computer Society
- Society for Industrial and Applied Mathematics
- Association for Computing Machinery

Professional Services

- Member of Advisory Committee, Computer Science Academy, Capital Area IT Council, Lansing, MI, 2011 – present.
- Program Committee Member, 2008 IEEE International Conference on Networking, Sensing and Control, China, April 6-8, 2008.
- Track Chair, The 11th International CSI Computer Conference, Tehran, Iran, January 2006.
- CSE Graduate Director, 1994 - 2004
- Session Chair, The 9th Quadrennial International Conference on Graph Theory, Combinatorics, Algorithms and Applications (GTCC2000), Kalamazoo, MI., June 2000.
- Associate Editor, *NETWORKS*, an international journal, June 1996 – December 1999.
- Organizer, *The XXXI Midwest Graph Theory Conference*, MSU, May 1998.
- Regional Representative for the Midwest Theory Conference
- Member of the Program Committee, Second Great Lakes Computer Science Conference, October 1991.
- Member of the Scientific Committee, Computer Society of Iran.
- Reviewer for:
  - IEEE Transactions on Computers
  - IEEE Transactions on Communications
  - IEEE Computer Magazine
  - Journal of Graph Theory and Combinatorics
  - Journal of Graph Theory
  - Journal of Algorithmica
  - Journal of Networks
  - Journal of Algorithms
  - Journal of Information Processing Letters
  - Journal of Discrete Applied Mathematics
  - Journal of Distributed and Parallel Processing

- National Science Foundation Grant Proposals

Committees Assignments, Michigan State University

- CSE Department Undergraduate Curriculum Committee
- College of Engineering Grievance Committee
- CSE Department Awards Committee (Chair), 2004-2011
- University Academic Council, 2001-2003
- College Graduate Directors Meetings, 1994-2004.
- CSE Department Graduate Studies and Research Committee, 1994-2004.
- CSE Department Advisory Committee (Elected), 1992-1994, 1998 – 1999, 2005
- CSE Department Search Committee, 1992.
- CSE Department Tenure/promotion Committee, 1992.
- CSE Department Representative for the College Curriculum Committee, 1992.
- CSE Department Undergraduate Curriculum Committee (Chaired), 1990-1992.
- CSE Department Computing Environment Committee (Chaired), 1988-1990.
- Case Center for Computer Aided Design Advisory Committee, College of Engineering, 1988-1990.
- PhD Qualifying Examination Committee.