Mohammad R. Salavatipour
Curriculum Vitae

Personal Info

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Positions:

July 2009 - present	Associate Professor, Department of Computing Science, University of Alberta
July 2004 - June 2009:	Assistant Professor, Department of Computing Science, University of Alberta
Sept 2003 - July 2004:	Postdoctoral fellow and instructor, Department of Combinatorics and Optimizations, University of Waterloo
Sept 2002 - Aug 2003:	Sessional lecturer, Department of Computer Science, University of Toronto

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Education

Ph.D. 2003:	Department of Computer Science, University of Toronto **Advisor:** Prof. Michael Molloy **Thesis:** Graph Colouring via The Discharging Method
M.Sc. 2000:	Department of Computer Science, University of Toronto **Advisor:** Prof. Derek G. Corneil **Thesis:** On Sum Coloring of Graphs
B.Sc. 1998:	Department of Computer Engineering, Sharif University of Technology **Advisor:** Prof. Mohammad Ghodsi **Thesis:** Parallel Delaunay Triangulation

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Awards and Grants

- NSERC individual research grant, 2008-2013 ($24,000/year)
- Alberta Ingenuity New Faculty Award 2008-2011 ($96,000/year)
- NSERC individual research grant, 2005-2007 ($20,000/year)
- Faculty Startup grant, University of Alberta, 2004-2006 ($20,000/year)
- NSERC postdoctoral fellowship, 2003-2005 (used only for 1 year)
- Killam postdoctoral fellowship, University of Dalhousie 2003 (declined)
- Ontario Graduate Scholarship (OGS), 2002-2003
- University of Toronto Fellowship, 1998-1999, 2001-2002, and 2002-2003
- Gold medal in the 3rd Iranian National Computer Olympiad 1994 and a member of Iranian National team in International Olympiad in Informatics (IOI) 1994

Research Interests

Approximation Algorithms, Hardness of approximation, Combinatorics and Algorithmic Graph Theory, The Probabilistic Method, The Discharging Method.

Student/Postdocs supervision

Ph.D. and M.Sc. students supervised:

- Zachary Friggstad, M.Sc., Sept 2005 - Aug 2007.
  Thesis title: "Minimizing Movement in Mobile Facility Location Problems".
- Zhipeng Cai, Ph.D. (co-supervised with Guohui Lin), Sept 2004 - Aug 2008.
  Thesis title: "Feature Selection in Microarray Gene Expression Data Analysis and Contagious Viral Strain Computational Genotyping".
- Zachary Friggstad, Ph.D., Sept 2007 - present.
- Amin Jorati, Ph.D., Sept 2007 - present.
- Babak Behsaz, Ph.D., Sept 2007 - present.

Postdocs supervised:

- MohammadAli Safari, Oct 2007 - Aug 2008.
- Zoya Svitkina, Sept 2008 - present.
- Imran Pirwani, Sept 2008 - present.

Publications

Note: Journal versions of the papers that earlier appeared in a conference have the same number. Also, in all the publicatiosn except [7a,b,c] and [20], the authors' names have been in alphabetical order.

a) Articles Published or Accepted in Refereed Journals

[1a] Z. Friggstad and M.R. Salavatipour, *Approximability of packing disjoint cycles*, To appear in Algorithmica.

[2a] L. Lau, S. Naor, M.R. Salavatipour, and M. Singh, *"Survivable network design with degree or order constraints"*, To appear in SIAM J. on Computing (special issue for selected papers of STOC 2007), 26 pages.

[3a] M. Hajiaghayi, G. Kortsarz, and M.R. Salavatipour, *"Approximating Buy-at-Bulk and Shallow-light k-Steiner tree"*, To appear in Algorithmica.

[4a] E. Demaine, U. Feige, M. Hajiaghayi, and M.R. Salavatipour, *"Combination can be hard: approximability of the unique coverage problem"*, SIAM J. on Computing, Volume 38, Issue 4, pp. 1464-1483.

[5] M. Krivelevich, Z. Nutov, M.R. Salavatipour, J. Verstraete, and R. Yuster *"Approximation algorithms and hardness results for cycle packing problems"*, ACM Transactions on Algorithms, Volume 3(4), November 2007.

[6a] J. Cheriyan and M.R. Salavatipour, *"Packing element-disjoint steiner trees"*, ACM Transactions on Algorithms, Volume 3(4), November 2007.

[7a] M. Molloy and M.R. Salavatipour, *"The resolution complexity of random constraint satisfaction problems"*, SIAM J. on Computing 37(3): 895-922, 2007.

[8a] Z. Cai, R. Goebel, M.R. Salavatipour, and G. Lin, *Selecting dissimilar genes for multi-class classification, an application in cancer subtyping*, BMC Bioinformatics 2007, 8(206), 15 pages.

[9a] J. Cheriyan and M.R. Salavatipour, *"Hardness and approximation results for packing steiner trees"*, Algorithmica 45(1):21-43, 2006. The special issue for selected papers of ESA 2004.

[10] M.R. Salavatipour, *"Large induced forests in triangle-free planar graphs"*, Graphs and Combinatorics 22(1):113-126, 2006.

[11a] M. Molloy and M.R. Salavatipour, *"A bound on the chromatic number of the square of a planar graph"*, J. of Combinatorial Theory (Series B), Volume 94(2), pp 189-213, 2005.

[12] O.V. Borodin, A.N. Glebov, A. Raspaud, M.R. Salavatipour, *"Planar graphs without cycles of length from 4 to 7 are 3-colorable"*, J. of Combinatorial Theory (Series B), 93:303-311, 2005.

[13a] M.R. Salavatipour, *"A $(1+\epsilon)$-approximation algorithm for partitioning hypergraphs using a new algorithmic version of the Lovász local lemma"* , Random Struc. & Algorithms 25(1) 68-90, 2004.

[14] M.R. Salavatipour, *"A polynomial time algorithm for strong edge coloring of partial k-trees"*, Discrete Applied Mathematics 143:(1-3) 285-291, 2004.

[15] M.R. Salavatipour, *"On sum coloring of graphs"*, Discrete Applied Math. 127(3) 477-488, 2003.

b) Articles Submitted

[16a] C. Chekuri, M. Hajiaghayi, G. Kortsarz, M. Salavatipour, *"Approximation algorithms for non-uniform buy-at-bulk network design"*, submitted, 25 pages.

[17a] Z. Friggstad and M.R. Salavatipour, *Minimizing movement in mobile facility location problems*, submitted.

[18] I. Pirwani and M.R. Salavatipour, *A PTAS for Minimum Clique Partition in Unit Disk Graphs*, Manuscript.

[19] Z. Friggstad, M.R. Salavatipour, and Z. Svitkina, *Asymmetric Traveling Salesman Path and Directed Latency Problems*, Manuscript.

c) Articles in Refereed Conferences

[20] N. Bansal, Z. Friggstad, R. Khandekar, and M.R. Salavatipour, *A logarithmic approximation for unsplittable flow on line graphs*, To appear in Proceedings of SODA 2009.

[17b] Z. Friggstad and M.R. Salavatipour, *Minimizing movement in mobile facility location problems*, In Proceedings of the 49th Annual IEEE Symposium on Foundations of Computer Science (FOCS) 2008.

[21] R. Khandekar, G. Kortsarz, V. Mirrokni, and M.R. Salavatipour, *Approximation and hardness results for robust network design with exponential scenarios*, In Proceedings of 16th Annual European Symposium on Algorithms (ESA) 2008.

[22] M.A. Safari and M.R. Salavatipour, *A constant factor approximation for minimum λ-edge-connected k-subgraph with metric costs*, In Proceedings of 11th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX) 2008.

[2b] Z. Friggstad and M.R. Salavatipour, *Approximability of packing disjoint cycles*, In Proceedings of the 18th International Symposium on Algorithms and Computation (ISAAC 2007), pp 304-315.

[2b] L. Lau, S. Naor, M.R. Salavatipour, and M. Singh, *"Survivable network design with degree or order constraints"*, In Proceedings of the 39th ACM Symposium on Theory of Computing (STOC) 2007, pp 651-660.

[23] O. Madani, W. Greiner, D. Kempe, and M. Salavatipour, *"Recall systems: efficient learning and use of category indices"*, In Proceedings of the Eleventh International Conference on Artificial Intelligence and Statistics (AISTAT) 2007.

[16b] C. Chekuri, M. Hajiaghayi, G. Kortsarz, M. Salavatipour, *"Approximation algorithms for node-weighted buy-at-bulk network design problems"*, In Proceedings of the Eighteenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2007, pp 1265-1274.

[8b] Z. Cai, R. Goebel, M. Salavatipour, Y. Shi, Lizhe Xu, and G. Lin, *"Selecting genes with dissimilar discrimination strength for sample class prediction"*, In Proceedings of the Fifth Asia-Pacific Bioinformatics Conference (APBC) 2007, pp 81-90.

[8c]Z. Cai, L. Xu, Y. Shi, M. Salavatipour, R. Goebel, and G. Lin, *"Using gene clustering to identify discriminatory genes with higher classification accuracy"*, In Proceedings of IEEE 6th Symposium on Bioinformatics and Bioengineering (BIBE) 2006, pp 235-242.

[16c] C. Chekuri, M. Hajiaghayi, G. Kortsarz, M. Salavatipour, *"Approximation algorithms for non-uniform buy-at-bulk network design problems"*, In Proceedings of the 47th Annual IEEE Symposium on Foundations of Computer Science (FOCS) 2006, pp 677-686.

[3b] M. Hajiaghayi, G. Kortsarz, and M.R. Salavatipour, *"Approximating buy-at-bulk and shallow-light k-Steiner tree"*, In Proceedings of the 9th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX) 2006, pp 152-163.

[4b] E. Demaine, U. Feige, M. Hajiaghayi, M. Salavatipour, *"Combination can be hard: approximability of the unique coverage problem"*, In Proceedings of the Seventeenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2006, pp 162-171.

[6b] J. Cheriyan and M.R. Salavatipour, *"Packing element-disjoint Steiner trees"*, In Proceedings of the 8th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX) 2005, pp 52-61.

[24] M.R. Salavatipour and J. Verstraete, *"Disjoint cycles: integrality gap, hardness, and approximation"*, In Proceedings of the Eleventh Conference on Integer Programming and Combinatorial Optimization (IPCO) 2005, pp 51-65.

[9b] J. Cheriyan and M.R. Salavatipour, *"Hardness and approximation results for packing Steiner trees"*, In Proceedings of the 12th Annual European Symposium (ESA) 2004, pp 180-191.

[7b] M. Molloy and M.R. Salavatipour, *"The resolution complexity of random constraint satisfaction problems"*, In Proceedings of the 44th Annual IEEE Symposium on Foundations of Computer Science (FOCS) 2003, pp 330-339.

[13b] M.R. Salavatipour, *"A $(1+\epsilon)$-approximation algorithm for partitioning hypergraphs using a new algorithmic version of the Lovász local lemma"*, In Proceedings of the fourteenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2003, pp 347-356.

[25] K. Jain, M. Mahdian, and M.R. Salavatipour, *"Packing steiner trees"*, In Proceedings of the fourteenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) 2003, pp 266-274.

[11b] M. Molloy and M.R. Salavatipour, *"Frequency channel assignment on planar networks"*, In Proceedings of the 10th European Symposium on Algorithms (ESA) 2002, pp 736-747.

d) Non-refereed Contributions

[26] M.R. Salavatipour, *"The three color problem for planar graphs"*, Technical Report CSRG-458, Department of Computer Science, University of Toronto, 2002.

e) Theses

[25] M.R. Salavatipour, *"Graph Colouring via the Discharging Method"*, Ph.D. thesis, Department of Computer Science, University of Toronto, Aug 2003.

[27] M.R. Salavatipour, *"On Sum Coloring of Graphs"*, M.Sc thesis, Department of Computer Science, University of Toronto, Jan 2000.

f) Patents

"Packing Steiner trees", joint with K. Jain and M. Mahdian, patent No. 302152.01, Filed 11/20/2003 in USA.