

# Curriculum Vitae

Md. Jawaherul Alam

## Personal Information

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## Education

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- **BS** Computer Science and Engineering, 2008  
Bangladesh University of Engineering and Technology(BUET)  
Thesis Supervisor: Prof. Md. Saidur Rahman
- **MS** Computer Science and Engineering, 2010  
Bangladesh University of Engineering and Technology(BUET)  
Thesis Supervisor: Prof. Md. Saidur Rahman
- **Ph.D.** in Computer Science, 2015  
University of Arizona  
Thesis Supervisor: Prof. Stephen G. Kobourov

## Research Interests

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- Graph Theory
- Graph Drawing
- Information Visualization
- Computational Geometry
- Algorithms
- Combinatorics

## Experience

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- August '11–now: Research Assistant for Dr. Stephen Kobourov at University of Arizona
- June '14: Summer Research with Dr. Michael Goodrich and Dr. David Eppstein at UC Irvine
- July '12, May '13: Summer Research with Dr. Michael Kaufmann at U. Tübingen
- June '11–July '11: Summer Research with Dr. Stefan Felsner at TU-Berlin
- June '08–December '09: Research Assistant for Dr. Md. Saidur Rahman at BUET
- June '12: Participant at MRC Workshop on Discrete and Computational Geometry
- July '09: Participant at JAIST Summer School on Computational Geometry and Graphs
- May '11: Invited participant at Dagstuhl-Seminar 11191: Graph Drawing with Algorithm Engineering
- June '12: Invited participant at Dagstuhl-Seminar 12261: Putting Data on the Map
- March '14: Invited participant at Bertinoro Workshop on Graph Drawing
- January '13: Invited participant at the Joint Mathematics Meeting organized by AMS

## Honors and Awards

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- Best paper award at ISAAC 2011 (out of over 180 submissions)
- University of Arizona, College of Science Galileo Circle Scholarship (2013)
- Department of Computer Science Graduate Student Research Award (2013)
- University of Arizona, College of Science Outstanding Graduate Student Research Award (2013)
- University of Arizona, Graduate College Fellowship (2010–11)

## Refereed Journal Publications

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1. Md. Jawaherul Alam, Michael Kaufmann, Stephen Kobourov, Tamara Mchedlidze, Fitting Planar Graphs on Planar Maps, *Journal of Graph Algorithms and Applications (JGAA)*, 2014 (to appear).
2. Md. Jawaherul Alam, Steven Chaplick, Gašper Fijavž, Michael Kaufmann, Stephen Kobourov, Sergey Pupyrev and Jackson Toeniskoetter, Threshold Coloring and Unit-Cube Contact Representaion of Planar Graphs, *Discrete Applied Mathematics (DAM)*, 2014 (to appear).
3. Md. Jawaherul Alam, Therese Biedl, Stefan Felsner, Michael Kaufmann, Stephen Kobourov, Torsten Ueckerdt, Computing Cartograms with Optimal Complexity, *Discrete and Computational Geometry (DCG)*, 50(3), pp. 784–810, 2013.
4. Md. Jawaherul Alam, Therese Biedl, Stefan Felsner, Andreas Gerasch, Michael Kaufmann and Stephen G. Kobourov, Linear-Time Algorithms for Proportional Contact Graph Representations, *Algorithmica*, 67(1), pp. 3–22, 2013. (Invited to the special issue dedicated to the best papers from ISAAC'11.)
5. Md. Jawaherul Alam, Therese Biedl, Stefan Felsner, Michael Kaufmann, Stephen Kobourov, Proportional contact representations of planar graphs, *Journal of Graph Algorithms and Applications (JGAA)*, 16(3), pp. 701–728, 2012. (Invited to the special issue dedicated to the best papers from GD'11.)
6. Md. Rezaul Karim, Md. Jawaherul Alam, Md. Saidur Rahman, Straight-Line Grid Drawings of Label-Constrained Outerplanar Graphs with  $O(n \log n)$  Area, *Journal Graph Algorithms Applications(JGAA)*, 15(3), pp. 437–456, 2011. (Invited to the special issue dedicated to the best papers from WALCOM'09.)
7. Debajyoti Mondal, Rahnuma Islam Nishat, Md. Saidur Rahman and Md. Jawaherul Alam, Minimum-Area Drawings of Plane 3-Trees, *Journal of Graph Algorithms and Applications (JGAA)*, 15(2), pp. 177–204, 2011.
8. Md. Jawaherul Alam, Md. Abul Hassan Samee, Md. Mashfiqui Rabbi and Md. Saidur Rahman, Minimum-Layer Upward Drawing of Trees, *Journal of Graph Algorithms and Applications (JGAA)*, 14(2), pp. 245–267, 2010.
9. Md. Jawaherul Alam, Md. Mashfiqui Rabbi, Md. Saidur Rahman and Md. Rezaul Karim, Upright Drawings of Graphs on Three Layers, *Journal of Applied Mathematics and Informatics (JAMI)*, 28(5–6), pp. 1347–1358, 2010.

## Refereed Conference Publications

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10. Md. Jawaherul Alam, Stephen Kobourov, Sergey Pupyrev and Jackson Toeniskoetter, Weak Unit Disk and Interval Representation of Graphs, *41st International Workshop on Graph-Theoretic Concepts in Computer Science (WG)*. Accepted, to appear in 2015.
11. Md. Jawaherul Alam, William Evans, Stephen Kobourov, Sergey Pupyrev, Jackson Toeniskoetter and Torsten Ueckerdt, Contact Representations of Non-Planar Graphs, *Algorithms and Data Structures Symposium (WADS)*. Accepted, to appear in 2015.
12. Md. Jawaherul Alam, David Eppstein, Michael Kaufmann, Stephen Kobourov, Sergey Pupyrev, André Schulz and Torsten Ueckerdt, Contact Graphs of Circular Arcs, *Algorithms and Data Structures Symposium (WADS)*. Accepted, to appear in 2015.
13. Md. Jawaherul Alam, Stephen Kobourov and Sankar Veeramoni, Quantitative Measures for Cartogram Generation Techniques. *17th IEEE Eurographics Conference on Visualization (EuroVis)*. Accepted, to appear in 2015.
14. Md. Jawaherul Alam, Stephen Kobourov, Sergey Pupyrev and Jackson Toeniskoetter, Happy Edges: Threshold-Coloring of Regular Lattices, *7th International Conference on Fun with Algorithms (FUN)*, pp. 28–39, 2014.
15. Md. Jawaherul Alam, David Eppstein, Michael Goodrich, Stephen Kobourov and Sergey Pupyrev, Balanced Circle Packings for Planar Graphs, *22nd International Symposium on Graph Drawing (GD)*, pp. 125–136, 2014.
16. Md. Jawaherul Alam, Michael Bekos, Michael Kaufmann, Philipp Kindermann, Stephen Kobourov, Alexander Wolff, Smooth Orthogonal Drawings of Planar Graphs, *11th Latin American Symposium on Theoretical Informatics (LATIN)*, pp. 144–155, 2014.

17. Md. Jawaherul Alam, Michael Kaufmann, Stephen Kobourov, Tamara Mchedlidze, Fitting Planar Graphs on Planar Maps, *40th International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM)*, pp. 52–64, 2014.
18. Md. Jawaherul Alam, Stephen Kobourov, Franz J. Brandenburg, Straight-Line Grid Drawings of 3-Connected 1-Planar Graphs, *21st International Symposium on Graph Drawing (GD)*, pp. 83–94, 2013.
19. Md. Jawaherul Alam, Steven Chaplick, Gašper Fijavž, Michael Kaufmann, Stephen Kobourov and Sergey Pupyrev Threshold Coloring and Unit-Cube Contact Representaion of Graphs, *39th International Workshop on Graph-Theoretic Concepts in Computer Science (WG)*, pp. 26–37, 2013.
20. Md. Jawaherul Alam and Stephen Kobourov, Proportional Contact Representations of 4-connected Planar Graphs, *20th International Symposium on Graph Drawing (GD)*, pp. 211–223, 2012.
21. Md. Rezaul Karim, Md. Jawaherul Alam and Md. Saidur Rahman On Some Properties of Doughnut Graphs, *23rd International Workshop on Combinatorial Algorithms (IWOCA)*, pp. 60–64, 2012.
22. Md. Jawaherul Alam, Therese Biedl, Stefan Felsner, Michael Kaufmann, Stephen Kobourov, Torsten Ueckerdt, Computing Cartograms with Optimal Complexity, *28th Annual Symposium on Computational Geometry (SoCG)*, pp. 21–30, 2012.
23. Md. Jawaherul Alam, Therese Biedl, Stefan Felsner, Andreas Gerasch, Michael Kaufmann and Stephen Kobourov, Linear-Time Algorithms for Proportional Contact Graph Representations, **(Best Paper)**, *22nd International Symposium on Algorithms and Computation (ISAAC)*, pp. 281–291, 2011.
24. Md. Jawaherul Alam, Therese Biedl, Stefan Felsner, Michael Kaufmann and Stephen Kobourov, Proportional contact representations of planar graphs, *19th International Symposium on Graph Drawing (GD)*, 26–37, 2011.
25. Debajyoti Mondal, Md. Jawaherul Alam, Md. Saidur Rahman Minimum-Layer Drawings of Trees, *5th International Workshop on Algorithms and Computations (WALCOM)*, pp. 221–232, 2011.
26. Md. Rezaul Karim, Md. Jawaherul Alam and Md. Saidur Rahman, Straight-Line Grid Drawings of Label-Constrained Outerplanar Graphs with  $O(n \log n)$  Area, *3rd International Workshop on Algorithms and Computation (WALCOM)*, pp. 310–321, 2009.
27. Md. Abul Hassan Samee, Md. Jawaherul Alam, Md. Abdullah Adnan and Md. Saidur Rahman, Minimum Segment Drawings of Series-Parallel Graphs with the Maximum Degree Three, *16th International Symposium on Graph Drawing (GD)*, pp. 408–419, 2008.
28. Md. Jawaherul Alam, Md. Abul Hassan Samee, Md. Mashfiqui Rabbi and Md. Saidur Rahman, Upward Drawing of Trees on the Minimum Number of Layers, *2nd International Workshop on Algorithms and Computation (WALCOM)*, 88–99, 2008.

## Other Publications

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29. Md. Jawaherul Alam, Stephen Kobourov, Giuseppe Liotta, Sergey Pupyrev and Sankar Veeramoni, 3D Proportional Contact Representations of Graphs, *International Conference on Information, Intelligence, Systems, Applications (IISA)*, pp. 27–32, 2014.
30. Md. Jawaherul Alam, Muriel Dulieu, Justin Iwerks and Joseph O’Rourke, Tetrahedron Contact Graphs, *Fall Workshop on Computational Geometry (FWCG)*, 2013.
31. Debajyoti Mondal, Rahnuma Islam Nishat, Md. Saidur Rahman and Md. Jawaherul Alam, Minimum-Area Drawings of Plane 3-Trees, *Canadian Conference on Computational Geometry (CCCG)*, pp. 191–194, 2010.
32. Md. Jawaherul Alam, Md. Emran Chowdhury, Md. Saidur Rahman, Fewer-Bend Point-Set Embedding with Mapping, *International Conf. on Electrical & Computer Engineering (ICECE)*, 2010.

## Manuscripts in Preparation

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33. Md. Jawaherul Alam, Thomas Bläsius, Ignaz Rutter, Torsten Ueckerdt and Alexander Wolff, Pixel and Voxel Representations of Graphs (in preparation).
34. Md. Jawaherul Alam, Franz J. Brandenburg, Stephen Kobourov and Sergey Pupyrev, Book-Embeddings of 1-Planar Graphs (in preparation).

35. Md. Jawaherul Alam, Stephen Kobourov and Debajyoti Mondal, Orthogonal Layout with Optimal Face Complexity: NP-hardness and Polynomial-time Algorithms (in preparation).
36. Md. Jawaherul Alam, Michael Kaufmann, Stephen Kobourov, Contact Graphs with Cubes and Proportional Boxes (in preparation).
37. Md. Jawaherul Alam, Thomas Bläsius, Fabian Fuchs, Tamara Mchedlidze, Roman Prutkin, Torsten Ueckerdt, Planar Drawings of Graphs with Monotone Paths (in preparation).

## Journal and Conference Reviews

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SIAM Journal of Computing (SiComp),  
PLOS One,  
Symposium on Computational Geometry (SoCG),  
Scandinavian Symposium and Workshops on Algorithm Theory (SWAT),  
Algorithms and Data Structures Symposium (WADS),  
Workshop on Graph-Theoretic Concepts in Computer Science (WG),  
International Symposium on Graph Drawing (GD),  
International Colloquium on Automata, Languages and Programming (ICALP),  
International Workshop on Algorithms and Computations (WALCOM)

## Major Software Projects

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- (January 2009 – December 2009) *Graph Drawing Visualization Software*  
Website: <http://www.buet.ac.bd/cse/research/group/gd/>  
Supervisor: Dr. Md. Saidur Rahman, Professor, CSE, BUET
- (October 2011 – December 2011) *Optimal Cartogram Computation*  
Website: <http://www.cs.arizona.edu/~mjalam/optocart/>  
Supervisor: Dr. Stephen G. Kobourov, professor, CS, U of Arizona
- (January 2013 – now) *Comparing Cartogram Construction Algorithms*  
Website: <http://cartogram.cs.arizona.edu>  
Supervisor: Dr. Stephen G. Kobourov, Professor, CS, U of Arizona

## References

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- Dr. Stephen G. Kobourov (Research Advisor)  
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- Dr. Michael Kaufmann  
Professor, Wilhelm-Schickard-Institut für Informatik,  
Universität Tübingen, Germany  
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- Dr. Alon Efrat  
Associate Professor, Dept. of Computer Science  
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