

# Sankar Veeramoni

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## EDUCATION

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- **Ph.D., Computer Science**, University of Arizona. (2010 - 2014). **GPA:** 4.00. Minor: Mathematics. Advisor: Dr. Stephen G. Kobourov, Dissertation: How to color a map.
- **M.S., Computer Engineering**, University of Arizona. (2007 - 2010). **GPA:** 4.00.
- **B.Tech., Computer Engineering**, National Institute of Technology Calicut, India. (2001 - 2005)

## EXPERIENCE

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- (2012–Present) *Research Assistant, Computer Science, University of Arizona.* Conducted research with Dr. Stephen Kobourov on combinatorial algorithms for various problems in graph drawing with applications in **information visualization, wireless networking**, computational biology and location data analysis.
- (2010–2011) *Teaching Assistant at the University of Arizona.* Teaching assistant for courses on **Algorithms** and **Automata, Grammars and Languages**. Conducted office hours, developed homework assignments and graded assignments and exams.
- (2007–2009) *Research Assistant, NSF Center for Autonomic Computing, University of Arizona* Conducted research with Dr. Salim Hariri on an autonomic computing environment involving **autonomic load balancing** and fault management to improve performance of **HPC clusters** and applications.
- (2005–2007) *Software Development Engineer, IBM, India.* Executed software projects for a Services Provisioning Platform (SPP). Involved in complete software development lifecycle and gained experience with **object-oriented design and development** on the UNIX platform. **Client: AT&T.**

## TECHNICAL SKILLS

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Languages: C/C++, Java, Python, Unix Shell Scripting, Matlab, OpenGL, MPI, MySQL.  
Tools: GraphViz, WinMips64, Simple Scalar Simulator, PSPICE, USLOSS, Flask, Clearcase.

## AREAS OF INTEREST

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Discrete Algorithms, Graph Drawing and Information Visualization, Distributed Systems.

## TECHNICAL PUBLICATIONS

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- Y. Hu, S. G. Kobourov and S. Veeramoni, “On maximum differential graph coloring,” *18th Symposium on Graph Drawing (GD)*, p. 274-286, 2010.
- Y. Hu, S. G. Kobourov and S. Veeramoni, “Embedding, Clustering and Coloring for Dynamic Maps,” *5th IEEE Pacific Visualization Symposium (PacificVis)*, p. 33-40, 2012.
- A. Das, K. Fleszar, S. Kobourov, J. Spoerhase, S. Veeramoni, and A. Wolff. “Approximating the Generalized Minimum Manhattan Network Problem,” *24th International Symposium on Algorithms and Computation (ISAAC)*, 2013.
- Y. Hu, S. G. Kobourov and S. Veeramoni, “Embedding, Clustering and Coloring for Dynamic Maps,” *Journal of Graph Algorithms and Applications*, pp. 77-109, 2014.

- L De La Cruz, S Kobourov, S Pupyrev, P Shen, S Veeramoni, “Computing Consensus Curves,” *13th International Symposium on Experimental Algorithms (SEA)*, p. 223-234, 2014.
- M J Alam, S Kobourov, G Liotta, S Pupyrev, S Veeramoni, “Proportional Contact Representations Using Ls,” *5th International Conference on Information, Intelligence, Systems and Applications (IISA)*, p. 27-32, 2014.
- M Bekos, M Kaufmann, S Kobourov, S Veeramoni, “A Note on Maximum Differential Coloring of Planar Graphs,” *Journal of Discrete Algorithms*. vol. 29, p. 1-7, 2014.
- J. Alam, S. G. Kobourov, S. Veeramoni, “Quantitative Measures for Cartogram Generation Techniques,” *7th IEEE Eurographics Conference on Visualization (EuroVis)*. Accepted, to appear in 2015.
- M Bekos, M Kaufmann, S Kobourov, S Veeramoni, “Maximum k-Differential Coloring Problem,” *41st SOFSEM - the International Conference on Current Trends in Theory and Practice of Computer Science*. p. 115-127, 2015.
- J. Alam, S. G. Kobourov, S. Veeramoni, “Quantitative Measures for Cartogram Generation Techniques,” *Computer Graphics Forum, special issue on EuroVis’15*. Accepted, to appear in 2015.

## MANUSCRIPTS AND POSTERS

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- A. Das, K. Fleszar, S. Kobourov, J. Spoerhase, S. Veeramoni, and A. Wolff. “Approximating the Generalized Minimum Manhattan Network Problem,” Submitted to *Algorithmica*.
- M Bekos, M Kaufmann, S Kobourov, S Veeramoni, “Maximum k-Differential Coloring Problem,” Submitted to *Journal of Discrete Algorithms*.
- M Bekos, A Das, M Geyer, M Kaufmann, S Kobourov, S Veeramoni, “Maximum Differential Coloring of Caterpillars and Spiders,” *arXiv preprint arXiv:1302.7085*, 2013.
- L De La Cruz, S Kobourov, S Pupyrev, P Shen, S Veeramoni, “AngryAnts: An Approach for Accurate Average Trajectories using Citizen Science,” *arXiv preprint arXiv:1212.0935*, 2012.
- A Das, S Kobourov, S Veeramoni, Y Xu, “ImageQuest: From Multiple Inaccurate Trajectories to One Accurate Trajectory”, Poster at *Histochemistry 2012*.

## PRESENTATIONS

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- On maximum differential graph coloring. *18th Symposium on Graph Drawing*.
- Embedding, Clustering and Coloring for Dynamic Maps. *5th IEEE Pacific Visualization Symposium (PacificVis)*.
- Maximum differential graph coloring. *Dagstuhl Seminar on Graph Drawing with Algorithm Engineering Methods (2011)*.
- Approximating the Generalized Minimum Manhattan Network Problem. *Computer Science Mathematics Seminar. Department of Computer Science. University of Arizona*.

## PROJECTS

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- **Experimental evaluation of Cartograms.** (C/C++) Cartograms are maps created in such a manner that each country’s area is proportional to a weight (such as population). In this project, through extensive experimentation, we evaluated and compared several algorithms to create cartograms according to certain natural properties.

- **Autonomic load balancing in Microsoft Windows Server 2008 based Cluster. (MPI, C)** We implemented receiver-initiated and sender-initiated load balancing in an eight-core cluster using MPI and C.
- **Implementation of an operating system using USLOSS. (C)** We implemented low level CPU scheduling, process synchronization, interrupt handler synchronization, inter-process communication primitives, disk drivers, terminal drivers and virtual memory management.
- **Distributed Distance Vector Routing Algorithm Implementation. (Java)** The system was implemented in a computer cluster, with each node acting as a router. Distributed Devs Java was used to manage the message passing.
- **Compression of an image using sub-band coding.(MATLAB)** A Modified EZW algorithm was applied to compress the image. The whole project was implemented in MATLAB (Selected as the best undergraduate final year project.)
- **Implementation of a parser for C-, a subset of the C programming language.** The project involved reading a program according to the lexical conventions of the language, checks syntax rules, and reports lexical/syntax errors.

## RELEVANT COURSEWORK

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Algorithms, Graph Theory, Geometric Algorithms, Experimental Algorithmics, Operating Systems, Distributed Systems, Computer Networks, Distributed Simulation, Network Security, Information Theory, Probability Theory, Computer Architecture, Theory of Computation, Computer Graphics, Algorithms for Bioinformatics.

## LEADERSHIP ACTIVITIES

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- Member of Graduate Affairs and Admissions committee, Computer Science Department.
- Chair of the Student Seminar Series, Computer Science Department. (2011 - Present).

## REFERENCES

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- Dr. Stephen G. Kobourov,  
Professor, Dept. of Computer Science, University of Arizona, Tucson, AZ 85721.  
E-mail: [kobourov@cs.arizona.edu](mailto:kobourov@cs.arizona.edu).
- Dr. Alon Efrat,  
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- Dr. Yifan Hu,  
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