

John Augustine

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Education

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| Ph.D. | 2006 | The Donald Bren School of Information and Computer Sciences, University of California at Irvine.
Dissertation: Near-Optimal Solutions for Powering-Down Problems and Scheduling Jobs in FPGAs. (Sandy Irani, advisor) |
| M.S. | 2002 | Elec. & Computer Engg, Louisiana State University.
Thesis: Offline and Online Variants of the Traveling Salesman Problem (Jaganathan Ramanujam & Steven Seiden, advisors) |
| M.S. | 2001 | Systems Science, Louisiana state University
Project: Matrix based Population Simulation Software. (Aiichiro Nakano, advisor) |
| B.E. | 1998 | Computer Science and Engineering, University of Madras. |

Journal Articles

- J-1** John Augustine and Steven Seiden, "Linear Time Approximation Schemes for Vehicle Scheduling problems," *Theoretical Computer Science*, Volume 324, Issues 2-3, September 2004, pp. 147-160.
- J-2** John Augustine, Sandy Irani and Chaitanya Swamy, "Optimal Power-Down Strategies," *SIAM Journal on Computing*, Volume 37, Issue 5, January 2008, pp. 1499-1516.
- J-3** John Augustine, Sudarshan Banerjee, and Sandy Irani, "Strip packing with precedence constraints and strip packing with release times," *Theoretical Computer Science*, Volume 410, Issues 38-40, 6 September 2009, pp. 3792-3803.
- J-4** John Augustine, Brian Putnam, and Sasanka Roy, "Largest Empty Circle Centered on a Query Line," to appear in the *Journal of Discrete Algorithms*.

Refereed Conference Publications

- C-1** John Augustine and Steven Seiden, "Linear Time Approximation Schemes for Vehicle Scheduling problems," Proceedings of the 8th Scandinavian Workshop on Algorithm theory, 2002. (Preliminary version of article J-1.)
- C-2** John Augustine, Sandy Irani, and Chaitanya Swamy, "Optimal Power-Down Strategies," Proceedings of the 45th Annual IEEE Symposium on Foundations of Computer Science, 2004. (Preliminary version of article J-2.)

- C-3** Mohamed Aly and John Augustine, “Online Packet Admission And Oblivious Routing In Sensor Networks,” Proceedings of the 17th International Symposium on Algorithms and Computation, 2006.
- C-4** John Augustine, Sudarshan Banerjee, and Sandy Irani, “Strip packing with precedence constraints and strip packing with release times,” Proceedings of the 18th ACM Symposium on Parallelism in Algorithms and Architectures, 2006. (Preliminary version of article J-3.)
- C-5** Deepak Jeswani, Nakul Korde, Dinesh Patil, Maitreya Natu, and John Augustine, “Probe Station Selection for Robust Network Monitoring,” to appear in the second Student Research Symposium on High Performance Computing, 2009.

Manuscripts Under Preparation

- M-1** John Augustine, David Eppstein, and Kevin A. Wortman, “Approximate Weighted Farthest Neighbor Queries and Minimum Dilation Stars.”
- M-2** John Augustine, Qi Han, Sachin Lodha, and Sasanka Roy, “Optimal Shortest Path Algorithms for the Convergecast Problem in Sensor Networks.”
- M-3** Sangameshwar Patil, Sasanka Roy, John Augustine, Amanda Redlich, Sachin Lodha, and Harrick Vin, “Minimizing Application Testing in Database Migration.”

Theses

- T-1** John E. Augustine, “Near-Optimal Solutions for Powering-Down Problems and Scheduling Jobs in FPGAs.” Ph.D. dissertation at the University of California, Irvine, September 2006.
- T-2** John E. Augustine, “Offline and Online Variants of the Traveling Salesman Problem,” Master’s thesis at Louisiana State University, December 2002.

Work History

**Research Fellow, School of Physical and Mathematical Sciences,
Nanyang Technological University**
Singapore (September 2009 – present).

**Visiting Scientist, Theoretical Computer Science,
Institute of Mathematical Sciences**
Chennai, India (July 2009 – August 2009).

Scientist, Tata Consultancy Services
Pune, India (July 2007 – June 2009).

Scientist at the Tata Research Development and Design Centre, an R&D division of Tata Consultancy Services. Member of the Applied Algorithms and Optimization Group in the Systems

Research Lab. Simultaneously involved in solving optimization problems and developing optimization software for reducing cost in data centres. Problems solved and implemented are used in server consolidation, software consolidation, and migrating databases.

Visiting Assistant Professor, Colby College

Waterville, ME, USA (Sep. 2006 – June 2007).

Weaving the Web, Fall 2006: Introduced non-majors to web design. The course included an HTML component (1 project) and a longer Javascript component (3 projects).

Analysis of Algorithms, Fall 2006: The class comprised of junior and senior computer science majors. The course included standard undergraduate algorithmic topics such as asymptotic notations, sorting, greedy algorithms, divide-and-conquer algorithms, dynamic programming, and various graph algorithms including graph searching, shortest paths, minimum spanning trees, and strongly connected components.

Structured Programming and Elementary Algorithms, Spring 2007: The class introduced JAVA programming to potential computer science majors. The language was taught using a pedagogical programming environment, BlueJ, designed specifically for introducing programming from an object oriented perspective.

Topics in Computational Geometry and Graphics, Spring 2007: The class had junior and senior computer science majors. Several topics were broadly sampled from Computer Graphics and Computational Geometry. The course included basic wireframe modeling of 3D objects, rendering techniques, planar point location, convex hull, voronoi diagram, and delaunay triangulation.

Student Advising: Advised the final year honors thesis of Ms. Andreea Olea at Colby College. She explored the partitioning of the vertices of directed acyclic graphs (DAGs). This problem finds application in embedded systems with components (vertices in our DAG) that can be implemented either in hardware or in software.

Research and Teaching Asst, Univ. of Calif. at Irvine

Waterville, ME, USA (Sep. 2002 – June 2006).

Research: Designed algorithms for combinatorial optimization problems. The primary source of problems have been from the domain of systems design, specifically motivated by recent trends in designing power conserving systems. Other domains include computational geometry and vehicle scheduling.

Teaching: Duties included facilitating discussion sections, lecturing, and grading. The courses assisted in the capacity of a TA or grader are Discrete Mathematics (twice), Design and Analysis of Algorithms (3 times), Graph Algorithms (once) and Technical Writing (once).

Programmer and Systems Administrator, Louisiana State Univ.

Baton Rouge, LA, USA (Sep. 1998 – Aug. 2002).

Programming: Developed software in C++ for modeling fish population trends in various habitats using the matrix modeling technique. This technique was implemented in a highly generalized fashion to allow researchers at Louisiana State to model species with significantly disparate life stages that needed uniquely tailored time-steps.

Systems: Administered a DEC ALPHA/LINUX lab. Maintained printers and PCs.

Programmer, Aeronautical Development Agency

Bangalore, India (Jan. 1998 – Mar. 1998).

Developed software for visualizing flight recorder data using Visual C++.

Skills

Computer Languages: Java, C, C++, Javascript, FORTRAN, Python, Mathematica.

Operating Systems: Linux, Windows, Mac OS X.

Natural Languages: English and Tamil.

RELEVANT COURSEWORK

Undergraduate: Programming Languages, Data Structures, Algorithms, Discrete Mathematics, Probability, Operating Systems, Modeling and Simulation, Database Management, Interactive Computer Graphics, System Software, Computer Networks, Software Engineering, Artificial Intelligence, Mathematics, Computer Architecture, Computer Organization, Microprocessor and Assembly Language Programming.

Graduate: Data Structures, Analysis of Algorithms, Computer Security Algorithms, Computational Geometry, Randomized Algorithms, Computational Complexity, High Performance Computing, Parallelizing Compilers, Compiler Optimizations, Computer Architecture, Distributed Systems, Statistical Inference, Quantitative Methods in Population Ecology, Object Oriented Programming and C++, Software Engineering, Databases and WWW, Abstract Algebra, Compiler Optimization, Computer Arithmetic, Neural Nets.

MISCELLANEOUS

- Recipient, 2005 UCI Info. and Computer Science Outstanding TA award.
- President, Graduate Christian Fellowship at UCI (2003-05).
- Member, Mission Team at St. Andrews Pres. Church, Newport Beach, CA (2005-06). Served in hurricane Katrina relief efforts in New Orleans, LA and Gulfport, MS.
- Hobbies: hiking, biking, photography (www.flickr.com/photos/augblog).

REFERENCES

Prof. Sandy Irani
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University of California, Irvine
Irvine, CA 92697, USA.
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Prof. Dale Skrien
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Prof. David Eppstein
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