SHWETA JAIN

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RESEARCH INTERESTS

Algorithms, Optimization, Combinatorics, Graph Theory, Computational Geometry, Algorithmic Game Theory, Mechanism Design

EDUCATION

University of Chicago, Chicago, IL, USA.
Master's in Computer Science (expected December 2013)
GPA: 3.83
Discrete Math, Algorithms, Advanced Algorithms, Introduction to Probability Models, Mathematical Toolkit, Computational and Metric Geometry.

University of Pune (Pune Institute of Computer Technology), Pune, India.
Bachelor of Engineering, Computers (2005 - 2009)

PUBLICATION

Saurabh Kadekodi, Shweta Jain (2010). Taking Linux Filesystems to the Space Age: Space Maps in Ext4. In Robyn Bergeron & John W. Lockhart (Eds.), Proceedings of the Linux Symposium. Paper presented at The International Ottawa Linux Symposium, Ottawa, Canada, 13-16 July (pp. 121-132).

RESEARCH EXPERIENCE

Northwestern University (July 2013 - September 2013)
Visiting PreDoc student working with Prof. Jason Hartline.
Studied the structural properties of revenue-optimal mechanisms for a multi-dimensional unit-demand agent, including variants with supply and allocation constraints. Work involved designing algorithms for creating visual representations of these optimal mechanisms and experimenting with different distributions to understand the behavior of these mechanisms (technical report).

EMPLOYMENT

Oneirix Engineering Labs Pvt. Ltd. (March 2011 - July 2012)
As a part of the Computer Science Research Group, my work included:

- Simulating optical phenomena including scattering and fluorescence using the Monte Carlo method.
- Performing spline based shape optimization of mechanical parts. Work included writing a nonlinear static equilibrium solver.
- Creating a tool to manipulate huge image data-sets in real time. It involved creating a compressed data structure (rather than a flat file), that supports image retrieval and modification operations.

ACADEMIC PROJECTS

Space Maps in Ext4
Designed space efficient data structures (that essentially used red black trees and logs) to implement an extent based free space management technique for the Linux based Ext4 filesystem, called space maps. Also designed an algorithm that using space maps, enhanced the allocation and deallocation speeds and reduced fragmentation significantly. Paper published at Ottawa Linux Symposium (publication).

PROGRAMMING SKILLS

- C
- C++
- Matlab

ACHIEVEMENTS

- A+ in Advanced Algorithms.
- All India Rank 65 in TSI's Maths Olympiad (Level 2)
- Awarded Best Alumni Research - 2010 by P.I.C.T.
- 'Best Project' awards at a number of national-level project competitions including IIT Kanpur, BITS - Goa, PICT and others.