

Dinesh Agarwal

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Educational Background			
Degree	University/School	Year	Percentage/CPI
Ph.D.	Georgia State University, Atlanta, Georgia	Pursuing (expected 2012)	3.73/4.0
MS-IT	Dhirubhai Ambani Inst. Of Info. & Comm. Tech., GandhiNagar, India	2007	3.67/4.0
BIT	Jiwaji University, Gwalior, India	2004	78.48%

Skills	
Programming and Scripting Languages	C, JAVA, Python, Visual Basic, SQL, PL/SQL, JavaScript, HTML, XML, XSLT, PHP, Perl, JSP, VBScript, Prolog, DRC, Datalog
Operating Systems	Windows 9x/XP/Server 2003, Linux
Database	Oracle, MySql, DB2, CloudScape, MS-Access
Tools	Crystal Reports, Informatica, Business Objects, IBM WebSphere Studio, MicroStrategy, Rational Rose Suite, Macromedia Dreamweaver, Adobe Photoshop

Papers Presented
A Robust Service oriented Architecture based solution for GIS Interoperability: Presented at Map-Asia 2007, an International Conference held at Kuala Lumpur, Malaysia, this paper presented a comprehensive model to gather spatial data from GML files and present it over internet in the form of SVG(Scalable Vector Graphics) files. The paper discusses a robust solution which used WMS and WFS web services, using which a user can access text-based spatial data over a web browser in the form of interactive maps. The transformation from GML to SVG was achieved using XSLT style sheets and

ecmascript.

Grid Computing - An overview: This paper was presented at **National Conference on Information & Communication Technology (NCICT – 2005)**. The paper introduced the possibilities of sharing the networked resources outside a virtual organization (VO). In addition to that it covered the usage of Grid computing to meet the challenges in data mining from distributed databases.

Reloaded Grid – Building Competitiveness in the interconnected world: This paper was presented at a national level conference named **AIMS Western Region Conference** during 2005. The paper was co-authored by a second year MBA student. It also discussed about the efficacy of Grid Computing in providing optimum usage of available resources for any organization from managerial perspective.

MindTree Bus Route Management System using Web Based Geographic Information system: This paper proposes a solution to solve the current problems with the system being used by MindTree Ltd. This paper won the first prize in annual technical festival called Osmosis at MindTree Ltd.

Project Summary

Company	MindTree Ltd.
Project	BlackHawk Network Enterprise Reporting
Client	BlackHawk Network
Period	July-07 to May-08
Description	Blackhawk, a subsidiary of Safeway Inc. wants to build an enterprise DW that will cater to all kinds of reporting needs of the user community, both internal and external. The project will provide BlackHawk with an enterprise reporting platform for their gift card business and other subject areas like Finance and Supply Chain as well as new product lines like Fast forward and Health cards.
Role	<ul style="list-style-type: none">• Team Member involved in enhancement and Reporting.• Team Member involved in support and maintenance of existing reports.
Responsibilities	<ul style="list-style-type: none">• Conversion of specification to reports.• Unit / System testing• Maintenance and enhancement requests• Fixing of Bugs raised by users.• Deployment of the development to QA and production systems.

Tools	<ul style="list-style-type: none"> • Aqua Data Studio • Data Stage • MicroStrategy
Company	Bhaskaracharya Institute for Space Applications and Geo-Informatics.
Project	Spatial Data Management using XML
Client	BISAG
Period	January-07 to May-2007
Description	BISAG collects satellite images of earth in the format of shape files, which should be available to a user with a web browser in the form of interactive maps. To make the maps interactive the data should be displayed in SVG (Scalable Vector Graphics) form. The project will provide BISAG with a comprehensive tool which can collect data from shape files, organize it in GML files, convert it to SVG files and send it over the internet.
Role	<ul style="list-style-type: none"> • Architecting XML schema and related XSLT style sheets
Responsibilities	<ul style="list-style-type: none"> • Processing shape files and to convert them to GML files. • Creation and maintenance of Web Services to transform GML to SVG using XSLT. • Writing Scripts for user interaction.
Tools, Technologies and Languages	<ul style="list-style-type: none"> • Microsoft C# • XML Writer • XSLT • SVG • Macromedia Dreamweaver • ECMA Script

Academic Projects

Project: Parallel Priority Queues

This is a research project that I am working on with my Advisor Dr. Sushil Prasad. I am trying to implement Parallel Priority Queues on multicore architecture. A Parallel priority queue is a parallel heap with node-capacity $r \geq 1$ is a complete binary tree such that (i) its each node contains r items (except its last node which may contain fewer items), and (ii) at each node all its items have values less than or equal to the items at its children. When

the second constraint holds at a node, the node is said to satisfy the parallel heap property, which is an extension of the 'heap property' for conventional heaps. The parallel heap property, when satisfied at all the nodes, ensures that the root node of size r of a parallel heap contains the smallest r items (the r highest priority items). A parallel heap with node-capacity r employs r processors. I am trying to modify the existing algorithms to adapt Parallel Priority Queues to harness the power of multicore processors. Subsequently, we are going to implement Parallel Priority Queues on GPUs to leverage their massive parallelism.

Project: Comparing various sorting algorithms via experimental implementation

In this project various popular sorting algorithms were implemented in C language to analyze their time complexity. Algorithms implemented as part of this project are QuickSort (using random pivot, median of first middle and last element as pivot, median of medians as pivot and first element as pivot), MergeSort, Counting Sort, radix sort with various bases from 2 to 200, Insertion sort and QuickSort using Insertion sort. All these algorithms were compared for small inputs as well as large input. The best algorithm for sorting was found to be QuickSort with insertion sort.

Project: DRC query interpreter

The objective of this project was to take a DRC query and check it for any errors. The modules in this project were to check if the given formula is well formed or not, if the query is OR safe or not, getting all the sub-conjuncts in the query, to check if the query is safe or not and finally to check if the query has a safe schema or not. This project was implemented in PROLOG.

Project: Parallel Adaptive Page Rank

Page rank is a link analysis algorithm used by Google internet search engine that assigns a numerical weighting to each element of a hyperlinked set of documents, such as World Wide Web, with the purpose of measuring its relative importance within the set. In this project we improved on regular page rank by making it adaptive. A page's rank is only calculated if it has not converged till that iteration/pass. There were two versions of this algorithm that were implemented. One was sequential algorithm and other was parallel algorithm that can run on any arbitrary number of processors. The parallel algorithm itself had two versions, in which the advanced version created threads on each processor thereby reducing the inter-process communication. The algorithm was implemented using C with MPI as message passing framework.

Project: Smart Grade Manager (SGM)

SGM was created under the supervision of Professor Dr. R.B. Lenin, he provided with the requirements of a faculty member to assess a student's performance. SGM enables a faculty member to maintain academic details related to various courses and students enrolled in those courses in an efficient way. There are mainly three types of assessments in a course - quizzes held in class, internal or external examinations and laboratory/practical examinations. Each of these examinations can be of some percentage of total marks (e.g. each quiz of weight 5%), or they may represent certain percentage when aggregated (e.g. all quizzes contribute towards 15% of total marks). The scores can

be imported from an MS-Excel spreadsheet or can be manually inserted in SGM. SGM has the ability to project results in the form of Graphs; it displays the minimum, maximum, average and standard deviation of the marks among students. SGM was created using Visual Basic 6.0 as front end and MS-Access 2003 as back-end. The reporting tool used was Seagate Crystal Reports 8.5.

Project: POST Master

“POST Master” was used to handle data of clientele of a post office agent working with Recurring Deposit, Fixed Deposit, Monthly Income Scheme, Public Provident Fund, and General Insurance. I provided dos based (fast) printing in this project. POST is developed using Visual Basic 6.0 as front end. I used no database specific functionality; instead I used ODBC connectivity so that any RDBMS can be used as back end. Reporting was done using Seagate Crystal Reports 8.5. The project was highly appreciated by the agents and is still being used as a handy tool in their daily activities.

A second version of POST Master was created using PHP and MySQL. This version enabled the agents to access their accounts online, thus increasing availability of data on demand at any location. The agents were able to insert update or delete data similar to a stand alone application over internet. We used MD5 encryption to ensure the security of the data.

Project: ShabdaPurna

ShabdaPurna was created under guidance of Professor Abhinay Pandya at DA-IICT. ShabdaPurna which means “fill the word” in Sanskrit, is an online multi user Scrabble gaming portal. A user needs to register to play; once the user logs-in he can select an opponent from the list of online players. When both parties agree a new game starts, the winner is the person who scores 100 points early. The user can create a word in any of the eight directions in a 10 X 10 matrix. The word claimed by user was check against a Standard English dictionary available on server. The ShabdaPurna is developed using PHP with MySQL as database. Apache server was used to host the game website.

Project: Hyper Induced Text Search (HITS)

HITS is a link analysis algorithm that rates Web pages for their authority and hub values. Authority value estimates the value of the content of the page; hub value estimates the value of its links to other pages. These values can be used to rank Web search results. This project calculates the weight of a page according to its hub value and authority values. More the hubs point towards a page better authority is the page, similarly more the number of good authorities a page points to, the better hub is that page. “HITS” was implemented in Perl and the input to this program was a web graph created as flat text files representing adjacency lists.

Project: Content Management System

Content Management System, as the name suggests provides a solution to publish information in an elegant manner over internet. The project has the functionality to take information directly entered into the underlying database, or reading it from flat text files

called metadata files. Once the data is collected it is stored in a metadata repository and based on this a user can create any number of web pages for different content conforming to same schema. The project was capable of creating HTML forms which can create specialized HTML elements like text boxes allowing only numeric or alphabetic data, check boxes and radio buttons. Also a user can create forms which can accept a file as input. The authentication module was linked with the university web-mail and a student's official email id and password can be used to access the project web pages.

Personal Achievements:

- Topped University in BIT (Bachelor of Information Technology) 3rd Semester.
- Secured 3rd rank in MS-IT (Master of Science – Information Technology).
- Topped University in MS-IT 1st semester with a SPI (Semester Percentage Index) of 4.0/4.0.
- Two times First Prize winner at state level Proscenium competition.
- Second prize in street play during annual techno cultural festival at DA-IICT.
- Awarded 'Best Actor' during Synapse 2006 (annual cultural festival) at DA-IICT.
- Served as Radio Jockey for 'Radio – DA-IICT'
- Active member of DA-IICT cultural committee, as I have lived in many different states and cultures, I helped institute in establishing cultural harmony among students by organizing cultural programs.
- Successfully led the theatre group at DA-IICT which today, is a well known identity at all national level competitions.