

Top 5 Projects (Year 2010-11)

Summary

Sr No	Student Name	Project Title	Area of specialization	Sponsored Company
1	<ol style="list-style-type: none"> 1. Nazia Shaikh 2. Bhagyashree Shende 3. Anagha Shevtikar 4. Juhi tatkod 	Labvisor	Android based Mobile application	PSL
2	<ol style="list-style-type: none"> 1. Mamta Pathak 2. Snehal patil 3. Mugdha Vichare 4. Darshana Wagle 5. Rohini yadav 	Web Harvester Lite	Web Based	IBM India
3	<ol style="list-style-type: none"> 1. Pooja Deshpande 2. Gayatri gadre 3. Utkarsha Khadke 4. Akshatha Kumar 	Reward management system	Web based	Barclays Technology Centre
4	<ol style="list-style-type: none"> 1. Anuradha Kapse 2. Neha kaul 3. Manasi Kher 4. Prerna Yeolekar 	Framework for developing and automated testing of Flex based application	WEB UI Testing	PSL
5	<ol style="list-style-type: none"> 1. Aboli aaradhya 2. Sayali Borawke 3. Prerna Budhkar 	Design and implementation of variants of call string method for Interprocedural data flow analysis.	Compiler Construction/GCC Framework/LINUX	GCC resource Centre- IIT Bombay

Top 5 Projects Abstract (Year 2010-11)

Project Title: Labvisor

ABSTRACT

Network/Lab Monitoring includes device/application monitoring, troubleshooting and other tasks- ideally all coordinated and overseen by an experienced and reliable network administrator. Lab monitoring applications keeps you informed and allows you to track problems and make appropriate changes with ease. Above all, lab monitoring helps you cut down on the total amount of time it takes to investigate problems.

There is a need for a simplistic lab monitoring mobile application which does not only monitor one computer but can monitor an entire lab (consisting of computers in a network) completely, when the lab administrator is away from the lab.

It becomes difficult for troubleshooting a problem that is to be solved urgently and it arises when a lab administrator is away from the lab, which in turn delays the entire schedule until the problem is solved. In this situation, if the supervisor cannot attend the problem immediately, then the problem may turn into crisis because of delay. Administrators need to know what's happening on their networks at all times, including performance, and status of every computer on the network.

Hence, a mobile application is needed which will be of enumerable help to the administrators during emergency or urgent situations. Our application will help the lab supervisors to attend a certain problem occurred in the lab as soon as it arises.

Project Title: Web Harvester Lite

ABSTRACT

Computers are good at following instructions but not at reading minds! It would be amazing if we could train the computers so that they could understand our interests simply from our browsing behavior and not by asking us for instructions every time. This project provides an intelligent framework for knowing user interests without taking any 'explicit feedback' from the users. Thus, the user would simply navigate through the web pages and will not provide information about his/her liking.

A proposed method for implementing above mentioned scenario would be by capturing the user gestures and saving the same against the visited URL. These gestures could be used to perform server-side analysis in the form of machine learning algorithms to determine the usefulness of the web page. Depending on the score given to the web page after analysis, the page would be classified as 'liked' or 'not liked' by the algorithm. One of the applications of this result would be to extract the keywords associated with a URL and then tag the corresponding user against it.

Deploying this framework in an enterprise would help in 'smarter' working of the organization since all the employees would be tagged against fields of their interest. By knowing this, employees could be placed in respective domains for project work. Also, if employees would know the interest of their peers, the organization would provide a healthy atmosphere for exchange of information among like-minded employees.

Thus, we aim to develop an employee specific framework which determines employee's interests through his/her browsing behavior and which could be further integrated into any existing subsystem of the enterprise.

Project Title: Rewards Management System

ABSTRACT

Every bank has millions of customers all over the world. These customers are empowered with credit cards, debit cards, ATM cards and so on which allows them to make transactions in any corner of the planet. Taking about credit cards, on any purchase made using a credit card; the customer is awarded loyalty points or bonus points. These loyalty points are subjective to the purchase made i.e. higher the purchase, more the bonus points received. On the sufficient collection of these bonus points, also called as reward points, users can login to the bank's website and can view their existing reward points of their Issuing Credit Card Bank and redeem them against existing merchants.

Many customers own more than one credit card, each belonging to a different bank. Redemption of the reward points on these credit cards has to be done individually. Combining points from various cards is not possible. Currently every bank provides its own means to redeem credit card rewards. There is lot of duplication of efforts across banks to manage these rewards and handle merchants and promote them. Also, users do not have many choices as every bank has a limited number of merchants displaying their products. If a particular product is of a high price then a customer should be able to combine points from various cards in order to avail that product. Unfortunately, this solution is not incorporated by most of the banks.

The area of this project will include addressing this drawback by providing a common online portal which helps customers of different bank to combine the points on various credit cards so that the sum of these points can be used to redeem rewards! From the bank's perspective, this application will be cost saving as it will be completely outsourced and will not require any extra maintenance efforts from the bank's side. This web application will be highly beneficial to merchants as well as they will be advertising their products online to many more customers as compared to advertising only to customers on a single bank website. Users will get to avail special offers on products and will be able to combine their points on various credit cards to buy a product of high price!

The technologies that will be used include "**Encryption**" which will be used to provide a secure and protected environment to the user, **Tomcat Apache server** which is an application server which is an application server usable on any operating system that supports Java, **Ajax** which is group of interrelated web development techniques used on the client side to create interactive web applications, **Spring** which is a framework to build enterprise applications and **Java Server Pages** and **Servlets** which help in creating dynamically generated web pages using Java platform

Project Title: Development of framework for automated GUI testing of Flex based web application.

ABSTRACT

The availability of a large number of programming tools has made it easy for programmers to develop software in less amount of time thereby increasing the stress on testers, as they have to test large amount of code in limited span of time. Thus automation of testcases will increase their productivity to a large extent. Automation will also prevent the errors which human beings are prone to make.

A wide range of Flex GUI Test Automation tools are available, but most of these tools are quite expensive. Combining the various open source tools available it is possible to achieve automated GUI testing of Flex application, but it is a long procedure and involves installation overhead. Moreover it will require the testers some time to be acquainted with these various technologies thereby increasing time and efforts. The main idea for this project comes from this fact and also the client's requirement for having an automated testing tool for GUI testing of Flex based Web Application. This tool will not only be open source but also reduce the time and human efforts required at present.

This project mainly includes development of a Test Automation framework. A Test Automation Framework is set of assumptions, concepts and practices that provide support for automated software testing. This Framework will allow the tester to make use of the re-usable functions within the framework library files by calling them and passing the desired parameter values and viewing the log result for the various test scenarios.

Project Title: Variants in call string approach for interprocedural Data Flow Analysis

ABSTRACT

Compiler optimization is used to improve the efficiency of the code output by a compiler. These techniques allow programmers to write code in a straightforward manner, while allowing the computer to make choices about implementation details that lead to efficient code.

Data flow analysis is used in compilers and software engineering for machine independent optimization, program verification and debugging. Interprocedural data flow analysis is determination of data flow information in presence of procedure calls.

In classical call string method, when program is analyzed statically, all unfinished calls are remembered with tagged data values. This method is most precise, because at any program point, data flow values of all calls is available. But this method is inefficient in terms of analysis time and memory requirements, as number of calls is infinite.

In order to achieve both efficiency and precision, we present an algorithm in which only the call site from which current call is encountered is remembered. There is no need to remember a call string; data flow information is updated simultaneously as the analysis is done. Instead of saving the call-string, this method saves the return node. Since the return node contains return site of the caller function, so the callee function will return only to that function. For each procedure, data flow values are updated simultaneously with the propagation of the call-graph.

We want to implement the algorithms in the industry strength compiler and so we have chosen GCC (GNU Compiler Collection) which supports various programming languages. We wish to improve the current implementation of interprocedural analysis in GCC for liveness analysis and pointer analysis. For GCC we believe that implementing these interprocedural analyses would make it possible to greatly improve the generated code in many applications.

Top 5 Projects (Year 2009-10)

Summary

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1	<ol style="list-style-type: none"> 1. Agiwal Pooja Rajesh 2. Agrawal Aanchal Ashok 3. Bela Soni 4. Vastivika Khashu 	Data De-duplication in EXT2 file system	System Programming (Linux File System)	Calsoft
2	<ol style="list-style-type: none"> 1. Shetty Dhanashree 2. Rokade Priya 3. Kulkarni Anagha 4. Mohod Amruta 	Design an application having stereovision capabilities to detectan object and mapping	Image Processing and Stereo Vision	Fennec Fox Technology Pvt Ltd.
3	<ol style="list-style-type: none"> 1. Mahadik Kanak Vivek 2. Shaikh Saamiya Munaf 3. Mungel Sharayu 4. Karwa Sonali Surendra 	Vertical search Engine for Job Search using Hadoop Framework	Analytics/ Information Retrieval/ Parallel Computing	PSL
4	<ol style="list-style-type: none"> 1. Bhosale Uttara Pravin 2. Bhuskute Vaishali Vijay 3. Deshmukh Rasiya Rajan 4. Dhaktode Amruta 5. Dhavalikar Amruta 	Userspace for VOIndia Project tools and applications using iRODS packages	Science Data Management	PSL
5	<ol style="list-style-type: none"> 1. Srishti Shridhar 2. Lahoti Amruta Ajaykumar 3. Gupta Ritika Dilip 4. Motiramani Ankita Ravindra 	Multimedia application optimization on multi core platform	Parallelism, Multi core, Multimedia	KPIT Cummins Infosystems LTD.

Top 5 Projects Abstract (Year 2009-10)

Project Title: Data Deduplication in Ext2 filesystem

ABSTRACT

Certain applications can result in a set of files in which many different files have the same content. Using a traditional file system to store these files separately results in excessive use of disc and main memory file cache space. Using hard or symbolic links would eliminate the excess resource requirements but changes the semantics of having separate files.

Data de-duplication is the ability to compare blocks of data being written to disk with data blocks that currently reside on that disk. When duplicate data is found, it gets replaced by pointer to original data removing or de-duplicating redundant blocks. Data de-duplication helps in protecting data better, recover lost files faster, reduce backup and recovery cost.

We propose a solution to implement de-duplication in the Ext2 file system. It is a simple and easy to understand Filesystem compliant to most of the linux distributions and VFS architecture. The project aims to reduce archival and backup storage needs with performance impact

Project Title: Design an application having stereovision capabilities to detection object and mapping

ABSTRACT

The idea of our project is to develop 3D mapping of surrounding from 2D images and get distance of the object and object position in the image. Stereo Vision is an area of study in the field of machine vision that attempts to recreate the human vision system by using two or more 2D views of same scene to derive 3D depth information about the scene.

Each eye sees the slightly different image and the brain combines then to form the single image. The different points of view allow the brain to judge depth and distance. Our project uses those characteristics of human perception to create the 3D images and also performs shape detection and color detection. Project will be carried out in three steps Image preprocessing, Algorithm Implementation and Image Post processing.

Stereopsis (from *stereo* meaning solidity and *opsis* meaning vision or sight) is the process in visual perception leading to the sensation of depth from the two slightly different projections of the world onto the retinas of the two eyes. With stereo vision, we can see where objects are in relation to our own bodies with much greater precision—especially when those objects are moving towards or away from us in the depth dimension. Human beings generally come equipped with two eyes, which enables him to have stereo vision capability.

In 2D images we can't have depth information, so we can accomplish the same.

Project is developed on Linux Platform using OpenCv library. It is open source software. It uses NetBeans Environment and Ubuntu (Linux) Operating /System.

Project Title: Vertical Search Engine for Job search using Hadoop Framework

ABSTRACT

“Vertical Search Engine for Job Search using Hadoop framework” concentrates on the field of parallel computing and information retrieval and demonstrates the use of Hadoop in implementing complex processing tasks typical for a search engine. It also uses Apache Nutch and ‘General Architecture for Text Engineering’ (GATE).

The objective of this project is to extract relevant and accurate domain knowledge from the massive and intractable “digital universe”, growing rapidly, according to the search string. Generic search engines suffer from “disambiguation” or “not knowing the context”. Our system addresses this problem by allowing the custom design for job search, selecting company web sites as seed sites and thus effectively catering to the needs of the user. The targeted search creates specific and detailed information.

Nutch tools like crawler, parsers for HTML and other document formats make use of Hadoop’s MapReduce paradigm. The concrete data processing in this task succinctly identifies hadoop’s strengths as a parallel data processing engine. Map-sort-reduce primitives are used to select URLs eligible for fetching, and to extract relevant information from the HTML pages, while the fetcher uses multithreading and MapReduce to minimize the time it takes to crawl. Structured and unambiguous data in fixed format from originally unstructured web pages is obtained using the GATE tool. The Hadoop distributed file system inspired by Google’s GFS can solve the storage needs for the very large files generated as part of the web crawl. Thus, the search engine with Hadoop at its core gives excellent results.

Project Title: Userspace for VOIndia project tools and applications using iRODS packages

ABSTRACT

Astronomy surveys produce huge data. Future telescopes will produce data at the rate of some tera bytes. Different surveys would produce data observed at different frequencies and the some area of sky will be observed at different times. So there will be huge amount of data which a researcher can correlate and analyze.

So to deal with such data our project uses iRODS which attempts to provide tools for managing the data life cycle starting from storing raw data, data analysis to preservation of data. Our project include development of prototype which provides users of VOI applications and tools with distributed storage space. For that we are altering an existing Mosaic application is a web application to use VOI userspace for intermediate and output file storage. Mosaic application is a web application which enables users to select a region on Google sky and get the data observed in that region (FITS images) from different surveys. The retrieved images are combined and mosaiced to get a single image. Currently the application uses local file system for data storage. Hence our project comes up with userspace which is a distributed storage and iRODS package is used for developing the userspace application.

Project Title: Multimedia application development on multicore platform

ABSTRACT

MP3 is one of the most common audio file formats in use today. The mp3 file format reduces the size of a regular audio file on CD (PCM file) to one of the original thus allowing rapid file sharing and downloading. With the advent of Multicore processors, processor speeds and capabilities reached a new level. However, most of the code written for most of the commonly used applications is in serial format. Thus the applications are not able to exploit the underlying multicore architecture and its abilities to the fullest. We consider one such commonly used application, the mp3 decoder and try to optimize serial code for multicore processors. In this way we are able to modify an mp3decoder code in such a way so as to optimize processor usage on multicore systems. The project also has another aspect, performance analysis. After having implemented a parallelized decoder code, we look into the performance issues and compare and contrast the performance of the serial (non-optimized) code with that of the parallel (optimized) code for the same machine. This is tested on various systems starting with dual core and moving onto quad core machines.