Balasubramanian Bharath
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## Objective

Seeking a summer internship in the field of Software Development.

## Areas of Interest

1. Distributed Systems 2. Computer Networking 3. Embedded Software

## Education

Master of Science, Electrical and Computer Engineering, Dec 2007
The University of Texas at Austin, Overall GPA: 3.75/4.00

Bachelor of Engineering, Electronics, May 2004
Datta Meghe College of Engineering, Mumbai University , Overall GPA: 4.00/ 4.00

## Relevant Courses

Software for High Performance Computing, Engineering Programming Languages, Operating Systems, Distributed Systems, Computer Architecture, Advanced Topics in Computer Networks, Communication Networks, Wireless and Mobile Networking, Mobile Computing, Probability and Stochastic Processes.

## Work Experience

Research Assistant, Dr. Vijay Kumar Garg, UT Austin
(Jan 07- May 07)

- Enhancing a distributed debugger in Java to test and debug distributed algorithms through a GUI. The main challenge involves modifying the debugger to allow standard java network programs to run in simulation mode.
- Optimizing the Monte Carlo Simulations carried out by Dr.Graeme Henkelman of the UT Chemistry department to determine the saddle points of atoms in a reaction. These simulations are being performed in a distributed manner on a network of volunteer PCs around the world ( similar to seti@home).
- Researching on optimizing fault tolerance for finite state machines. This project basically involves developing a reduced state machine from which either of the failed machines can be recovered from.

Research Member, Parallel and Distributed Systems Laboratory (PDSL), UT Austin
(Aug 06 – Jan 07)
Working with Dr. Vijay Garg on projects in distributed computing. Responsibilities include:

- Developing a distributed debugger in Java to test and debug distributed algorithms through a GUI.
- Understanding the requirements for a project in the UT Chemistry department involving Monte Carlo simulations to determine saddle points of atoms in a reaction.
- Researching various methods of erasure coding for fault tolerance.
- TA for the graduate level industrial course, Distributed Systems.

Summer Intern, Wintegra, Inc., Austin
(Jun 06 - Aug 06)
Worked as a network programmer implementing the new WiMax specifications. Responsibilities included:

- Specifying the requirements for mobile handover from one base station to another.
- Porting the Wintegra API for the WiMax Services Layer from their proprietary OS to Linux.
- Designing and coding an interrupt based event handler using POSIX threads in Linux.
- Writing the test plan for the WiMax Services Layer.

Teaching Assistant, Bio-Medical Instrumentation Lab
(Jan 06 - May 06)
Conducted a lab on bio-medical electronic instrumentation where students built complex analog and digital circuits using the NI ELVIS prototyping board and NI LABVIEW software.

Graduate Research Assistant, Division of Instructional Innovation and Assessment (DIIA)
(Sep 05 - May 06)
Worked on a web application for students to give online tests. Technologies included Macromedia Flash, Actionscript, XML, PHP and MySQL database.

Associate Consultant, Capgemini Consulting India, Pvt. Ltd
(July 04 – July 05)
Worked on three projects at Capgemini. Responsibilities included:

- Web development in Java, J2EE, JavaScript, JSP, Struts, Hibernate (Object Oriented Database Access), MySQL (Open Source Database) and Tomcat Web server ported on a Linux machine.
- Application maintenance of a project management tool called NIKU and generation of reports using SQL.

## Academic Experience

Domestic Fire Detection using Wireless Sensor Networks (Fall 06)
Developed an application for intelligent fire detection in domestic settings using mica2 motes running tinyOS.

TCP for Intermittent Connectivity (Spring 06)
Developed an algorithm to modify TCP for efficient performance in the face of repeated disconnections. Implemented the same in Network Simulator 2 as a proof of concept.

Implementation of a self stabilizing spanning tree algorithm (Spring 06)
Implemented and enhanced a self stabilizing spanning tree algorithm using Labeled tree encoding (Garg and Agarwal 05). The algorithm was implemented in Java and was compared to another popular algorithm for the same (Dolev, Israeli and Moran 90).

Implementation of TCP style sliding window protocol (Fall 05)
Implemented TCP style sliding window with congestion control, flow control and the entire state transition diagram. The project was developed in C using the socket and multithreading interface provided by a tool called Xkernel.

Faculty Time Table Management System (Spring 2002)
Developed an automated time table management system for the faculty of my undergraduate electronics department. This involved in depth use of pointers, structures and File I/O in C.

## Skills

Operating Systems: Windows XP/2000/98, Linux.
Languages : C,C++,Java.
Tools: gdb, Eclipse, Macromedia Flash, Rational Rose, TOAD, Web Sphere Application Development, MATLAB, LABVIEW.
Database Management Systems: Oracle, MySQl, SQL and PL/SQL.
Web Application Development: HTML, XML, CSS,Javascript, JSP, Servlets, Struts, PHP.

## References

Dr. Vijay Kumar Garg, Professor - Computer Engineering, ECE dept., UT Austin.