

# Sandeep Baldawa

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**OBJECTIVE** To obtain a full time position in Computer Engineering Field

## EDUCATION

- University of Texas at Dallas, **Aug 2005 - Current**  
**MS in Computer Engineering** **GPA: 3.66**
- BVB CET Hubli, India. **Aug 1997 - Oct 2001**  
**Bachelor of Engineering (E&C) ,** **GPA: 3.75**

## Thesis

### **Development of CMP-SIM a new Multiprocessor Simulation tool.**

*This thesis is motivated by the increasing difficulty to develop a simple yet accurate Multiprocessor simulation tool. Using CMP tools developed by other developers might require a long study phase to understand the tool and at the end of which the tool might not be useful for several reasons like ,inflexibility to add new features, usage of an unknown coding language, issues of portability and nonavailability of extended support for the tool from the developer. Hence we consider developing a tool on our own might be a very good option.*

## SOFTWARE SKILLS

### **Programming Languages**

C, C++, perl, awk

### **Hardware Description Languages**

VHDL , verilog

### **Scripting Languages**

Unix Shell scripting.

### **Tools Used**

cadence, gdb, kdbg, cvs, bugzilla, Stream Analyzer, xilinx, CM Synergy, Altera Quartus, Latex , hspice

### **Domain knowledge**

Digital broadcasting, digital television ,ATSC systems, DVB systems real time systems, real time board board analysis, graphics tools , linux kernel,board bring up etc. analysis, CMP,SMT, parallel workloads.

### **Operating System**

LINUX, Windows 95/2000, Windows NT 4.0, DOS, SOLARIS, VXWORKS, PSOS.

### **Assembly Language**

8086, 8087, 8051 microcontrollers

## PROFESSIONAL EXPERIENCE (3+ years)

**Wipro Technologies, Chennai, India**

July, 2002 – Aug 2004

System Engineer

**NDS(UK), Bangalore, India**

Aug, 2004 – Aug 2005

Software Engineer

**Research Assistant , UTD, Dallas**

Dec, 2005 – June 2007

**Internship, Broadcom Corporation**

June 2007 -- Present

### **Internship at Broadcom:**

Building Kernel, cross compilation, benchmarking, fixing bugs with linux kernel etc

### **Projects in NDS:**

1. Implementation for Pull mode of Digital Transmitted data for the already existing push mode for ADSL

Implementation of back end channel(pull mode) for ADSL system with addition of interactive applications, implemented the Events Information Table reception and Pilote Application, Implemented EIT P.F(Present / future) then EIT others and then EITS(Scheduling).

## **2. Implementation of a framework for handling of OSD and SI data to be shared between various applications**

Design and development of the framework. Adapting it for the existing applications.

## **3. Implementation of application working for both satellite and terrestrial tuner.**

Developing a terrestrial tuner and integrate it with the satellite tuner. Developing various applications for the same.

### **Projects in WIPRO:**

#### **1. Enhancements and Testing of the PSIP (Program and System Information Protocol) module**

Parsed PAT , PMT and the CAT tables. Created abstract layer for certain APIs to the DBB. Tested the same using stubs . Integrated DBB and PSIP(for terrestrial),Tested the same with live streams and Sarnoff streams.

#### **2. Design, Development and Testing of DTV Closed captioning module for ATSC (Advance television standards committee for set top box)**

Designing of the CC module. Developed the closed caption module from scratch (on Teralogic board) according to EIA-708.Integrated, tested and implemented the same on the ATSC system.

#### **3. Development of CAT (Conditional Access Table)Parsing module**

Parsed the CAT table, parsed the CAT descriptors, integrated the same with DBB and PSIP Tested the same with live streams

#### **4. Development of the database for a terrestrial ATSC system.**

Developing the terrestrial database, developing the PSIP module. run time updation of tables, bringing up the board for Linux OS, Bug solving wrt the video layer

### **RELEVANT GRADUATE COURSES, PROJECTS, and PAPERS**

|                                |                                  |
|--------------------------------|----------------------------------|
| Computer Architecture          | Advanced Computer Architecture s |
| Microprocessor Systems         | Distributed Computing            |
| Real Time Systems              | VLSI                             |
| VHDL                           | Parallel Computing Architectures |
| AOS(Advance Operating Systems) |                                  |

### **Research Projects**

#### **Developed Chip Multi Processor Simulator**

**CMP-Sim** is a multi-core micro architectural simulation tool t with a detailed cycle-accurate model for the key pipeline structures both for parallel and normal work loads. CMP-Sim extends the **Simple Scalar 3.0d toolset** with accurate models of the pipeline structures. (Document available online and code available on request).

#### **Developed fault tolerant mechanism for Cache Coherency for CMPs**

Developed a unique mechanism for **fault tolerancy in CMP systems**

#### **Developed a simulator for SMP**

Developed a simulation tool for SMP.

## **Course Projects**

### **Implementation of Packet Content Checking (sifting) using 8051**

Packet content checking (sifting) is one of the ways of detecting well known viruses. The project was implemented in **Assembly Language** using **8051 microcontroller**.

### **Implementation of L3 cache**

Implemented Level 3 exclusive caches using the **simple scalar tool** developed in **C** on **Linux**

### **Designing a Train Control System**

Developed a Real time train control system on **VXWORKS** platform.

### **Design a new algorithm for Publish Subscriber system**

Designed and developed a new algorithm for content based publish subscriber systems.

### **Pipeline controller in vhdl**

Designed and developed the basic instructions in a Pipeline controller in Vhdl.

### **Design and development of a system in VLSI**

Designed and developed using Cadence tool a vending machine controller in VLSI

## **HONORS**

- Got “feather in my cap” award in Wipro technologies for my significant contribution to the project.
- Got “Ant award” in NDS for significant contribution to my project.
- The tool developed as part of my thesis is going public soon and has already been used for courses like Computer Architecture and Advance Computer Architecture at University of Texas at Dallas.

**Availability**      Dec 2007(for full time)