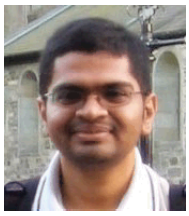

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Synopsis

- An Engineering graduate with more than 3 years of experience in embedded technologies
- Specialization in Electronics from University of Pune, India
- Professional diploma in Embedded System Design from Centre for Development of Advanced Computing, Pune (CDAC)
- Experience in developing working models based on Embedded systems
- Areas of interest include Digital Signal Processing, Embedded Systems and Computer Networks
- Adept at decision making through analysis of quantitative and qualitative data
- Expertise in Analysis, Development & Deployment of BSP for ABB Paint robots based on Linux
- Development using C and Python
- In-depth knowledge of Operating Systems and Embedded Systems Concepts
- Worked extensively on Embedded Systems used in ABB's robot controllers

Software Engineering Skills

Skills	Description
Analysis & Design, Development	▪ Requirement Analysis, System Design and Review ▪ Application Implementation, Test cases design & development, User acceptance, Documentation
Programming Languages	▪ Proficiency in C in UNIX/LINUX environment ▪ Programming of Powerpc processors. ▪ Trace32 ▪ Python
Operating Systems	▪ DOS, WINDOWS and Linux platforms
Integrated Development Environments (IDE)	▪ Visual Studio 2008 ▪ Eclipse (CDT)
Configuration Management	▪ SVN ▪ GIT
Hardware Systems	▪ PC assembling, installation and networking (A+, N+)
Office Productivity Software	▪ MS-Office

Experience

Asea Brown Boveri [http://www.abb.com]

Duration – February 2008 – till date (2 years 7 months)
Function – Embedded Developer
Location – Bangalore, India; Stavanger, Norway

About

ABB is a Swiss-Swedish multinational corporation headquartered in Zürich, Switzerland, operating mainly in the power and automation technology areas. ABB is one of the largest engineering companies as well as one of the largest conglomerates in the world. ABB has operations in around 100 countries, with approximately 117,000 employees, and reported global revenue of $31.8 billion for 2009. ABB is traded on the SIX Swiss Exchange in Zürich and the Stockholm Stock Exchange in Sweden since 1999, and the New York Stock Exchange in the United States since 2001. ABB is ranked 237th on Fortune 500 list. ABB key business areas include Power Products, Power Systems, Discrete Automation and Motion, Low Voltage Products and Process Automation.

Projects

Project	Description
Name	Embedded Linux for Integrated Paint System - **eLIPS**
Client	NOATM, SEROP
Work Location	Bangalore
Duration	Since Feb 2008.
Description	This project evaluated the real time properties of preempt_rt linux to deploy Linux based BSP (board support package) for use in IPS(Integrated Paint System) of ABB's paint robots and validate its performance in real world applications.
Team Size	4 persons
Responsibilities	▪ Porting rt-preempt linux and u-boot to the paint interface board. ▪ Patch management. ▪ Testing and analysis of real-time performance for rt-preempt on PIB. ▪ Lauterbach scripts for porting boot-loader to PIB. ▪ Developed code for multiport PTPd from the IEEE1588 specifications for precise time synchronization. ▪ Release manager for all incremental and final release of eLIPS. ▪ Configuration management
Operating System	Windows 7, Linux, preempt_rt patch
Languages	C, Trace32, shell script
Development Tools	Visual Studio, Vim,
Other Tools	Trace32 Debugging Tool, SVN, TFS, gdb, eldk cross-compilers
Customer Benefit	In case of propriety RTOS like vxWorks a large amount of time and money had to be invested in terms of both development and licensing cost. Also much time was required to port ABB applications to APIs that were not completely POSIX compliant and it increased the reliance on single vendor. All these problems could be overcome by using an open source OS like linux while still maintaining the real time constraints using preempt_rt patch. This was a research project that studied the properties of preempt_rt patched Linux in real world scenarios and decided on worst case timings that will satisfy requirements in ABB's robotic applications

Project	Description
Name	**CCPU**
Role	Software Developer
Client	NOATM
Duration	July 2009
Work Location	Bangalore
Description	This project involved putting realtime embedded Linux on the MPC5200 based CCPU board. The CCPU is a piggyback board and the application running on it depends on where it is mounted. This project follows CMMi Level 5 standards.
Team Size	1 person
Responsibilities	▪ Writing a user space driver for detecting configuration of underlying board. ▪ Open source software license compliance ▪ Create a Install image for installing IPS on Linux BSP provided and develop, present and merge into NOATM build system ▪ Provide a mechanism for field upgrade of BSP provided in case of newer releases ▪ Startup scripts to start various applications and daemons on board boot-up ▪ To identify and perform tests to check the real-time properties of Linux kernel and integrate them into NOATM BVT (build verification test) system using python scripts.
Operating System	Windows 7, Linux, preempt_rt patch
Languages	C, Trace32, shell script
Tools	Visual Studio, Vim, Trace32 Debugging Tool, SVN, TFS, gdb, eldk cross-compilers

Customer Benifit	Apart from the obvious benefits that any open source software brings, using an open source Linux BSP allowed the customer to use a number of COTS (commercially off the shelf) components that drastically reduced the time to marked, especially since many libraries useful for robotics applications are readily available for Linux platforms like vision libraries, Ability to port languages like python, perl etc which can be readily done on linux but is extremely time consuming on other real time platforms like vxworks. Such porting does not provide any value addition to ABB robotics and yet increases time to market.

Project	**Description**
Name	**Safety Board**
Role	Software Developer
Work Location	Bangalore
Team size	4 persons
Description	This project involves putting a Linux BSP on the MPC8323 based safety board and porting the safety application to Linux
Responsibilities	Linux kernel testing – Create an automated tool which will deploy all linux kernel functional and performance tests on all embedded boards running on linux BSPs and store the result logs on a server.
Operating System	Linux
Languages	C, shell script
Development Tools	Vim

Project	**Description**
Name	**Gandalf – Install Services**
Role	Software Developer
Work Location	Bangalore
Team size	2 persons
Description	This project involves creating debian and red hat package managers for porting robot applications to main controller using RobotStudio environment and virtualization
Responsibilities	Develop and deploy the build environment for creating and porting applications to main controller with VirtualBox and RobotStudio
Operating System	Linux/Windows
Languages	Shell script, Python
Development Tools	Vim, VirtualBox

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Project	**Description**
Name	**SoftPLC**
Role	Software Developer
Work Location	Bangalore
Team size	5 persons
Description	This project involves creating a software emulation of PLC for Robot.
Responsibilities	Develop and port the implementation of SoftPLC to Linux platform on main controller

Operating System	Linux/Windows
Languages	C, Shell script
Development Tools	Vim, ELDK

Education

Degree	University (Year)	Track	Percentage
Diploma in Embedded Systems	Centre for Development of Advanced Computing, (CDAC) Pune, India (2008)	DSP, 32-bit microprocessors, Operating System Concepts, Wireless Embedded Systems Design	A+ (Amongst the top 10 in the batch)
Bachelor of Engineering (B.E.)	Vishwakarma Institute of Technology (VIT), University of Pune, India (2007)	Electronics Engineering	62.93 % (First Class)
Higher Secondary Certificate (Std XII)	Modern College, Pune, India (2002)	Physics, Chemistry, Mathematics	83.33 % (Distinction)
Senior Secondary Certificate (Std X)	St John's Sr. Sec. School, Chennai, India: Affiliated to CBSE curriculum (2000)	Mathematics, Science	83.35 % (Distinction)
Certification Course	Indian Institute of Hardware Technology	Networking	Certification

Diploma in Embedded System Design - from CDAC

- DSP - Architecture, Floating point arithmetic, DSP based embedded system design, FFT algorithms, design of FIR and IIR filters, Audio/Video Coding
- 32 bit micro controllers (ARM) - programming in C and Assembly using C and GNU tools and various protocols like I2c, CAN, USB, PCI etc.
- Operating system concepts - Introduction to OS, Process Management and Inter Process Communication, Memory management, I/O subsystem, File System Organization, POSIX Thread Programming, Introduction to Real-Time / Embedded Operating Systems, Real Time Scheduling, Linux and RTAI Internals, Programming in Linux and RTAI, Configuring and Compiling RTAI
- Wireless Embedded Systems Design - Protocol Design and Validation, Network Embedded Systems (Operating Systems and programming), Bluetooth and IrDA, Wireless Sensor Networks and ZigBee, Wireless LAN - IEEE 802.11, RFID, GSM and GPRS

Subject of Interest from Engineering Degree

Subject	Description
Embedded Systems	Introduction to embedded system, General architecture of Embedded systems, Embedded systems development, Communication interfaces.

Academic Projects in Robotics and Embedded Systems

- **Traffic signal system with Automatic tracking**: A working model of traffic signal system was constructed which allowed automated tracking of vehicles. This project was based on 8051 micro-controllers and full duplex communication system
- **Voice over Internet Protocol**: Developed the hardware and software required for VoIP using an ARM9 processor and successfully demonstrated it. This technology reduces the telephony charges of both SOHO users as well as large firms to almost nil

Achievements and Interests

- Stood second in order of merit in Indian Physics Association quiz held in 2000-01
- Certificates of Excellence for memory and learning methods, public speaking, human relations and mind science
- Qualified first-degree Reiki practitioner
- Certified first and second degree Graphologist from Institute of Graphology, Pune, India

Language Proficiency

- English – Good
- Hindi & Marathi - Native
- Japanese - Beginner

References

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