

Rajan Rai

Email: rajan_rai@yahoo.com (preferred means of Contact)

Objective	Seeking for challenging position where my past experience and skill can assist in providing valuable contribution in the growth of an organization. I'm also looking forward towards learning new embedded software design and development methodologies, along with integration and testing techniques.
------------------	--

Strengths	<ul style="list-style-type: none">➤ 6 years of Software industry Experience out of which 3 year experience in Embedded Systems.➤ Currently working as staff engineer at Ingenient Technologies, Baltimore. My responsibility includes programming on embedded Linux platform, integrating and testing Audio and Video Codec, Encoder, muxer and Network streaming application. GUI development on Qtopia Core for ARM Linux. Opera Web Browser integration with Qtopia.➤ Responsible for system integration and testing Codecs and various modules.➤ Worked on various embedded firmware development emulators.➤ Knowledge of embedded and DSP programming using C, C++ and assembly language.➤ Worked at Nivis, Atlanta on TI MSP430 F149 and Chipcon CC1020.➤ Wrote shell scripts in embedded Linux in order to automate the testing of Ad-Hoc wireless protocol implementation. Configured ARM based Intel IXP425 embedded Linux kernel and customized it using Snapgear distribution.➤ Aware of SEI CMM level 5 Methodology and Six Sigma Quality process➤ Capable of working independently or as a part of team.➤ Implemented IEEE 802.15.4 protocol on AVR ATMEGA128L microcontroller using Chipcon 2420 as a part of my Masters Thesis.
------------------	---

Education	University : University of North Carolina at Charlotte Location : Charlotte, NC USA Major : Electrical and Computer Engineering _ Duration : Jan 2003 to March 2006 Expected Degree : Master of Electrical Engineering, Cumulative GPA : 3.71 / 4.0
	University : Barkatullah Vishwavidyalaya Location : Bhopal, M.P India Major : Electronics and Communication Engineering Duration : June 1996 to June 2000 Degree : Bachelor of Engineering, Graduation : June 2000 Cumulative GPA : 3.71 / 4.0

Skill Set	System Programming: Embedded, firmware, DSP programming using C, C++ , Qtopia Core (QT/Embedded), QT/X11 Hardware Description Language: VHDL
------------------	---

Awareness About Quality Processes: Worked in *SEI CMM level 5* company for 2.5 years. Aware of software development life Cycle, SEI CMM process and **Six Sigma**.

Configuration Management Tools: *PVCS, Microsoft Visual Source Safe* and *CVS*

Platforms: Worked on Unix, Linux, Sun Solaris Windows NT and Windows XP

Languages: Visual Basic, Developer 2000, Power Builder, Java, VC++

Systems : C ,C++ Object Oriented programming , Shell Script

Scripting Languages: HTML, VB script

Database : Oracle , Sybase and SQL Server

Packages/Tools used

Matlab, QT Designer

Microsoft Office: Well versed with all the suits of Microsoft office Microsoft Word, Microsoft Excel, Microsoft Power Point, Microsoft Access Database, made software to maintain and track library inventory records in Microsoft Access.

Technologies : TCP/IP, OSI , GSM, CDMA

Work Experience	<p>Designation : Embedded Engineer Duration : August 2005 – till date Organization : Ingenient Technologies, Inc. Baltimore, MD</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Programming DSP using C language and <i>Code Composer</i> as IDE • Embedded Linux scripting host-side control of DSP's • Writing device drivers in Linux. • Programming Embedded and DSP peripherals and device interfaces. • Operate cross compilers, emulators, and debuggers. • Integrating and debugging Audio, Video codec, muxer, demuxer and Network streaming application. • Integrating and debugging API's of multimedia standards like MPEG-4, MPEG-2, H.264, AAC, G711 and G726. • Worked on Intel IXP425 platform fixed on EBC2 motherboard of Kontron. • Worked on PPC EB8347, ported PCI driver to make it big endian compatible. • Configured ARM 9 based IXP425 embedded Linux kernel and customized it using <i>Snapgear distribution</i>. • IP Set Top Box application development by integrating DSP codecs and ARM9 Linux application. • Worked on TI-Davinci, which has C644X core, and ARM9 based Linux core. <i>MontaVista</i> embedded Linux distribution is used to configure ARM9 Linux. • Configuration of <i>Qtopia Core (QT/Embedded)</i> for ARM Linux and GUI development for embedded Linux. • Integration of <i>Opera embedded Web browser along with Qtopia GUI</i>.
	<p>Designation : Software Engineer Duration : 2 months (June 2005 – July 2005) Organization : Softnice, Inc Allentown, PA</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Automate batch processes by writing shell scripts. • Maintain and enhancement of Oracle database related batch processes. • Monitor Manugistics supply chain management suit, processes. • Develop interface in order to exchange data with different systems
	<p>Designation : Embedded Engineer Duration : 14 months (May 2004 - June 2005) Organization : Nivis, LLC Atlanta, GA</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> •Developing firmware application, which reads the data from meter and do <i>wireless data transfer</i> in order to do <i>data acquisition</i> on Linux server. •Being one of the main developers for developing firmware for Automatic Meter reading and transmitting the Data by wireless medium using <i>Chipcon CC1020</i>. •Implemented <i>I²C</i> module to communicate with Microchip <i>24LC256 EEPROM</i> •Also implemented various system maintenance modules like <i>scheduler, Event generation, Real time Clock, registration</i> etc. •Test team lead for regression testing of developed firmware •Wrote <i>shell scripts</i> in <i>embedded Linux</i> in order to automate the testing of Ad-Hoc wireless protocol implementation. •Implemented ANSI standard C12.21 over serial port , to read utility industry end device data tables specified in ANSI standard C12.19 ANSI communication

Grad Work/Thesis	<p>UNCC along with Dr. James Conrad Designing and programming of embedded systems</p> <ul style="list-style-type: none"> • Currently as part of my masters Thesis I'm implementing IEEE 802.15.4 protocol using AVR ATMEGA128L and Chipcon. • Implemented JTAG interface, with aim to communicate and download assembly program from desktop to the MSP430 mounted on small PCB. This PCB is used to operate small six-legged robot called Stiquito. • Worked on Mitsubishi toolkit MSV30262 and MSP430 evaluation board of MSP430F1121A and MSP430F1122. • Analyzed Ericsson Bluetooth application toolkit with an objective to implement Bluetooth protocol using Mitsubishi MSV30262. • Programming in C for MSV30262 and MSP430 • Studied Bluetooth, IEEE 802.11 and IEEE 802.15 protocol. • Helped in the design and enhancement of small six legged robot using MSP430
-------------------------	--

Projects :	<p><u>Implementation of IEEE 802.15.4 Protocol:</u> As a part of my masters Thesis I implemented IEEE 802.15.4 protocol using AVR ATMEGA128L microcontroller and Chipcon CC2420 transceiver with final goal of improving on certain communication performance parameters specially power consumption. ATMEGA128L uses One Wire protocol in order to interface with coulomb counter used for measuring the current consumption. SPI interface is used in order to communicate between Chipcon CC2420 and ATMEGA128L.</p> <p><u>Stiquito Robot:</u> Stiquito is a self-sufficient small, six-legged walking robot. The objective of this project was to research and construct an autonomous small, hexapod walking robot known as “Stiquito,” using simple PCB and an inexpensive microcontroller. The Stiquito allowed the end-users to change its movement to the way s/he desires by giving them the ability to reprogram the code loaded onto the microcontroller using an external device and JTAG interface. Stiquito Printed Circuit board was controlled by Texas Instrument (TI) ultra low power mixed-signal microcontroller MSP430F1122. Programming was done in C using “IAR Embedded Workbench IDE 3.0B (3.0.2.0)” its part of Tool “Kickstart V2”.</p> <p><u>Interfacing Ericsson Bluetooth application toolkit with Microcontroller:</u> Analyzed Ericsson Bluetooth application toolkit with an objective to implement Bluetooth protocol using Mitsubishi MSV30262 and interface it with Ericsson Transceiver.</p> <p><u>DSP C++ simulation to implement a modem:</u> C++ program was used to implement the simulation of FFT, different convolution techniques. QPSK modem was implemented using DSP principles in C++. In order to recover the modulated signal designing appropriate filter. Study of using different kinds of filter and effect of various parameters of filter designing was also done in this project.</p> <p><u>Infra Red Communications Device:</u> Built IR full duplex Communications Device using Mitsubishi MSV30262, IR receiver and IR emitting Diode.</p> <p><u>Implementation of PC As A Wireless Remote Device Controller:</u> Project was based on Wireless Communication between two computers, which can be used to transfer data from one computer to other. This wireless communication method was used to control the remote devices, with the help of main computer. Software developed for this project was in C language.</p>
-------------------	--

Computerized Security System: Involved Programming in C language and an interface between doors and a computer parallel port. When an authorized user entered correct password and user-id at the computer console, interfacing door opened automatically. Automatic log report is generated telling which lock was opened on which day and time. If an unauthorized user enters incorrect password, alert sound is triggered off and he is denied the access of the door, which he is trying to open.

CNC Machine prototype using Stepper Motor: Developed software interface to control the movement of CNC machine using the parallel port of PC. System programming was done in C and GUI based application was developed in VB. CNC machine movement was controlled using stepper motor.

Honor's:

Scholarship:

- Held **Teaching Assistantship** at UNCC in Electrical & Computer Engineering Department.
- Awarded with prestigious MP Science Quiz Scholarship. Secured 8th position in entire State, out of 50,000 candidates who appeared in this test. Through this scholarship **State Government sponsored** my education expenses during **undergraduate studies**

Awards

- Secured **first position** at national level in Software development contest.
- At national level Technical Fest, achieved **second position** in prototype design contest, among all contestants from different colleges of India.
- In Junior National Talent Search contest in Mathematics, was honored with a **certificate of recognition at National level.**