Curriculum Vitae

Harish Nagaraju harishnagaraju@gmail.com Phone: **+91-8618735480**

Profile Summary

- Dynamic Software professional with 18+ years of experience in the IT industry, worked extensively on software design and development using C#, C, C++, Java, .Net, assembly and Python programming as the underlying programming languages on Windows, Linux and RTOS platforms. Developed various applications for standalone, servers and mobile platforms.
- Experience in Linux Internal. Developed Real time Kernel.
- Experience on Multi-thread programming, IOT
- Worked as Architect for DCS – distributed control system
- Strong exposure on UML, Object Oriented programming methodologies (OOPS) and Design Patterns.
- Sound knowledge of Web technologies and Apache web server.
- Experience in WCF and Web Api (REST, SOAP)
- Experience in DB performance tuning in SQL Server, Java Script, Sql and NoSql
- Experience using different SCM tools like Perforce, GitHub, CVS, SVN, TFS, SharePoint (Documents), CM Synergy and VSS.
- Experience in using issue tracking tools like Jira (Open Source), Change Synergy and Bugzilla.
- Excellent development, testing and integration experience in a complex, multi-threaded, embedded applications environment where multiple teams working on a different modules adhering to strict schedules with tremendous debugging skills for integrating those modules.
- Creative in writing automated test plans and test cases for the developed software modules and also developed testing tools.
- Strong knowledge in SDLC, Agile and CMMi process.
- Strong Technical and analytical background, problem solving, decision-making.
- Good communication skills, team player and goal oriented, with a commitment towards excellence.
- Leading the Team for making design decision and implementing new design approaches and methodology.
- Proven ability to plan, manage, motivate and work efficiently in both independently or collaboratively in a team effort.
- Good experience in coordinating with Onsite and Offshore team.
- Flexible and ability to balance multiple projects at one time in a fast-paced environment.
- Ability to learn and incorporate new technologies.

Technical Skills
Programming Languages : C#, JAVA, C++, C, Python, Java Script

Platforms	: Linux, Windows, Web, Android, RTOS
User Interface	: ASP.NET, Silverlight, WPF, HTML5
Database	: MS SQL Server 2008, Oracle 11.g, DB2, NoSql
Data Service	: WCF, Web API, Web Services
IDE	: Visual Studio, Eclipse, Android Studio, CC Studio
Framework / Libraries	: AngularJS, JQuery, Kendo UI
Review / Testing	: JUnit, GUnit, LibU, CppTest, CppUnit
Source Control Tools	: CVS, Perforce, GitHub, SVN, CM Synergy, VSS, SourceSafe
Other Tools	: Microsoft Visio, MPP, Rational Rose UML, Enterprise Architect, Bugzilla
Hardware	: X86, MIPS, 8085/86 board, TI TMS320 DSK board, UBICOM IP2022,CARMEL, ARM SC344BOX01, PPC, TI MSP 430, ESS 6810, Tensilica, PCL-812 Card, Blue-tooth dongles, ROK101, Silicon wave, Infineon, X86 Emulators, JTAG, CanCase controller, N800, BSP, and BIOS.
Protocols/Standards	: TCP/IP, Bluetooth, ATAPI, SCSCI, JPEG, MP3, MPEG4, GSM/GPRS, I2C

Experience Summary

- Software Consultant in G&D Solutions, India from Oct 2018 to till date
- Software Consultant in R K Consulting, India from Jan 2014 to Oct 2018
- System Architect in Honeywell Technology Solutions from May 2010 to Jan 2014
- Freelance Software Consultant (USA, UK and India) from July 2008 to May 2010
- Project Manager in Wipro Technologies from April 2006 to June 2008
- Performance Analyst in AMD R&D Centre (Bangalore, USA) Dec 2004 to April 2006
- Senior Software Engineer in Sasken Communication R&D Nov 2003 to Dec 2004
- Software Engineer in SAMSUNG and Adamya Computing Dec 1999 to Oct 2003

Education & Training

- Advanced Post Graduate Diploma in Computer Applications from IAAC, Bangalore
- Bachelors in Electronics & Communication Engineering from Bangalore Institute of Technology -1999
- Six Sigma Black Belt Training(Honeywell Technology Solutions)
- Rational Rose UML Training (Wipro Technologies)

Project Profile:

Project: ABB Smart substation control and protection   Oct-2018 to till date
Client: ABB
Role: Software Consultant

Description: New approach to protection and control in distribution networks – centralizing all protection and control functionality in one single device on substation level. It is digitally enabled solutions. Working on Cyber Security for applications written on Linux platform

Technology Used: GIT, Tvos, Algero webserver, Apache2, PAM, PKI, Java script, CGI, Ajax, C, C++,
      IOT, PAM, CAM, LDAP.

Project: Study project on AI & Machine learning   Mar-2018 to Nov-2018
Client: R.K.Consulting
Role: Software Consultant

Description: Study project is to develop applications using dataset and algorithms for future transportation. The dataset of 3D road network can be used for benchmarking various fuel and CO_2 estimation algorithms. This dataset can be used by any applications that require to know very
accurate elevation information of a road network to perform more accurate routing for eco-routing, cyclist routes etc. For the data mining and machine learning community, this dataset can be used as 'ground-truth' validation in spatial mining techniques and satellite image processing. It has no class labels, but can be used in unsupervised learning and regression to guess some missing elevation information for some points on the road.

Technology Used: Tool – Weka, Language - JAVA 8, R
     Dataset – 3D road Network
     Algorithm – k-nearest neighbor classification

Project: ERP Application & Project Consulting   Jan-2015 to Mar 2017
Client: SK Studio (GOK, India)
Role: Project Consultant

Description: This is an ERP package that solves the major part Studio daily booking transactions. This provides multi-company and with multi-address for each company. Some modules included are raising Sample Quotation Order, Purchase Order, Order Confirmation, Invoice, Pre Shipment Document and Post Shipment Document Preparation. And also having Payroll and Inventory management. There are 36 External reports and 12 internal reports. This package will take care of LC, Quota functionality.

Technology Used: JAVA, MYSQL-Server 5.5, Crystal report 6.0

Responsibilities:
- Creating the reports using Crystal Reports 6
- Analyzing the database for data conversions.
- Providing training to the end users
- Project Maintenance and technical support

Project: Radio Remote development & Enhancement　　　　　　　　Jan-2014 to Jan 2015
Client: Agiledge -Tele-Radio (Sweden)
Role: Software Consultant

Description: Industrial Radio remote development and Enhancement
Industrial radio transmitter sends out radio waves which correspond to a binary command for the button you press. A radio module in the receiver receives the radio wave and interprets it, which in turn performs a command; command say was for lowering a hook from an overhead crane or any other necessary controls.

Technology Used: RF Transmitter 2.4GHz range, SIL3 IEC 61508 standard and PLe,

Responsibilities:

- Initial Study on RF technology
- Working on protocol Design and development of RF products for Agiledge solutions for their Swedish clients Tele-Radio.
- Up gradation of their existing products with new software modules.
- Requirement Analysis
- Technically leading a team
- Coding and Testing

Project: Industrial Automation - DCS　　　　　　　　　　May-2010 to Jan -2014
Client: Honeywell Technology Solutions (US, FINLAND)
Role: System Architect

Description:
　　　　One of the projects was development of a hardware test system connected to servers via web technologies. Another was Paper and Pulp manufacturing DCS system migration to Experion DCS. Another project was on fault identification in a legacy controller which was costing client a lot of money. One more project on development of Test system for 4 controllers which can be monitored in temperature controlled chamber during production. Last project was on legacy code (PASCAL) maintenance and bug fixing of DCS system.

Technology Used: C++, C, Java, C#, PASCAL, Honeywell DCS Experion R410, R430, PKS, ReqPro,

Enterprise Architect – SPARX, JIRA

Responsibilities:
- Design and developed a software application for Production diagnostics.
- System Architect for Industrial Automation DCS (Distributed Control System).
- End to End solution integration from transducers, controllers, I/O's devices to Servers on L1,L2,L3 Layer network nodes,
- Working on Internet of things, IOT.
- Architecture using Enterprise Architect tool
- Requirements gathering using ReqPro Tool
- Preparation of Vision documents
- Design prototype for products and successful presentation to Clients

Project: Linux Drivers and Tool Chain   July-2008 to May-2010
Client: GTech-USA, IBM Software Labs, TCS, ChipMax technologies
Role: Freelance Software Consultant

Description:
Development of Linux device drivers for IBM Servers, Motorola boards and Texas Instruments boards.
GTech Company is manufacturing lottery and casino machines for gaming community. Development involved firmware configuration and design of CLFS (Cross Linux from Scratch). Configuration of GDB, GCC, GLIBC, Binutils on the target 32bit and 64bit platform. Configuration of PCIutils for 64 bit. Writing udev code for the touch screen display.

Technology Used: Linux Kernel 2.6.18, GDB 3.4, GCC, Makefile, related tool chain packages, CLFS, CVS
Responsibilities:
- CLFS (Cross Linux from Scratch) tool-chain build configuration
- Building of libraries and utilities needed for host system - like Binutils, GCC, Glibc, GDB, gperf,
- Configuration of PCIutils package for the cross-compilation of a x86_64 Linux target system.
- Implementation of "udev" for touch screen display.
- Setting up of Linux environment Fedora Core 6, apache-ant, J2sdk packages for emulation of the device and for build system
- Understanding firmware architecture, Cross compilation for the 32bit and 64bit x86 platforms.
- Understanding of Ant xml tags and firmware build procedure.
- Completed requirement analysis and knowledge transfer.
- Understanding the system and documented all the tasks assigned.

Project: 2D-3D graphics accelerator Linux driver for N800   Nov-2007 to May-2008
Client: SAMSUNG R&D
Role: Firmware Architect

Description:

       Mobile hand held tablet PC device N800 had a 2D/3D graphics accelerator SOC chip set which needed to be enabled in the code and then applying patches and wrapper class for the device driver to provide necessary interface to the OpenGL applications. Code was written in C and assembly on Linux platform. Cross compilation and BSP configuration

Technology Used: Linux Kernel 2.6.18, GDB 3.4, GCC, Makefile, ClearCase, N800 Tablet Mobile, Scratchbox, related tool chain packages, Embedded Linux., Uboot.

Responsibilities:

- Setting up of Linux environment which included installation of Scratchbox necessary tool chain and packages for emulation of the device and real time interface to the device.
- Coding, debugging and testing. Update Uboot onto the device.
- Enabling the chip set, checking for Virtual memory
- Enhancement of device driver in accordance with the standards laid out in development for embedded Linux.
- Compilation of Linux Kernel 2.6.18 and development of modules and porting into the device.
- Completed requirement analysis and knowledge transfer.
- Understanding the system and documented all the system specs

Project: Atapi, UDF file system development, video API for DVD Camera   May-2007 to Oct-2007
Client: SAMSUNG R&D
Role: Senior Consultant

Description:

       Samsung provides advanced technology solutions to consumer electronics. One of the products is DVD Video Camcorder which supports DVD, HD DVD, and Blue ray disc for live video recording. This software development is for DVD CAMCODER, which supports most of the DVD formats. The module is about development of a ATAPI device driver layer with IOCTL calls, UDF File system, UDF up-gradation, and OS layer abstraction. Also providing DVD file system for various video formats API's for application layer.
Further logical formats are classified into DVD video recording & DVD video format, according to the standard specifications and which is further implemented to various DVD physical formats like +R, +RW, -R, -RW. Entire development is on Monta-vista Linux.

Technology Used: Embedded Linux, GDB, GCC, Makefile, ClearCase, Cross compilation, BSP configuration

Responsibilities:

- Setup the offshore team and set the scope and out of scope for the project for outsource.
- Developed new features like support of IOCTL in Atapi layer, UDF up gradation from 2.0 to 2.5 and accommodate the new features in the complicated existing code.
- Added new tables to support new features of UDF 2.0
- Fixed the existing bugs in the redundant logging and exceptions in the event logging.
- Completed identification and set the potential make file required for the existing manual process. Played the active role in release of new feature.
- Writing low level driver access API for +R and -RW DVD formats.
- Understanding the system specification completed the requirement analysis and knowledge transfer of the project.

Project: TI Codec debugger enhancement and features enhancement   Nov-2006 to Apr-2007
Client: Texas Instruments
Role: Team Lead

Description:

TI Codec debugger enhancement and feature enhancement for test diagnostics, Texas Instruments are manufactures are of IC's. They develop multimedia codec system on chip. The various types of multimedia codec are developed for speech, audio and video products. Testing of multimedia CODECS for Texas Instruments multimedia CODECS. This also involved enhancement of a software debugger over Ethernet connectivity.

Technology Used: C, TI Code composer Studio, Jacinto and Davanci TI board, 54x & 6xx series TI DSP

                     processor, Clear Case tools.

Responsibilities

- Performed regression testing of the product, with proprietary test tool.
- Writing Optimization techniques for more accuracy in C and using TI Code Composer studio.
- Involved in testing of DTS, JPEG, MPEG4 & MP3, writing new test framework, test plan and test report.
- Developed internal website for the team, which was used for sharing of resources.
- Installation and configuration of apache web server and developing web pages.
- Development involved enhancement of a software debugger over Ethernet connectivity.
- Played the active role in scheduling client calls, team meetings and preparing minutes of meeting.

Project: Car DVD Player stack layer & GUI development   Apr-2006 to Nov-2006
Client: Magnetic Marelli, France
Role: Project Manager

Description:

Magnetic Marelli is an automotive division of FIAT car in France. Project was to develop DVD player layer and GUI integration for the car DVD player.

Technology Used: MPP, VXWorks, C, C++, VC++, UML, native complier for development, CVS, Bugzilla, Source Insight

Responsibilities
- Project Plan activities
- Requirement Gathering & Customer interaction.
- Developed internal website for sharing of information with entire team.
- High level design using Rational Rose UML tool for DVD, VCD/SVCD application modules.
- Writing code using C++ classes and C Procedures
- Major code was developed on VC++ and Windows. Ported to VXWorks OS.
- Actively developed Multi function multi file re-entrant programming for different modules, by implementing Message and Event handling.
- Code Integration and porting on to the hardware.
- Have sound knowledge of firmware which consisted of JTAG and CAN case controller for downloading code and debugging.
- Identified and debugged the existing bugs and proposed alternate solution.
- Having various fixes in the buggy and crashing code and making it stable.
- Participated actively in a team for requirement analysis
- Performed Unit testing and Regression testing.
- Design, Coding and testing.
- Completed requirement analysis and knowledge transfer for the project.

Project: Development of DSP routines & Performance primitives library   Dec -2004 to Apr-2006
Client: AMD R&D Centre, Austin Texas USA
Role: Performance Analyst

Description:
AMD is a leading IC manufactures which has it base in Austin and Sunnyvale. Worked for AMD R&D centre. Project involved development of various Image and Signal processing libraries which is used as performance primitives for various application develop

Technology Used: C++, C, Linux, Windows Vista, Windows XP, X86 - 64bit, dual core processors, SSE2.

Responsibilities:
- Performance analysis of Digital Signal Processing algorithms on X86 processors.
- Design, development of algorithms for IIR and FIR filters.
- Developed Image processing libraries for various arithmetic and logical operations which included complex number calculation.
- Initial development of entire code structure using C++ templates to accommodate 16 different data types.

- Optimization of signal and image processing libraries using SSE2 intrinsic on X86 - 64bit architecture.
- Coding and testing
- Drove the requirement analysis.

Project: Mobile Platform Solution   Nov -2003 to Nov-2004
Client: Ericsson, Sweden & Panasonic, Japan
Role: Senior Software Engineer

Description:
      SASKEN provides end to end customer solutions for mobile platform solutions. They have multimedia codec integrated into the application as of their product lines. Ericsson and Panasonic were the clients for Sasken communication.

Technology Used: VC++, C, Platform assistant, ARM SDK, Other tools: SPARK, Meetex, Timex, Statex,
                    Perforce, Bugzilla

Responsibilities
- Installation of platform assistant tool and enabling the same to entire team as client-server usage for downloading of code into the hardware and testing.
- Integrating of GPRS/GSM protocol stack, platform, kernel abstraction layer, basic telephony services and multimedia applications on Nucleus OS.
- Testing of applications like camera capture, MP3 player and Image viewer applications
- Integration of above applications onto mobile phone device.
- Writing code using C for GUI interface of video telephony applications
- Installation of new platform, compilation and building of entire code base.
- Requirement analysis, Preparing various analysis and design reports.
- Scheduled team meetings and demo presentation to the potential clients.
- Working knowledge of mobile device using JTAG firmware.
- Installation of software and configuration of Platform assistant, Apache Server, Sign server.
- Actively involved in debugging high severity defects using Microsoft VC++ debugger.
- Unit testing and Integration Testing, Writing test cases and test reports.
- Code reviews, coding and testing.

Project: Car DVD player   Jan -2003 to Oct -2003
Client: Samsung
Role: Software Engineer

Description:
      On the guidelines of Video Quality Expert Group (VQEG), analysis was made for video quality implementation to the DVD player. Also design of RFCOMM for Blue tooth protocol

Technology Used: C, VC++, Windows 2000, Windows ME, UZUSB.

Responsibilities
- Implementation of Functional routines of I2C protocol for Display panel to the main hardware board for remote control operations.
- Analysis of video quality using VQEG tools and comparison with raw RGB data output of the DVD player.
- Unit testing for I2C routine.
- Preparation of report for video quality analysis.
- Design of RFCOMM functionalities for Bluetooth protocol.

Project: ARTOS- **KERNEL development**   Nov -2001 to Dec -2002
Client: Adamya Computing Technologies, India
Role: Software Engineer

Description:
      ARTOS was developed for software BASEBAND and Blue tooth product. A Real time KERNEL was developed on various different processors. Various API's (application programming interface) was developed in order to support multi-tasking on priority based pre-emptive scheduling. Also included timer management, task scheduling, IPC (Inter-process communication) like message queues, mailbox and semaphore. Further provided Memory management and Interrupt management API's.

Technology Used: TI Code Composer Studio, UBIcom, Tensilica, Windows NT, TI emulator kit**,** Xtensa,
                Debugger, GDB, GCC, unity (GUI), Visual Linker, IP2022, MSP430
Responsibilities
- Drove the requirement analysis.
- Designing of entire Kernel from scratch including STATE Machines.
- Coding of IPC, Scheduling and Interrupt Management modules using C language and assembly language.
- This was intended to develop for compactness in order to fit in along with the smallest blue tooth protocol stack. Hence achieved this kernel with less than 1KB code.
- Also achieved a milestone (in micro seconds) for switching timings between the two IPC calls.
- System testing and Unit testing of firmware.

Project: MP3 player firmware   Apr -2001 to Oct -2001
Client: SANDISK, USA
Role: Software Engineer

Description:
      MP3 player firmware was to produce a minimal functional MP3 decoder player using Multi media card (MMC) on **TMS320C54x processor**. Project involved developing the driver for MMC &

MP1 layer3 decoder. Music files are stored in encrypted form in MMC. Our software reads the encrypted data, decodes the audio stream & regenerates the PCM stream. MP3-Decoder Software is written in both C & Assembly. Initially reference C code was tested on VC++ compiler. Due to excess data size it was impossible to port on the 'Code Composer Studio Compiler 'C5000' conditions. Overlaying big arrays reduced data size. Another aspect of this project was to provide Serial port interface and DMA features for MMC (multimedia card) card .Individual modules were developed on the Code Composer Studio Compiler 'C5000' and tested. These modules are very efficient with respect to time. These C and assembly Modules were integrated and tested on 'C5402-DSK Tool'. The decoded PCM files were analyzed using 'Cool Edit 2000'.

Technology Used: TI Code Composer Studio, VC++, DSP/BIOS

Responsibilities:
- Writing algorithm for the file-system provided synchronization between decoder, MMC card and the memory using DSP-BIOS tools (semaphore and timer management).
- Optimization of the reference code.
- Porting of reference code with enhancements into hardware.
- Testing of reference code using VC++ also streaming of audio files.
- System testing and Unit testing of firmware.

Project: Bluetooth Protocol Stack	Jul -2000 to Mar -2001
Client: Optimize, USA	
Role: Software Engineer	

Description:

Coding and Porting of Bluetooth protocol stack on client's hardware platform. Usage of TI's real-time OS DSP/BIOS for synchronization and multi-tasking environment was implemented. C-Blue (a Blue tooth Stack) was ported on to TI DSP processor TMS320C54x with testing done on TI Base Band Typhoon 6030. Testing of Bluetooth protocol Stack with application programs.

Technology Used: RTOS, Ti Code Composer Studio, TI Base B and Typhoon 6030, TMS320C54X.
Responsibilities
- Coding and testing
- Did requirement analysis
- Designed the KAL functionality.
- Coding serial driver and KAL (Kernel Abstraction Layer) functionality.
- Coding of synchronization techniques to provide multi-tasking.
- Integration with various applications and Unit testing

Project: Voice Scrambler	Apr -2000 to Jun -2000
Client: BEL, India	
Role: Software Engineer	
Description:	

Two platforms of DSP processors TMS320C54x were used for voice transmission & voice reception. At the transmitter end the signal was sampled at 8 KHz and was sent to the receiver by shuffling the data. At the receiver end reshuffling was done and the original signal was restored. Square wave was generated using general purpose pins of MacBSP (multi channeled buffered serial port), to aid the synchronization between the processors.

Technology Used: TI Code Composer Studio, Windows NT, TI Hardware kit

Responsibilities
- System and Unit testing of firmware.
- Writing test cases and test report.

Project: Vehicle Identification System & JPEG 2000   Dec -1999 to Mar -2000
Client: ELPAS, Singapore
Role: Software Engineer

Description:
There were two parts of the project one was to check out for JPEG 2000 implementation and another was Vehicle identification at the toll gate using cameras and generation of appropriate toll fee receipt. The scope of the project was limited to image processing of the two cameras and generation of rectangular coordinates and matching the same with predefined models. Both were done as POC to customer requirement. For JPEG 2000, it defines a set of loss less and lossy compression methods for doing continuous bi-level, grey-scale or color digital still images processing.

Technology Used: VC++, MATLAB, Windows 98

Responsibilities
- Actively participated in a team for requirement analysis
- Designed the application and feasibility study.
- Involved in the design of entire blocks.
- Preparation of analysis report of bit steam syntax
- Image processing techniques like image detection, threshold, edge detection and template matching were used.
- Tier-2 coding on MATLAB and also using VC++ and C
- Coding and testing.