**RESUME**

**RAMA RAO**

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**QUALIFICATION** : B.E in Electronics and Communication 1980 - 84

from Mysore University

M.E in Electronics 1991 - 92

from Bangalore University

**EXPERIENCE** : 20+ year

**ORGANISATIONS:**

* **GEMS India Pvt Ltd, Bangalore.**

Duration : Aug 2011 – May 2013

Joined - Life Science Bio Technology Services Group.

* **IBM India Pvt Ltd, Bangalore.**

Duration : Sept 1998 – Feb 2009

Joined - Hardware Design Services Group.

Onsite Assignment: 5+ years at IBM Rochester, 1999 – 2004

Advisory Manager, Firmware Group 2007-2009.

* **Ncore Technology Pvt Ltd, Bangalore.**

Duration : 1992 – 1998

Served at different capacities in the Hardware Development Group.

* **Indian Institute of Science, Bangalore**

Knowledge Based Computer Systems Group,

Duration : 1986 – 1990

Served as Scientific Assistant at the KBCS Group.

**DOMAIN**

* Aerospace and Defence systems, Consumer Electronics, Storage Systems, MPEG, DAS, Mainframe Emulation.

**HARDWARE SKILLS**

* Digital System Design - Hardware and FPGA (PALs)
* Hardware Design based on Processors from Intel x86, Intel 960, Motorola 68K series, Hitachi H8 series, Analog Devices DSP ADSP-21xx series.
* Board Bring-up, Design verification and validation,
* Hardware design for Avionic defence systems

- MIL-1553 Bus and ARINC 429.

**SOFTWARE SKILLS**

* Firmware development – Assembly Language Code development for Intel x86, Motorola 68K series, Hitachi H8 series,
* Boot Code development for DSPs,Analog Devices DSP ADSP-21xx series.
* Test Code development for Design verification and validation for Board Bring-up, incorporating features for Debugging to serve as aid for firmware developers and other applications.
* Real time software development for time critical applications - Assembly language coding.
* C Code development for Emulation of Mainframe Instruction sets of

- ESA390 and the zSeries.

**STANDARDS**

* Avionic and Defence systems – MIL 1553 bus, ISA, EISA(PC-AT), VME/VXI, Proprietary Buses, MPEG2, Storage Systems Interfaces – FC, SAS, SCSI.

**Several Projects undertaken during the Technical phase of my career, prefer to brief some that I consider as best from an achievement perspective.**

Significant while Working at GE.

Working with Component Engineering team addressing ECRs came across an ECR that appeared as critical in a list, it was about Electronics breaking down on a working system. Looked into the Circuit Schematic and the observation made by others who had addressed the issue, it appeared it was not resolved. A deep dive into the design enabled identify causes for failure of electronics.

Significant while Working at IBM.

Working at IBM for the Storage System Design Group. Involved in Design and Development of PC boards/cards for Serial Storage Products FC, SAS, and for Parallel Storage Products SCSI. One of the first iteration of a FC card shuffled the 32Bit interface between Memory and CPU/ASIC/FC Controller, this enabled feasibility in a 6 layer PC board instead of an 8 layer card.

Working at IBM for the Purpose Optimised Network Solutions Group (PONDS) . Involved in Code development at Assembly Language on a 16Bit Micro-controller from Hitachi known as the H8, this serves as the controller for the Keyboard and Power management on all adaptions of the IBMs Thinkpad.

Significant while Working at Ncore.

Working at Ncore Technology providing Hardware design services for Defence Organisations. Involved in Design and Development of PC boards/cards for Several Avionics MIL 1553 using readily available controller for these applications featuring internal Memory which needed a dual port interface, made ONE design of a FSM (Finite State Machine) embedded in a PAL (Programmable Array Logic), after having got that operational carried this FSM design in the PAL across a whole family of cards for several years. { Design of a EISA/ISA (PC/AT) compatible addon card for MIL-1553 Bus.

The project involved the design of EISA/ISA compatible card using United Technologies part UT69151 Serial micro-coded Monolithic Multi-mode Intelligent Terminal. The component needs a 16 bit interface and also memory which is Pseudo-Dual Port configured. This also meant the design of a Finite State Machine to do arbitration of this Pseudo-Dual Port memory. The card designed was versatile and could be mapped into the Real/Extended(protected) address space of the Processor.}

Design of a Temperature Logger card. The project involved the design of a Temperature Logger card that can measure temperature from -40C to +85C with an accuracy of 0.5C and resolution of 0.1C the measurement interval is configurable from 10seconds to 1hour communicates on an IR link, and is battery operated with a life expectancy of about 3 years. The design was hinged around Siemens micro-controller SAF504, it features 80C51 core with an 8 channel 10 bit ADC built in and some enhanced power saving modes. The measurement interval defined by alarm from an RTC. The termperature sensor, an NTC with accuracy of 0.1C. This called for a stable current source from battery operated source which drains off with time, a mechanism to detect the status of the battery, and a scheme to store the temperature data in the Flash memory, and exchange information with a host on the IR link. In this system there is need to turn ON the system only when required, also when ON for longer than desired keep the system power consumption low.

Design of a Hardware for MPEG-II. The project involved the Hardware design of system to support MPEG-II using C-cube multi-mode decoder CL9100 and C-cube Transport Demultiplexer CL9110. The hardware was built around Toshiba's 16 bit Processor H8003. The System consisted of a mother-board housing the Processor and the MPEG Decoder. The mother board consisted of connectors for plug-in cards, one of the cards in the slot was for a plug-in card which would provide the compressed stream from a module developed by COMstream. The rest of the slots on the mother-board were identical meant to add upto 7 channels for the system, each card could be configured to select and demultiplex one of the channels in the MPEG Transport stream.

Redesign of an Automated Dosa making Machine. The project involved reviewing an existing machine which had unreliability problems in the field. The review called for reengineering the product both in terms of firmware and hardware, the requirements were quite unusual calling for not just operational reliability but also quite a good amount of housekeeping and accounting for purpose of gathering statistics and revenue collection. The hardware is built around Intel's 8085 and has most of the controls which are mechanical. The software is completely in assembly language.

Design of a ISA addon card for speech recognition. The project involved the design of EISA/ISA compatible card using ADSP2105 with external memory and Codec for analog interface to Mic input. The DSP was provided with Host Boot facility and featured an 8 bit bi-directional real-time communication port between itself and the PC/AT. The diagnostic software was developed which featured Download of Program code to the DSP memory, memory testing of the DSP, Codec testing, Read/Write test on memory mapped ports,.. etc. Further Software development for purpose of speech recognition was to happen at client.

**Tools used for hardware development**

* Cadence (Orcad) for Schematic creation, Netlist, BOM etc,
* Cadence Alegro during Hardware development, ECR/ECO version management
* Magic a tool/database for archiving documents follow-up for ECRs/ECOs related to products in Manufacturing going through enhancements and improvements while in production.

**Tools used for software development**

* Assembler for Intel, Motorola, Hitachi Processors.
* Assemblers for Analog Devices DSP21, SIM21xx.
* C Compiler
* Version control management of software codes.