**Manickaraj Vedasamy**

**PERSONAL DETAILS**

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Work Visa: Tier 1 – Post Study Work Visa up to August 2014

**PROFILE**

A highly motivated, enthusiastic, innovative Software and Embedded Design Engineer with 4 years hands on experience in various projects; prior to designing, developing, managing, testing and documenting hardware & software for various electronic devices and products, seeking a responsible role to implement new ideas and technology, learned from experience & education for the betterment of the organization.

**WORK EXPERIENCE SUMMARY**

* At present working as an Embedded Design Engineer in the R&D team in Photonstar LED Technology, Romsey, UK from May-2013 to present.
* Worked as a “***Free Lancer”*** from Jul 2012 –Feb 2013 for the products pedometer & vehicle tracking system.
* Served for “***Vaaraahi Embedded***”, Coimbatore, India, from October2007 to December 2010 as an Embedded Design Engineer in the R&D Team.
* Developed Firmware for 8/16-bit microcontrollers, Device Drivers for specific hardware and involved in Analog & Digital circuit design for the new product.
* Implemented V-Model product life cycle methodology in both Software and Hardware development.
* Proficient in Embedded C, C++ languages and software configuration management (SCM).
* Configured and built Embedded Linux platform for ARM, MPIS & X86 processors.
* Developed GUIs and System software for handheld and desktop platform.
* Built multiplatform Cross compilers using build tools and also from the source.
* Experience on testing and debugging hardware and software utilities using debuggers, simulators, etc.
* Given excellent technical support for clients & team members in or out of company.

**PROJECTS SUMMARY**

* Halcyon- Advanced smart home Lighting (Consumer Electronics)
* CAR Body Control Module (Automotive)
* Simple pedometer and Vehicle tracking system ( Consumer Electronics )
* OS Based Point Of Sale machine ( Handheld Terminal )
* Electronic Voltage Regulator ( Power Sector )

***TECHNICAL SUMMARY***

**Micro Controllers & Processors Used** **Interface Communication**

Texas Instruments AM335x, NXP’s JN5168

Microchip’s PIC16F877A/18F67J10/18F4520 I2C, SPI, RS232, LIN, CAN (Intermediate)

Atmel’s AT91SAM9263, Wi-Fi, GPS, Bluetooth, GSM/GPRS

Samsung’s S3C6410 Ethernet, Smart Card

**Programming Language** **Debugger & tools**

Embedded ‘C’, C++

Perl, BASH script, Sqlite3 (Intermediate) GDB , ICD, JTAG, Oscilloscope

**IDE & Cross Compilers Version Control**

MPLAB IDE - CCS, C18, GIT, SVN

Eclipse, QT, Netbeans

**Design and Analysis Tools Embedded Operating systems**

MATLAB/Simulink, UML studio, Embedded Linux, OpenWrt, Android, DD-WRT,

CANoe, CANalyser (Intermediate) Embdebian

**EMPLOYMENT HISTORY**

1. **Project Title:** Halcyon- Advanced Lighting

**Role:** Electronic Design Engineer **Duration:** May 2013 to present

**Project Description:** Halcyon is an advanced smart home lighting system that can be controlled by Sensor, light switches or any other smart devices. These devices are inter connected each other on the modified IEEE 802.15.4 Wifi network called JenNet network. Each device in the Wireless PAN network has unique ipv6 address, it helps user to identify and control individual or group devices from the LAN/WAN devices. It can communicate with JN5168 wireless transceivers located in each Nodes through the Linux based IoT (Internet Of Things) Gateway Server.

**Responsibilities:**

* Prepared system specification and setting up the development environment.
* Building and compiling **OpenWrt** embedded linux platform for ARM and MIPS processor.
* Modified and applied board specific patches to the mainline U-boot and Linux Kernel.
* Written script to control **GPIO pins** on the IoT Gateway.
* Developed proto **CGIs** and **Web pages** to provide Bulb control web page on the LAN/WAN devices.
* Developing Smart Home Application using C, C++ programming language.
* Maintaining different versions of source code using SVN tool.
* Involved in development of customized UART protocol, it helps JN5168 Wireless transceiver to share information with co-processor received from IoT Gateway.
* Involving in hardware design and development.

1. **Project Title:** Body Control Module Development Board

**Role:** Free Lancer  **Duration:**  Jan 2013 to Feb 2013

**Project Description:** Body Control module DVB consists of PIC18F4520 microcontroller, MCP2515 & MCP201 CAN and LIN ICs. Beginners can experiment automotive controls on electrical and mechanical functions of body and chassis in a car. The BCM scans the input from the terminal (Switches) and control lighting (Halogen, xenon, LED’s), security and access (Power window, Mirror adjust, Wiper control, RKE-Remote Key Less entry). Control modules in the network can communicate with each other through automobile protocols called CAN and LIN.

**Responsibilities:**

* Requirement preparation, system enhancement and implementation.
* Design and develop ***prototype board*** & ***hardware circuits*** using Altium designer.
* Write reusable device driver for input switches & output controls.
* Implement functional & Unit test on software modules.
* Define and resolve hardware & software bugs on the prototype board and preparing user guides.

1. **Project Title:** Simple Pedometer, Vehicle Tracking system **Client:** Chip Crafts, Coimbatore, India.

**Role:** Freelancer **Duration:** 6 months (Jul 2012 to Dec 2012)

**Project Description:**

* **Simple Pedometer** is an 8 bit PIC microcontroller & ADXL335 accelerometer sensor based pedometer project used to measure & display step counts, distance and calories burnt.
* **Vehicle Tracking** is PIC micro controller & Sim300c GPS module based vehicle tracking system to track geographical location of vehicle by measuring latitude & longitude.

1. **Project Title:**  OS based Hand held computer  **Client:** Mahindra Finance, India.

**Role:** Design Engineer **Duration:** 12 months (Jan 2010 to Dec 2010)

**Project description:** It is an ARM9 core based ATMEL’s AT91SAM9263 processor, operating under Embedded Linux OS, battery operating hand held machine and PIC18F4520 is a co-controller. It is used by the client to collect vital data of their customer as a part of their business. It has features like Touch screen, audio, camera, finger print, SQLite database, Ethernet and GSM/GPRS.

**Responsibilities:**

* To configure, build, test & debug ***Embedded Linux OS*** for ARM processors.
* To prepare customized ***Cross Compiler, U-Boot boot loader, Linux Kernel*** for different architecture.
* To modify existing library source code and interface different ***OEM’s*** for extending features of the product.
* To develop rich ***Graphica****l* ***UI’s*** to provide interaction between user and machine using C++ environment.
* To write reusable driver to print data on SPI thermal printer receiving from OS with different font alignment, font styles, print images/photos in gray scale.

1. **Project Title:** General POS machine  **Client:** Clancor Technovates, Coimbatore, India.

**Role:** Design Engineer **Duration:** 11 months (Feb 2009 to Dec 2009)

**Project Description:** This is Microchip’s two 8 bit controller based generic ***Point Of Sale handheld device*** with APIs, where application developers could implement any POS kind of applications upon this hardware. It has been used in various premises like transportation ticketing, field data collection, retail shops, petrol filling station, etc. It has features of GLCD, barcode scanner, thermal printer, Smart card, Bluetooth, GSM/GPRS, GPS, PC interface tool.

**Responsibilities:**

* Involve in hardware designing, design of schematic drawings & PCB Layouts using ***Altium designer***.
* To test, define and resolve hardware & software bugs on the machine according to standards.
* Write reusable driver for GLCD, serial flash, accelerometer sensor, RTC, battery management.
* To develop reusable APIs for multi-lingual printing, GSM, GPRS, Wi-Fi, GPS modules.
* To document hardware & software modules for future reference.

1. **Project Title:** Electronic Voltage Regulator  **Client:** Tamil Nadu Electricity Board, India.

**Role:** JuniorDesign Engineer **Duration:** 8 months (Jun 2008 to Jan 2008)

**Project Description:** Electronic Voltage Regulator (EVR) is used in the Hydropower Generation Plant, which is to regulate the generation of voltage as per the load requirement. Automatic control circuit contains PIC16F877A microcontroller to automate control operation in the voltage generation depends on the load.

**Responsibilities:**

* Upgrade existing product with high performance, user interactive displays & extended data storage.
* Develop reusable driver for ***external EEPROM*** to maintain records of voltage & load variation.
* To analyze and convert existing ***assembly code*** into high level language for reference.
* Help and work with senior staffs, to observe design & development methods used for EVR projects.
* Provide technical services and solve issues in the field.

1. **Project Title:** Training and Development **Client:** OPTIS, Coimbatore, India.

**Role:** Teaching Assistant **Duration:** 8 months (Oct 2007 to May 2008)

**Project Description:** OPTIS training and development centre offers research based training program for graduate engineer and students, which enhances them to master latest trends and technologies to fulfill industrial needs.

**Responsibilities:**

* To teach microcontrollers internal and external peripherals to graduate engineer and other trainees.
* To show practical data transmission, using Microchip’s MCP2515 standalone CAN controller & MCP201 LIN Transceiver development boards.
* Write and demonstrate experiments for counter & interrupt on LED, 7-Segment, 2 Line display, stepper motor control using PWM, read & write operation on external EEPROM, enhancing microcontrollers digital I/O pins using I/O expander, interface & display RTC, etc, on various development boards using Embedded ‘C’ language.
* To teach about Validation & testing tools, hardware tools, handling and safety consideration during design & development.

**GRADUATE TRAINING**

* As part of my diploma course I have taken one month **Graduate Training** in “**Salzer Electronics Ltd”**, in India between 13.11.2003 to 10.12.2003. I have gained good practical knowledge about electrical apparatus, making method, specification and managerial skills.

**EDUCATION**

* 2011 to 2012 MSc- Embedded Micro Electronics and Wireless Systems - Coventry University, UK.

Project:Preparing Advanced Linux Kernel-3.0 for Android Operating System on OK6410 board.

* 2004 to 2007 B.E- Electrical and Electronics Engineering - Anna University, India.

Project:Prepaid Energy Meter

* 2001 to 2004 Diploma- Electrical and Electronics - Government Polytechnic College, Coimbatore, India.

Project:Soil Moisture Tester

Courses included Electrical, Electronics, Measurements and Instrumentation, Control systems, Digital Communications, Digital Signal Processing, Microprocessor, Computer architecture, Wireless sensor networks, Embedded system programming, Embedded operating system (**Gumstix Verdex Pro 270 vx** ).

**ACHIEVEMENTS**

* Won 2nd place in Inter college project show competition in 2004 for diploma project.
* Sports: Running, High jump, Football (District 3rd place in High Jump).

**Reference will be provided on request**