***Sathish Krishnamoorthy***

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**PROFILE SUMMARY**

* Process focused and detailed oriented professional in Embedded Systems Development
* Expertise in design, development and testing of embedded firmware/software development for real time multithreading/multitasking embedded applications using different 8 and 32 bit microprocessors/microcontrollers
* Strong working experience in designing and developing APIs (Application peripheral interfaces) for different micro controller in various hardware platforms
* Expertise in Hardware Abstraction Layer software design, development and validation for different hardware platforms for Freescale 68HXX, Power PC MPC 55X & 55XX, ARM 7 & 9, ARM Cortex, Atmel ATmega and Microchip microcontrollers
* Expertise experience of embedded programming using C, Embedded coders and Assembly language
* Strong in development of application software, embedded software and digital electronic circuits
* Experience in embedded system electrical board bring-up and debugging using flash, emulators, JTAG, BDM, RS232 serial, logic analyzers and scopes.
* Analyzing/designing/programming low level, real time, multi-threaded DMA, hardware-interfacing, interrupt (ISR) software
* Sound expertise and knowledge in design, development & implementation of Automotive Electronic Control Unit Hardware and ECU test simulators
* Implementation expertise in in setting up various test environments (hardware and software) for software and system validation adopting different embedded testing tools
* Held lead responsibilities in rolling out quality measurement tools and processes for the newer sub teams and later guiding them to sustain & improve on those.

**TECHNICAL SKILLS**

# Software and Protocols

Languages: Embedded C, Mathworks Embedded Coder, Assembly

IDEs & Compliers: Code warrior, Keil, MPLAB, IAR, Slick Edit, Cygwin, GCC, Cosmic

Protocols: I2C, SPI, UART, USB, CAN, LIN ,PCI, SATA, TCP/IP

RTOS: Posek, Uclinux, RTX-51

Debugger: Trace32, ST Link, PIC ICDs

Hardware tools: Logical analyzer, Signal Analyzer, ICEmulators

Familiar with: Matlab, C++, Perl, Python, Visual Basic

Software Version Control: Rational Clear Case, GIT

**PROJECT EXPERIENCE**

**Role: Project Development Engineer**

# Project: OTA software update for Electronic Control Units

**Company:** VisualThreat Inc., San Jose, CA

**Period:** October 2016 to March 2017

**Responsibilities:**

* Requirements gathering for target control board application implementation
* Responsible for designing and developing the control board API’s for required OEM application as libraries
* Development of the APIs in Embedded C
* Development of the driver software as per OEM target requirements
* Review with customers for the various phases of the development cycle
* Develop test frame work and test the developed APIs for required target boards interfacing with ECUs
* Responsible for test report generation after executing test cases in the development test suite and generate analysis report.
* Responsible to fix bugs reported by verification and validation team.

**Software & Tools Used:** ARM Cortex series, Embedded C, uclinux, Keil, GIT, ST Link

Debugger.

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**Role: Senior Engineer Design**

# Project: HAL Library and API Software Development for Electronic Control Modules

**Company:** Onsite Caterpillar Inc., Peoria IL, U.S

**Period:** March 2010 to April 2014

**Responsibilities:**

* Design, development and testing of Hardware Abstraction Layer (HAL) components for different microcontroller peripherals to process analog, PWM (Pulse Width Modulation), detonation and digital sensor signals
* Develop requirements and design document for the HAL components
* Design and Develop Non-Volatile Memory (NVM) management and emulation algorithms for internal and external memory
* Design and Develop PULSEO (PWM driver signals) HAL Component library for various ECU platforms for solenoid controls
* Develop diagnostics detection interfaces and algorithm for different ECU hardware for sensors and solenoids
* Develop test cases to validate the HAL components and API interfaces.
* Perform code optimizations and add code to improve the performance of the HAL components
* Co-ordinate with regression test team to validate the HAL components and API interfaces
* Review and Analyze the test results of the regression tests
* Apply software version control and release the software libraries for application team.

**Software & Tools Used**: Freescale controllers - MPC 55X, 55XX, Mac 7131 Arm core, 6805**,** Embedded C, Embedded Coder, Perl, Posek, Slick Edit, Clear case.

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**Role: Engineer – Technical Lead**

# Project: Design and Develop HAL components for Power Converter Modules

**Company:** Caterpillar Engineering Design Centre, Chennai, TN, India

**Period:** February 2009 to January 2010

**Responsibilities:**

* Design, development and testing of Hardware Abstraction Layer (HAL) components of a Freescale MPC 55X microcontroller peripherals to process analog, PWM (Pulse Width Modulation), and digital sensor signals for current, voltage and temperature sensing.
* Design and Development of HAL components of Freescale MPC 55X microcontroller to generate PWM output signals for voltage and current control drivers
* Develop diagnostics detection interfaces for the sensors and drivers
* Develop test cases to validate the developed HAL components
* Co-ordinate with regression test team to validate the HAL components
* Review and Analyze the test results of the regression tests
* Modify the HAL component design based on the application testing
* Apply software version control and release the software libraries for application team.

**Software & Tools Used:** Freescale Micro controllers, Embedded C, Posek, Understand C++, Trace 32, Code Warrior, Clearcase.

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**Role: Project Engineer**

# Project: CPST projects for EDC - ECM Processor Migration, Sensor Simulator System for ECMs and Test & Diagnostics simulation

**Company:** Caterpillar Engineering Design Centre, Chennai, TN, India

**Period:** October 2006 to January 2009

**Responsibilities:**

* Responsible for various design feasibility study to choose a pertinent hardware and software test environment design for the project
* Researching Caterpillar Engine and Machine sensor system and its signal specifications
* Requirements gathering and analysis for the project
* Design and develop software libraries for the various microcontroller peripherals
* Design and develop application software for standalone requirements
* Participate with hardware design engineers for design and development of the evaluation boards
* Design and Develop a board startup program for the evaluation board
* Develop a software communication protocol between the evaluation board and graphical user interface to aid the peripherals testing and debugging
* Conduct DFMEA for the sensor simulation modules
* Responsible for test report generation after executing test cases in the test environment, test report analysis and reporting
* Supporting the global team in deploying and releasing the developed hardware software system
* Participate in core board components considering the signal specification and test requirements.

**Software & Tools Used:** Motorola68K series, Atmega, Code warrior, Keil, Cosmic, Embedded C, Assembly, clear case, perl, Xlinx FPGA flashing tools.

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**Role: Project Engineer**

# Project: Battery Management System

**Client:** Reva Electric Car, Bangalore, KA, India

**Period:** November 2005 to April 2006

**Responsibilities:**

* Requirements gathering and analysis of the Battery management system
* Analyzed the projected hardware system design, lead acid batteries and battery state of charge measuring sensors
* Implemented battery charging software algorithm based on manufactures specifications
* Designed Well-written state machine for the BMS to perform optimally
* Responsible for field evaluation of the software and the hardware with the proto build
* Documentation of the implemented software and algorithm.

**Software & Tools Used:** dspic microntroller, Atmel, MPLAB, IAR, Embedded C, VSS.

**EDUCATIONAL PROFILE**

* **Master of Science in Engineering Management** (2015-2017)

International Technological University, San Jose, CA

* **Bachelor of Engineering in Electrical & Electronics**

National Institute of Engineering, Mysore, KA, India – (2002- 2005)

* **Diploma in Advanced Embedded Systems**

Everest Infocomm, Bangalore, KA, India – (Jul 2005 -Nov 2005)

**PROFESSIONAL TRAINING**

Trained and certified six-sigma green belt in DMAIC process

Certified in Agile process and methodologies

Trained in NPI (New Product Introduction) and CPI (Continuous Product Improvement) processes

Trained in CPS (Caterpillar Production system).

Trained in BOSCH Product Engineering (BES-PE).

**Thanking you**

**Sathish K**