

# **THOMAS F. SIMMA JR.**

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## **OBJECTIVE**

Contribute to society through outstanding software development.

## **SUMMARY**

I am an analytical, self-motivated, detail-oriented, and hard working senior computer engineer. I have an exceptional ability to develop and troubleshoot software, combined with good problem solving and communication skills. I work well both within a team environment and as an individual contributor. I have successfully completed any project I have been assigned and believe that I can learn any task. In order to accomplish these goals I rely on my creativity, strong desire to learn, and determination to be the best at my profession.

My background is in real-time embedded programming, communication protocols, embedded networks, real-time operating systems, digital signal processors (DSP), anti-lock brake control algorithms, and software/hardware integration.

## **EMPLOYMENT**

### **NDA Clients**

#### **Contract Engineer**

- Developed ISO 15765-3 flash bootloader for TMS320F2812
- Assisted with flash bootloader for STM32.
- Developing CAN to USB adapter LM3S9790.
- Ported [J1939 software protocol stack](#) and CAN device driver to a TMS470.
- Developed real time clock (RTC) firmware for PXA270.
- Developed proprietary CAN protocol for use on 10 products with 100k/yr units.
- Developed firmware for intelligent sensor for the agricultural industry.
- Ported J1939, J1587 protocol stacks and CAN, J1708 device drivers to a STM32 for a cellular based heavy duty truck diagnostics system.
- Ported J1708 device driver to a dsPIC33 for a USB based protocol adapter.
- Assisted with porting of real-time operating system uC/OS-II and flash file system uC/FS to multiple PowerPCs for an avionics system.
- Ported real-time operating system uC/OS-II and data acquisition system to a PXA270 for a microsatellite.
- Ported real-time operating system uC/OS-II, CompactFlash and NAND based flash file system uC/FS, and USB host stack uC/USB-Host to a PXA270 for an electronic voting machine.

### **Dana Corporation**

#### **Contract Engineer, 3/04 - current**

- Developed J1587 and J1708 source code for multiple products.
- Developed J1939 and CAN source code for multiple products.
- Led software development and CPU selection for an active wheel speed sensor.
- Designed timing parameters for the physical layer of a communications standard.
- Designed high speed Controller Area Network (CAN) data acquisition system.
- Ported anti-lock brake system firmware to a new DSP based architecture.
- Merged anti-lock brake system firmware with tire pressure maintenance software.
- Assisted in hardware design for an ABS ECU and an active wheel speed sensor ECU.
- Developed a flash bootloader for a PWM communications network.
- Developed persistent data object for mirroring dual images of RAM in EEPROM.

## **Wabash National Corporation**

**Senior Software Engineer (Individual Contributor), 3/00 - 1/04**

- Led all aspects of software development for a leading anti-lock brake system.
- Responsible for complete vehicle system functionality.
- Invented and prototyped a software PLC4TRUCKS spread spectrum transceiver.
- Invented an advanced and cost effective wheel speed sensor interface.
- Directed third party software development and system integration.
- Documented SAE J1587 and a proprietary data exchange interface specification.
- Developed an experimental ABS control algorithm, which improved stopping distance, vehicle stability, and firmware size.
- Handled selection, software development, validation, and production ordering for new watchdog CPU. Completed project in 6 weeks.
- Developed all software and debugged prototype hardware for a general-purpose SAE J1587 network communication ECU. Completed project in 4 weeks.
- Reduced 13.3k of existing software for a tire pressure maintenance system to 4.0k as a future product development effort in 2 weeks.
- Developed numerous PC applications for ABS configuration, firmware updating, and validation.
- Rewrote a PLC4TRUCKS and SAE J1587 protocol stack, which reduced code size by 50%, and significantly improved reliability and readability of firmware.
- Designed a graphical user interface for PC based ABS diagnostic software and provided requirements documentation to application developers.
- Managed and validated five third party system integration designs to insure system compatibility among products.
- Ported ABS firmware to a DSP, increased calculation speed by 400%, reduced user interface code size by 65%, and allowed for a configurable number of speed sensors and pneumatic valves.
- Integrated flash memory utilities, developed a communication protocol, and an embedded kernel, which enabled the ABS to be field programmable over the PLC4TRUCKS network.

## **Komatsu Mining Systems**

**Engineer, 6/98 - 3/00**

- Responsible for proprietary and commercial RTOS code fixes, modifications, and internal software developer support.
- Developed an embedded, threaded, and platform independent Network File System (NFS) client.
- Ported a flash in-field programming kernel to a new architecture and modified an existing Delphi PC support application for independent target operation.
- Developed a J1939 protocol stack for communication with Detroit Diesel and Cummins' engine ECUs.
- Did extensive Controller Area Network (CAN) time analysis, developed multiple CAN device drivers for the Motorola TouCAN and Intel 82527 CAN peripherals, and developed software for threaded CAN applications.
- Developed a threaded and target independent remote procedure call (RPC) library that supported multiple physical layers. Reduced code size 75%, CPU utilization 60%, and increased network response 800%. Used on 5 platforms. (e.g. Palm OS)

## **Tether Applications**

**Consultant**

- Developed application to convert raw CMOS camera data to a BMP image file.
- Ported the commercial RTOS uC/OS, for simulation purposes, to Linux and the Hitachi SH-2 7045 CPU.
- Developed applications and device drivers for Dallas real time clocks, temperature sensors, and CPU analog inputs.

## **EXPERIENCE**

**RTOSes:** eCos, uItron, uC/OS, VRTX32, Takitron  
**Languages:** ASM, C, C++, LISP, Java, JavaScript, HTML, Pascal, Korn shell, NAWK, BASIC, Delphi  
**Protocols:** CAN, SPI, RS232, SAE J1939, SAE J1708, SAE J1587, SAE J2497, SAE J1979, OBD-II, ISO 15765  
**Processors:** TMS320, TMS470, MSP430, STM32, PXA270, HCS08, HCS12, PIC18, dsPIC33  
**Environments:** Code Composer Studio, CodeWarrior, MPLAB, uVision  
**Version Control:** SVN, PVCS, CVS, RCS

## **EDUCATION**

### **Purdue University, 1994 - 1998**

- Bachelors of science in Computer Engineering