Gerhard Stofer

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Embedded Software/Hardware Engineer

Self-motivated and focused professional with broad and extensive experience in the Software as well as Hardware domains. Special skills in designing and programming of embedded systems, real time processing, hardware control, device drivers and instrumentation. Accomplished in delivering complete solutions on time and budget. Excellent communication skills, multilingual. (*German, French).*

Software highlights:
Digital & analog instrumentation algorithms, hardware control / PID, Sensor integration, Inertial Measurement Units, Metrology, Air data, wireless communication & protocols, USB client & host, embedded test and instrumentation, Hardware level device drivers, OS level device drivers: Windows7/8 WDF, WDM, VXD, VDD; Windows Kernel Mode applications, Virtual machine design, Win PnP, In System & in Application Programming, .NET conversion, .NET GUI programming.

Tools: C/C++, C#, ASM, VB ,.NET, Java, HTML, SVG, Perl, PHP, TI-DSP-BIOS, Revision Control Systems (SVN, RCS, VSS), IDEs: Eclipse, Visual Studio , Ti Code-Composer, KEIL, IAR, MPLAB, Atmel-Studio, Arduino, Dynamic-C, Linux/GNU suite, etc..

Hardware highlights:
Devices: DSP-TMS320C6502, DSP-TMS320C31, ARM7, M68000, HC08, TI-MSP430, 8051, 80x86, Microchip PIC, Rabbit, ATMEL AVR, etc..
Protocols: USB, SPI/I2C, I2s, HTTP, TCP/IP, SDLC/HDLC, IEEE 1149(*JTAG)*, RS232, IEEE488, PCI, CAN

Tools: Eagle CAD pcb & schematic, Cadence Concept & Leonardo, TurboCad3d, LT-SPICE, PALASM, AHDL, Bus & Protocol analyzers, Logic Analyzer, Digital Storage Scope, Microscope, Soldering iron, Lathe, Mill, etc..

2009-current **Multiple ongoing projects**

- Windows 7/8 kernel mode device driver for PCI based adapter based on Windows Driver Foundation (WDF) technology and app level interfacing to driver. *(Landrex Taiwan)*
- Hygro-stat, Hygro-log, precision hygrometer for food processing cold room, wireless sensor.
- Weather Station and Sensors, Web based recording to cloud based servers, WiFi- HTTP/FTP server and client. Custom high resolution sensors for wind data. *(see http:wws.us.to)*
- Angle of Attack air data measurement unit, proof of concept. TI- controller, wireless link.
- Solar array embedded measurement system, proof of concept, wireless network, 802.15.4.
- RF wireless control with USB host interface to PC joy stick class for uplink/downlink to ROV.
- Attitude and Heading reference indictor, Magnetometers, Accelerometers, Rate of Turn sensors.
- Quad rotor based stable hovering platform (a study in 3d motion stabilization).
- Website stuff HTML5/ SVG

2007-2008 **Contractor, Systron Donner Inertial Division, Concord, CA**

- Laid out computing and communication design for next generation Inertial Measurement Unit (IMU) using TMS320C6727 and NXP ARM7.
- Evaluated various ARM devices and their respective IDE's
- Specified communication protocols between the sensors computing units and commutation controller.
- Specified Boot-Loading and In System Programmability sequences, protocols and mechanisms.
- Defined SDLC based protocol for output data stream based on MIL requirements and competitor's capabilities.

- Selected SDLC controller device and built a proto board to be used for bring up of the SDLC link. Made ARM code to evaluate and prove out the SDLC link.

Same contract, different project:

- Re-implemented a thermal profiling apparatus for screening of inertial measurement devices. A VB6 project, it controls an IEEE 488 based thermal chamber, Power Supplies and DMM along with 8 x 32 USB based ADC units. Much of my time was spent discovering and resolving HW related design errors and finding workable solutions for designed in shortcomings and build up errors. *The final solution was well received by the production floor personnel and it was noted that the new system produces much improved results compared to the predecessor..*
- Provided documentation of: Requirements, SW implementation, Requirements Traceability and User Guides.

2007 **Contractor, Dedenbear products, Pleasant Hill**, **CA.**

- Designed and furnished a proof of concept stepper motor throttle actuator for racecar applications, consisting of MSP430-2013 CPU, Allegro 3977 and a step-up power supply. This work was instrumental in selling the Dedenbear Company to a large automotive racing supply company late in 2007.

2006 **Contractor, Systron Donner Inertial Division, Concord, CA**

- Designed and implemented a DSP based test and calibration apparatus for inertial measurement units using a TMS320C6502, PCI bus hosted embedded DSP.
- Verified and validated existing hardware design and provided suggestions for solutions to existing problems.
- RS232 based Flash programmer via TI's boot loader and flash API

2004-2005 **Contractor, Optical Inspection Systems, Landrex , Santa Clara. CA.**

- Implemented applications licensing scheme using FlexLM and USB Hardware keys
- Created web / C# .NET based license fulfillment process and GUI based Dongle programmer.
- Build management and revision control (MKS/RCS) .
- Various HW related functions.

2003 -2004 **Contractor, Dedenbear products , Pleasant Hill**, **CA.**

- Implemented 8051 based assembly code for timing/triggering device used in drag racing applications.
- Designed PCB and assembly for same device using 8051 derivative.

1987-2003 **Teradyne Inc. Walnut Creek, CA,** (*formerly Zehntel)*

Primary system architect and design engineer of Teradyne's award winning In-Circuit Test platform "Z18xx". This flagship product revolutionized the Automated Test Equipment (ATE) market through it's user friendly programming interface, low capital cost and continuous improvements in performance. It provided Teradyne with a sustained revenue stream from over 3000 systems sold and was installed at more than 1000 customer sites.

- Ported Z18xx operating system, device driver and system diagnostics for Windows XP while maintaining full compatibility with existing user applications, legacy hardware and software options. Maintained customer satisfaction and extended products life cycle.

- Architected an ISP (**I**n **S**ystem **P**rogramming) subsystem used to program FLASH, JTAG and Boundary Scan devices. Led a cross-functional team from initial conception to first customer shipment in record time. Designed and implemented a PCI based controller, WDM and VXI based device drivers, user API and MSVC application Wizards. Created HTML based user documentation. Provided customers with a 5 to 10 fold increase in throughput while simplifying their programming task. 100% compatibility to legacy software and hardware was maintained throughout.

- Designed and implemented digital subsystem for a TMS320C31 DSP based Analog stimulus and measurement instrument. Designed the necessary FPGA's , specified and implemented communication protocols between the PC and DSP. Designed and implemented real time operating system as well as all the functional runtime software for the instrument.

- Architected and implemented device driver code to create a PCI bus hot swap environment under Windows 98 in order to test arrays of ADSL modems in parallel, improving throughput dramatically

- Designed PCI bus adapters for high speed control of ATE equipment. These adapters where used by several board test product families. Designed and implemented their associated hardware level device drivers and API's .
- Designed and implemented: Virtual Machine, Interconnect verification routines, real time kernel for analog and digital subsystems, Vector Processor test head controller using embedded Motorola 68K CPU and proprietary Run-Time Operating System.
- Led a study of "system down time" at customer sites to provide counter measures. Identified root cause as a misinterpretation of a device spec. After implementing the suggested changes, the MTBF improved from an original 800 hrs to over 2700 hrs and boosted throughput by 12%, which directly related to customer savings.

1986-1987 **Zehntel WC, Siemens**
Working as an foreign exchange worker for Zehnel while employed by Siemens to bring the voice of the customer into the next generation of test systems. Worked on pilot projects for new GUI based systems as well as embedded logic analyzer subsystem.

1981-1987 **Siemens Telecom, Switzerland**
ATE application developer, created in-circuit programs for analog and digital boards using Zehntel equipment. Developed extensions for the UNIX operating systems. Member of the UNIX interest group at the University of Zurich. Presented talks on shell scripting and C programming. Learned contemporary programming languages through self study.

Education:
1977-1981 Eidgenoessische Berufsschule von St.Gallen, Switzerland.
4 year government study program in the field of electronics and applied materials, Graduated 3rd in class.

Various Berkeley extension DVC classes related to programming and languages.

Trained in TQM (Total Quality Management)

Fluent in spoken and written German

US citizen