

Simon Richter Embedded Software Developer

Basic Information

Address	Kurt-Floericke-Str. 19 81249 München	
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Email	sr@simonrichter.eu	
GULP ID	94879	
Rates	70–90 €, depending on project requirements and duration	
Education	1999–2005	Technische Universität München Informatics (Computer Science)
	1993–1997	Obermenzinger Gymnasium München Accounting (“kaufmännischer Assistent”)
Languages	German	native
	English	fluent
	Japanese	basics

Skills & Expertise

Architectures	Intel/AMD	x86, x86-64, Itanium
	ARM	ARMv4, Thumb, Thumb2 (ARM-Cortex)
	IBM	PowerPC, POWER, Cell
	Motorola	68000
	DEC	Alpha
	Sun	SPARC
	TI	MSP430
Concepts	Real-Time Operating Systems (RTOS) Embedded Systems FPGA Digital Signal Processing (DSP) Software Defined Radio (SDR) Component Architecture Domain Specific Languages	
Platforms	PC	Windows, Linux, BSD, DOS
	FreeRTOS	
	Contiki	
	MacOS	
	Solaris / SunOS	
Programming Languages	Assembler	
	C / C++	
	Make	
	CORBA IDL	
	Microsoft IDL (MIDL)	
	Java	

	JavaScript / ECMAScript Shell L ^A T _E X yacc, lex VHDL	
Databases	SQL MS Access ODBC dBase4	PostgreSQL, MySQL, SQLite
Protocols	Application RPC / RMI Internet Routing LAN Wireless 802.15.4	HTTP, SMTP, SNMP, SSH, ... Sun RPC, SOAP, CORBA/IIOP, COM, Java RMI IP, IPv6, TCP, UDP, ... BGP, OSPF Ethernet, Novell IPX WiFi, GSM, EDGE, UMTS, LTE ZigBee, 6LowPAN
Software	QuartusII KiCAD	
Integration	Debian packaging Microsoft MSI packaging	

Projects

Embedded: OpenFirmware Compatible Bootloader

March 2017 – September 2017

Assembler (PowerPC), C

- Custom Call/Return interfaces
- Memory Allocator
- ELF Loader
- OpenFirmware Device Tree

Compiler: ECMAScript 7 Frontend

November 2016 – October 2017

lex, yacc, C++

- Conversion of language specification to Lexer/Parser combination
- Adaptation of grammar to resolve conflicts due to ECMAScript parsing rules (Automatic Semicolon Insertion, identifier/keyword disambiguation)
- Conversion to abstract syntax tree
- Symbol resolution

Test and Measurement Software: Spectrum analysis

October 2011 – December 2015

C++, COM, Visual Studio, Matlab

- Development and maintenance of measurement control software
- Integration of new hardware components
- Implementation of DSP algorithms
- Optimization of numerical accuracy, speed and memory consumption

Portability extension: Communication Stack IP/IPv6/RPC

October 2010 – June 2011

C, C++, IAR Workbench

- Design of abstract interfaces
- Piecewise refactoring of existing codebase, continuous integration with ongoing development
- Reduction of code size
- Target Platforms: Contiki, POSIX

Framework: Web UI for Embedded Devices

November 2007 – August 2010

C, C++, Lex, Yacc, in-house abstraction layer

- Domain specific languages for configuration and event subsystems
- Compiler toolchain leading to complete binaries (CGI, background services)
- Component library for standard configuration parameters (date/time, network settings, ...)
- Interface to SNMP
- Porting to x86, ARM, MIPS, PowerPC, SPARC and others

Hardware and OS abstraction layer

November 2007 – August 2010

C++

- Framework for asynchronous I/O with callbacks
- Implementations of common protocols (HTTP, SMTP, SNMP)
- Wrappers for operating system functions
- Porting to x86, ARM, MIPS, PowerPC, SPARC and others

Software Build Tool

June 2007 – November 2007

C++, Boost

- Tracking of project and file dependencies
- Backend drivers for common tools
- Automatic deduction of build order

High Speed JTAG Adapter

June 2005 – June 2007

C++

- Asynchronous stack for JTAG data
- Implementation of JTAG debug drivers for ARM7TDMI and ARM9
- Integration into Microsoft Windows CE Platform Builder (eXdi2)
- Integration into gdb (gdb-remote)
- USB abstraction layer for portability to Windows and Linux
- Licence management

SDK/BSP for Embedded Linux Board

March 2005 – June 2005

C, C++, Linux, make, Shell

- Creation of distribution package with compiler toolchain, standard libraries, base embedded Linux system and example code for an ARM7 (MMUless) board

VoIP/ISDN Primary Branch Exchange

June 2004 – March 2005

C, Linux, Asterisk

- Asterisk customization
- Porting of Linux ISDN drivers (mISDN) to support ARM and 64 bit systems
- Debugging of Linux kernel drivers
- Development of Asterisk plugins