

Profile

Sven Gothel*

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I possess over 20 years of experience in software engineering, including extensive knowledge in the embedded graphics space, 3D, multimedia, algorithms and high performance solutions, as well as in middleware and platform independent architectures like Java.

I have worked as an independent contractor for a broad range of organizations including Duerkopp-Adler AG, IBM Frankfurt, Siemens AG Munich, Jausoft, Lufthansa Airplus, Desys GmbH, Dekra GmbH, Harman/Becker Automotive Systems, Hella, AMD, Animoto, CCC International, et al. I was also full time employed by ATI and Sun Microsystems, Inc. in their headquarters.

At ATI and AMD I lead the development of the Embedded Display OpenGL driver.

At Sun I lead the JNLP support of the *New Java Plug-In* and *Plugin 3*, intended for a relaunch of Java on the desktop and mobile devices. I contributed to the *New Java Plug-In* redesign, a new experimental JavaFX platform utilizing hardware accelerated rendering (OpenGL, OpenMax, ..) and a platform independent windowing architecture and mobile support to JOGL.

With other specialists, I work on the open source project JogAmp, high performance Java libraries for 3D graphics, multimedia and processing, providing JOGL/OpenGL for desktop and mobile platforms, JOCL/OpenCL, et al.

I hold a degree in electrotechnics and computer science, Dipl.-Ing. (FH) - Diplom Engineer, Applied Science - MASC equivalent, conferred upon me by the Bielefeld University of Applied Sciences, Germany in 1998.

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1 Resume / CV

Sven Göthel

27th January 1968 in Bremerhaven, Germany

Düppelstrasse 18
27570 Bremerhaven, Germany

Career

- 11/09 - Software Engineering / Consulting, Sole Proprietor
<http://jausoft.com>
- 9/08 - 11/09 Sun Microsystems, Inc., Santa Clara, CA, USA
Staff Engineer
- 8/07 - 09/08 Sun Microsystems of Canada, Inc., Edmonton, AB, Canada
Staff Engineer
- 6/05 - 7/07 Advanced Micro Devices (AMD),
formerly ATI, Markham, ON, Canada
Senior Software Developer and Team Lead
- 9/91 - 6/05 Software Engineering / Consulting, Sole Proprietor
<http://jausoft.com>
- 9/91 - 1/98 Study of electric engineering and computer science
at the Bielefeld University of Applied Sciences, Germany, Europe.
Dipl.-Ing. (FH); Diplom Engineer, Applied Science (Equivalent to MASc)
Graduation in January 1998
- 8/90 - 6/91 A-Level certificate.
Senne-College, Bielefeld, Germany, Europe.
Graduation in June 1991.
- 8/88 - 3/90 Civilian Services.
Communications Center Dodesheide, Osnabrueck, Germany, Europe.
- 8/87 - 6/88 High School examination at
SZ Buergerpark, Bremerhaven, Germany, Europe.
- 9/85 - 6/87 Education as an industrial electrician
SZ Buergerpark, Bremerhaven, Germany, Europe.
Journeyman examination at the Bremerhaven Chamber of Commerce (IHK).
- Languages German (native)
Fluent in English
- Hobbies 16 years active membership to a basketball club, succeeding
in the German 3rd division, as well as fitness and chess.

2 Work Experience

2.1 First Experience

- 1985 - 1989 **Languages:** Basic, Assembler (6502), K&R C
Applications: Copy programs, data management,
games and tests, multitasking (C64)
Platform: C64, Amiga
- 1989 - 1992 **Languages:** ANSI-C, ANSI-C++, Pascal
Applications: Interpreter, Graphic, div.
algorithms (mandelbrot, wallpapers and dragon (fractals))
Platform: Commodore Amiga, MS-Dos

2.2 Projects

2009 - today Open Source

Project: JogAmp¹ - High performance Java libraries for 3D Graphics, Multimedia and Processing.

Activities: Hosting and maintaining various Java language mappings supporting 3D Graphics (JOGL/OpenGL), processing (JOCL/OpenCL), et al. JogAmp features a continuous integration system for all supported platforms based on Jenkins, bugtracking via Bugzilla, a wiki and a forum.

Presentations: JavaOne 2008², SIGGRAPH 2010 BOF³, SIGGRAPH 2011 BOF⁴.

2008 - today Open Source

Project: JOGL

Activities: Redesign of the OpenGL Java language mapping JOGL to support multiple windowing systems and exposing multiple OpenGL profiles (ES 1.1, ES 2.0 and GL 1.5 - 4.1) targeting multiple desktop and embedded/mobile devices, technical lead.

Creating a simple native windowing toolkit (NEWT),

demonstrating efficient JOGL usage on desktop and mobile devices without AWT.

Support porting JOGL to multiple embedded devices, APX 2500⁵, Broadcom/LG, Intel CanMore and PowerVR-SGX/Omap3.

Adding OpenMax IL multimedia support access for embedded platforms⁶.

IT-Environment: Solaris, Windows, Linux, Android, MacOSX, Java, JOGL, OpenGL, JOCL, OpenCL, OpenMax, OpenKode, ARM,

IA-32, Amd64, Sparc, Omap3, Tegra, GCC, MingW, ..

09/2008 - 11/2009 Sun Microsystems, Inc.

¹<http://jogamp.org>

²http://news.zdnet.com/2422-13568_22-201121.html

³<http://jogamp.org/doc/siggraph2010/jogamp-siggraph2010.pdf>

⁴http://www.siggraph.org/s2011/for_attendees/birds-feather

⁵http://blogs.sun.com/kbr/entry/java_on_the_nvidia_apx

⁶http://blogs.sun.com/jau/entry/good_morning_openmax_es2_on

Project: *Java Plugin3* Development

Activities: Design and realization of Plugin3, technical team lead.
Abstracting the windowing layer and modularizing Plugin2, forming Plugin3.
Allow usage of custom windowing implementations bootstrapped via JNLP.
Dramatically improving startup time, factor 3 - 13 (new load, reload).
Adding support for offscreen drawable to allow browser side compositioning.
Implementing an OpenGL proof of concept module.

IT-Environment: Solaris, Windows, Linux, Java, OpenGL, GLX, WGL, Networking,
UML, IA-32, Amd64, GCC, MingW, ..

Project: Experimental JavaFX⁷ 3D and multimedia cross platform UI API.

Activities: Targeting desktop and mobile devices for a high performance, state of the art user interface (HMI). Utilizing hardware acceleration (OpenGL ES1.1, ES2.0, GL 1.5-2.0, OpenMax) for the scenegraph layer.

Adding support for per pixel lighting (normal maps)⁸ using Maya files⁹.
Modularizing and preparing the scenegraph layer for JOGL's mobile GL profiles.

IT-Environment: Linux, MacOSX, Java, JOGL, OpenGL,
IA-32, Amd64, GCC, Maya, ..

08/2007 - 09/2008 Sun Microsystems of Canada, Inc.

Project: *New Java Plug-In* incl. JNLP support

Activities: JNLP integration¹⁰ in the *New Java Plug-In*, Plugin2¹¹.
Design and refactoring of the Java Plugin and JNLP modules, to become Plugin2.
Adding Unix Domain Sockets for the client/server IPC on unices.
Stabilizing the client/server communication and improving startup time.
Specifying the JNLP extension and helping with the test framework for the new features.
Presentation at JavaOne 2008¹².

IT-Environment: Solaris, Windows, Linux, Java, IPC, Networking,
UML, IA-32, Amd64, Sparc, GCC, VS-C, ..

06/2005 - 07/2007 Advanced Micro Devices (AMD), formerly ATI

Project: Embedded Graphics driver; Various embedded driver features and enhancements.

Activities: Requirement management, design, realization and ongoing enhancement of the embedded graphics driver and interfaces to the OpenGL core, EGL 1.1, ES 1.1/2.0, etc. for various graphic chips R3xx, R5xx, R6xx and their mobility variants. Technical team lead.

⁷<http://blogs.sun.com/chrisoliver/entry/epitaph>

⁸http://blogs.sun.com/chrisoliver/entry/the_real_slim_shady

⁹http://blogs.sun.com/chrisoliver/entry/3d_animation_and_maya

¹⁰<https://jdk6.dev.java.net/plugin2/jnlp/>

¹¹<https://jdk6.dev.java.net/plugin2/>

¹²<http://developers.sun.com/learning/javaoneonline/j1sessn.jsp?sessn=TS-6290&yr=2008&track=desktop>

Design and implementation for various features based upon customer requirements, e.g. performance OpenGL extension, hardware overlay, asynchronous ReadPixel, GLSL/DMA texture transfers, page flip and VSync, multi DMA page locks, etc.

High performance enhancements about 250% targeting many functional blocks of the driver, e.g. TLS, inlining, caching, dispatch table, stream copy, etc.

Managing and analyzing customer requirements and transferring them to technical specifications.

Participating in the general driver development within the software team. Targeting AMD's Linux kernel driver enhancements, etc.

IT-Environment: Doxygen, Office, UML, Perforce, Remedy; GNU: GCC, Linux, Valgrind, VTune, ATI Graphic Cards, Linux Kernel, OpenGL, GL ES; IA-32 and PPC, MPEG.

04/2005 - 06/2005 Hella

Project: Non Volatile Ram Manager

Activities: Requirement management and specification for a new NV Ram Manager. The backward compatible module includes new customer requirements.

IT-Environment: MKS, Doors, Innovator, Doxygen, MS Office, NEC, Lotus

12/2004 - 03/2005 Jausoft

Project: Linux Device Driver - Monolithic and User Space

Activities: Improving knowledge about using user space functionality within Linux device drivers. Learning pros and cons of simple resource handler and utilization of complex user space libraries. Implementing a portion of the Linux DVB API as a user level driver using FUSD and Gelato project knowledge.

IT-Environment: Linux Kernel 2.6.x, gcc, g++, dvb API, FUSD, gelato, ...

08/2004 - 11/2004 SiemensVDO

Project: Embedded Multimedia Player

Activities: Evaluation and proof of concept of hardware and software solutions.

Proof of concept paper including evaluating, test and quality audit of mpeg solutions incl. the software toolchain.

IT-Environment: Change Synergy, CM Synergy, x86, ESS 6218, ST20, Ansi-C++, DSP, gcc, mpeg2, a52, mp2, lpcm, dvd, ...

09/2003 - 06/2004 Harman/Becker Automotive Systems

Project: OSGI, Multimedia, Embedded Systems, Open Source, ...

Activities: Various activities around multimedia and OSGI support for embedded automotive systems. Evaluating, porting and enhancing misc. open source multimedia projects, like vdr, vdr-dvd, xine, mplayer, libdvd, ... to being used on a QNX-NTO sh4 platform.

Creating a dvb-driver for a DSP mpeg2 decoder board running under QNX-NTO, implementing the linux-dvb API. This allows using dvb-API applications like VDR and mplayer (dvb video-out).

Evaluating linux-sh for the sh4 developing platform, adding pci-dma support, as well as implementing the PCI-IRQ management. Porting a sh4 bootloader using bootp/nfs for disc-less system.

Evaluating a platform independent GUI/Widget toolkit: QT. Objectives are to develop, test and cross-compile UI projects on different platforms. To satisfy quality requirements, source code as well as a GUI builder should be available, some platform ports should already exist and the API should be state of the art. Implementing OSGI bundles/applications in an client/server environment for embedded systems (QNX-NTO, XFree86, Java/J2ME, ...).

IT-Environment: Linux, QNX-NTO, x86, SH4, Ansi-C, Ansi-C++, Java, OSGI, XFree86, QT, QT Designer, DSP, gcc, gdb, ddd, mpeg2, a52, mp2, lpcm, dvd, ...

06/2003 - 06/2004 Jausoft

Project: Multimedia ..

Activities: Evaluation and enhancing of open source multimedia projects, like VDR, vdr-dvd, ...

IT-Environment: GNU/Linux, ANSI-C++, mpeg2, a52, dvd, ...

03/2002 - 03/2002 JavaOne 2002, San Francisco, CA

Project: Speaker: OpenGL(R), and New I/O - High-Performance 3D Graphics for the Desktop Client.¹³

Activities: Presentation about the high performance New I/O, demonstrated with the OpenGL(R) language mapping for Java(TM).; Architecture, implementation and future prospects.

IT-Environment: GNU/Linux, Windows, Java, OpenGL

01/2000 - 11/2005 Various customers

Project: System Administration

Activities: Installation, design and maintenance of a heterogeneous IT infrastructure, using GNU/Linux, iptables, ppp, apache, sendmail, fetchmail, procmail, samba, nfs, nis, ssl, ssh, ... for the DMZ to serve GNU/Linux and Windows clients within different secure and insecure subnets.

Customers are public schools, training centers and internet shops.

IT-Environment: GNU/Linux, Windows, MacOSX; iptables, ppp, apache, sendmail, fetchmail, procmail, samba, nfs, nis, ssl, ssh, popper, imapd, VPN, ..

02/2002 - 08/2003 Harman/Becker Automotive Systems

Project: OSGI - Car-Remote-Control

Activities: Implementation of ClientServer OSGI bundles. The server, installed into the car, provides misc. remote maintenance services, like door locking, camera snapshots of the driver and retrieving it's current position via GPS. The client may connect to the server and use such services in the role of the main user, or in the role of the observer (read-only access). The network access is secured via SSL and RSA encryption and authorized using RSA signatures.

The goal is to demonstrate the remote car control via Java and OSGI bundles, which may be installed onto the client through the internet.

More bundles are under development.

IT-Environment: Java (Sun J2SE, IBM's J2ME J9), OSGI (IBM, Oscar, Acunia), HTTPS/SSL (JSSE), RSA (JCE) Encryption + Signature, Serial+Parallel (JavaComm), MOST, GPS

02/2002 - 08/2003 Harman/Becker Automotive Systems

¹³<https://jogl.dev.java.net/3167.pdf>

Project: XFree86 Integration and Driver Modules

Activities: Implementation of an XFree86 driver module for the Scarlet Fujitsu MB86291 graphics device running under Linux & QNX (X86, SH4).

Adaptation and bugfixing of the XFree86 driver module, for the Siliconmotion Lynx3DM graphic device running under Linux & QNX (X86,SH4).

The X11-Server should be used within embedded systems and should provide therefor a graphics interface with network abilities.

While using an X11-Servers in the Unix (QNX) environment we open up our platform to a huge amount of available applications, e.g. media players, Java AWT implementations etc.

Hardware accelerated functions of the graphic devices, such as blitting (XAA) and YUV overlay (Xvideo) were implemented and exposed via the generic X11R6 interface. High 2D and video playback performance with the Scarlet and the Lynx3DM chips are realized.

Miscellaneous adaptation of the XFree86 internals to QNX-NTO, for usage for the X86 and SH4 processor are made.

IT-Environment: Linux, QNX-NTO, ANSI-C, ANSI-C++ XFree86, Scarlet Gfx Chip, Lynx3DM Gfx Chip, gcc, gdb, ddd, X86, SH4

04/2002 - 05/2002 Harman/Becker Automotive Systems

Project: X11-Server AWT Implementation for Java

Activities: Completion & Bugfixing of the AWT Implementation of Kaffe. This AWT implementation does not require Motif (low Memory Footprint), but renders the GUI Widgets exclusively with the XLib. With the assistance of this AWT solution we are able to use standard Java GUI's within the J2ME environment on a Unix and X11R6 based platform.

A QT solution was evaluated as well, but because of the limited availability of a native QT implementation for the embedded device, this approach was discarded.

IT-Environment: Java (Sun J2SE, IBM's J2ME J9), Linux, QNX-NTO, X11-Server, QT, Kaffe

11/2001 - 01/2002 Harman/Becker Automotive Systems

Project: Location Based Premium Services (Usability)

Activities: Evaluation of an application server based upon XML. The application logic is provided via XML-Tags to the web-author. These application-sheets, XSP, can be implemented with Java, as well as with any other programming language. The XML engine Cocoon, provides a framework for this purpose. XML documents may be filtered (piped) and serialized in such a manner, that the application logic (XSP), multilingual support and several output formats (PDF, HTML) are interoperable.

Database objects may be used through the J2EE interface.

The purpose of this server is to provide location based services. Premium information (e.g. traffic control) is provided to the subscriber, which is connected to the network (GSM) and provides it's location via GPS.

IT-Environment: Linux, Java, Servlets (Tomcat), Cocoon (XML/XSP/XSL), J2EE (JBoss), Apache, GPS

08/2001 - 10/2001 Software Consulter

Project: Visualization of Organized Structures in 3D

Activities: Implementation and Design of a 3D visualization of organized structures (likely an organigram). The hyperbolic space (3D) is used therefor, so the objects and their correlated links are represented within a sphere. Interactions via mouse-over, mouse-drag and selection are used to navigate through the structure.

IT-Environment: GNU/Linux, UML, Java, OpenGL For Java (GL4Java), OpenGL, UML(ArgoUML).

05/2001 - 07/2001 EDS, Continental

Project: Client/Server Protocol via XMLRPC

Activities: Implementation and Design of a communication solution between a native server application running on AIX incl. DBMS and many Java clients.

The XMLRPC is used for this purpose as the lightweight protocol.

The XMLRPC is implemented in native ANSI-C++ for the server side, as well as in Java for the client side.

IT-Environment: AIX, Java, XMLRPC, UML(ArgoUML).

08/2000 - 01/2001 Siemens AG

Project: HLR-Innovation

Activities: Participation of new inventions of the Home Location Registers (HLR). This HLR ist part of the infrastructure for the mobile telecommunication. Design, implementation and tests belong to these task areas.

IT-Environment: Unix (Solaris), UML, C++, Java, TCP/IP, MAP/TCAP/CSS7, RTC.

08/2000 - 08/2000 Campus Part 2k, Valencia, Spain

Project: Speaker: Introduction to the OpenGL(R) language mapping for Java(TM)

Activities: Presentation about the OpenGL language mapping for Java.; Architecture, implementation and usage.

IT-Environment: GNU/Linux, Windows, Java, OpenGL

07/2000 - 08/2000 Dekra GmbH

Project: Tutoring in the Subjects networking and Java

Activities: Basics and praxis of network techniques, as well as the programming of tcp/ip based protocols in Java.

IT-Environment: Unix (Linux), Java, TCP/IP

06/2000 - 07/2000 Software/Internet Service Provider

Project: Reassurance auction platform in the internet

Activities: Architecture and implementation of an auction application for the internet. Direct insurers are able to offer partial layers of the overall risk to the reassurance companies. The whole handling incl. customer management (booker, direct insurer and reassurance) can take place on the HTML interface (Web-browser).

IT-Environment: Application server (Websphere, Apache, XML, Java Servlets), Java, EJB, DB2, PowerDesigner (DB-Design), Win32, Solaris.

06/1999 - 05/2000 IFS GmbH (An RWE Company)

Project: Cheops

Activities: Modeling, implementation and test of theme objects based upon Use Cases. The product discusses the complete energy economy (device management, customer services, etc.). The application is implemented in Java as a client/server solution.

IT-Environment: Java2, Paradigm Plus, PVCS, Win32, Oracle, Framework incl. ODBMS_i-RDBMS Mapper, GUI (View, Controller, Business Object), Java Generator for Paradigm Plus, JDBC, Corba, RMI, Email.

06/2000 - 10/2000 Desys GmbH

Project: 3D Scenegraph-API for Java.

Activities: Implementation of a native interface to the scenegraph library. Using the scenegraph API and GL4Java an application should be able to manage complex 3d structures and access native 3D techniques. The maintenance and adaption of the scenegraph API is also part of this work.

IT-Environment: Unix (Linux), Windows, VRML, OpenGL, GL4Java, Java

05/1999 - 06/1999 Jausoft

Project: GLMame32¹⁴.

Activities: Implementation of a M.A.M.E.¹⁵ display drivers for OpenGL¹⁶ for unix and windows. Alegation was Mike Oliphant's GLMame XMame¹⁷. The same could be modified, bugfixed and improved. GLMame32 is licensed under the GNU Library General Public License¹⁸ !

IT-Environment: Unix (GNU/Linux), Windows NT/95, OpenGL, MSVC++ 5.0

02/1999 - 06/1999 Lufthansa Airplus

Project: Easy Travel Online (ETO)¹⁹ der Lufthansa Airplus²⁰.

Activities: My tasks included the support of the C++, IIOP and Java environments, as well as the networking area. I managed to find a solution for the IIOP tunneling via HTTP incl. proxy server and a firewall. This solution is implemented like the ETO client in Java and uses the Java-Servlet-API (JSDK). The targets of this new middleware are the client itself and the web server within the server domain. The middleware also implements secure transaction via SSL.

IT-Environment: Unix (Aix, GNU/Linux), Windows NT, , JDK 1.1.X, Java2, JSKD 2.1, Apache, Iona Orbix (-Web), Cygwin32, TCP/IP, HTTP, SSL, Firewall, Proxy-Server

01/1999 - 07/1999 Jausoft

Project: GL4Java²¹ Version 2.X (see 04/1997 - 01/1998).

Activities: Design and implementation of the new objectmodel, to seperate the OpenGL²², GLU and window handler objects. Java2 and Netscape are now also supported for Win32. GL4Java is licensed under the GNU Library General Public License²³ !

IT-Environment: Unix (Aix, Solaris, GNU/Linux), Windows NT/95, Macintosh, OpenGL, JDK 1.1.X, Java2, Java-Native-Interface, Cygwin32, TCP/IP, HTTP, GNU-C++, MSVC++ 5.0

11/1998 - 12/1998 Training centers

Activities: Tutoring in the areas of ANSI-C++, Java and networking. Next to the theory, the learning target was deepened using practical example projects.

IT-Environment: Unix (GNU/Linux), Windows NT, , GNU-C++, JDK 1.1.X, RCS, SNMP, TCP/IP, Apache, UML

¹⁴<http://www.jausoft.com/glmame32.html>

¹⁵<http://mame.retrogames.com>

¹⁶<http://www.opengl.org>

¹⁷<http://glmame.linuxgames.com>

¹⁸<http://www.gnu.org/copyleft/lgpl.html>

¹⁹<http://www.airplus.de/btm/index.html>

²⁰<http://www.airplus.de>

²¹<http://www.jausoft.com/gl4java.html>

²²<http://www.opengl.org>

²³<http://www.gnu.org/copyleft/lgpl.html>

06/1997 - 10/1998 Siemens AG, Munich

Project: Realization of an *upgrade* process in SDL and C++

Activities: Participation in Design und Coding of each of the processes for the *Upgrade* module in SDL and C++. Special functions in C/C++ within the OS VxWorks. Review process, documentation and execution of module and unit tests (regression tests) on the host and target system.

The emphupgrade module is used for the remote maintained firmware distribution of diverse components (xDSL modems).

The emphupgrade process was developed for the project XpressLink of the Siemens AG, München²⁴.

IT-Environment: Unix (Sun - Solaris), Windows NT, SDT 3.11 (Telelogic SDL)²⁵, GNU-C++, ClearCase (ClearTool), VxWorks (Target), SNMP (MIB)

04/1997 - 01/1998 University of Applied Sciences - FH Bielefeld

Project: GL4Java, OpenGL language mapping for Java

Activities: Creation of a Java extension, which makes OpenGL and GLU natively available under Java. The OpenGL interface is realized with the Java Native Interface (JNI), which connects the Java-Methods to the native OpenGL functions. Creation of a platform independent development environment under Unix (AIX, GNU/Linux) and Windows NT (Cygnus-GNU-Tools, ...) for using Java, ANSI-C, Makefile, etc. These works started under the supervision of Prof. Dr. math. Bunse²⁶ FH-Bielefeld²⁷ within my diploma thesis. GL4Java is available under the URL: <http://www.jausoft.com/gl4java/>²⁸.

IT-Environment: Java Developer Kit 1.1.X (JDK), JavaCC, Latex, HTML, Make, RCS, Unix (AIX, GNU/Linux, Solaris), Windows NT, Cygnus-GNU for Win-NT 4.0 (bash, vi, sed, grep, awk, ...)

11/1996 - 04/1997 IBM Frankfurt

Project: Technical Prototype (GUI) for a Call-Center Application

Activities: Creation and integration of GUI widgets (objects) and functional extensions in Java for Sun's Java-WorkShop:

- Auto-Alignment/Styling for all Windows
- Statuslines for all Windows
- Online-, Bubble- and Statushelp, Tabulator-Focus, Cursor-Focus and Hotkeys for all Objects
- Browser/Tree integration of the JMAPI (sun) packages
- Integration of new Java-Applications/Applets at runtime
- Configuration of all features incl. text via runtime parsed config-files to achieve runtime national language support (JavaCC).
- ...

Creation of prototypes, installation of a Source Control System (SCCS) on AIX, support of the GUI-Team with Java know-how, Web-Publishing.

IT-Environment: Sun's Java WorkShop 1.0, Java Developer Kit 1.02 (JDK), Symantec Visual-Cafe, JavaCC (Java Compiler Compiler), HTML, Netscape (WWW), Make, SCCS, Unix (AIX), Windows NT, Cygnus-GNU for Win-NT 4.0 (bash, vi, sed, grep, awk, ...)

²⁴<http://www.siemens.de/oen/products/products.html>

²⁵<http://www.telelogic.com>

²⁶<http://www.fh-bielefeld.de/cgi-bin/fis1.pl?vorname=&nachname=Bunse&forschung=&einrichtung=Alle>

²⁷<http://www.fh-bielefeld.de>

²⁸<http://www.jausoft.com/gl4java/>

06/1996 - 09/1996 Software Consulter

Project: Platform independent graphical user interfaces and applications.

Activities: Usability test of Tcl/Tk and Java, to provide OS independent applications with a GUI. Examples with multi-threading, sound, animation, tables, menus and system interfaces are created for testing purposes. The Java libraries, (applet, awt, io, ...) as well as the TK-Library were evaluated for this purpose. The development environment was assembled with the JDK 1.02, GNU/Linux and Java Workshop 1.0.

IT-Environment: Unix (GNU/Linux), MS-Windows 95, ANSI-C, ANSI-C++, Tcl/Tk, Sun's Java Workshop 1.0, Java Developer Kit 1.02 (JDK), HTML, Netscape (WWW), Make, RCS

03/1996 - 09/1996 Duerkopp-Adler AG

Projects: CAD/CAM DIN66025 for 80166-Controller (Sewing machine), OS services for 8051 and 80166 controller-cards.

Activities: Implementation of modules in ANSI-C to support OO development in ANSI-C. Run-Time-Type-Information (RTTI) and virtual methods for user defined data types. Implementation of a dynamic polymorph list type. All modules are designed to implement OO designed applications in ANSI-C (80166-Controller, KEIL-C compiler). Building a GUI, a Unix like file system for a PCMCIA ram-card, and an IPC communication protocol for two 80166-Controller. Porting of the DIN66025 compiler (C++ to C), which was created for the Windows CAD/CAM application (see above). The DIN66025 CNC description is now visualized and editable on the 80166-Controller also.

IT-Environment: Controller hardware 80166 and 8051, MS-Dos, ANSI-C (KEIL compiler for 80166 and 8051 Controller), Unix-Environment for MS-Dos (MKS), RCS, Make, ANSI-C++ (GNU)

03/1996 - 08/1996 Internet provider

Activities: SQL-DB GUI for a web-server. Queries and db-management is offered with a http/cgi interface. Filters to process the non-uniform data for the db import are realized with Unix scripts (awk/sed/...).

IT-Environment: Unix (GNU/Linux), HTTP-Server (Apache), mSQL (DBMS), ANSI-C, ANSI-C++ (GNU), RCS, Make, awk, sed, grep

08/1995 - 03/1996 Duerkopp-Adler AG

Project: CAD/CAM DIN66025 under MS-Windows (3.1 u. 95)

Activities: Development of a CAD/CAM application. The applications have two windows. One for the graphical, and the other for the text based (DIN 66025) visualization of the geometric and the technical data. Both windows are editable and the data is updated synchronously. The text representation is the source data which is compiled into an OO data structure, which can be drawn in the 2D window and be printed in a DIN66025 text file.

IT-Environment: MS-Windows/Windows95, ANSI-C++ (MS VisualC++), MFC, Word 5 (Onlinehelp), Lex & Yacc (MKS), RCS (GNU), Make (GNU), Unix env. (MKS/GNU/Linux)

12/1994 - 06/1995 Software distributor

Project: DB interface to AutoCad (visualization and graphical editing)

Activities: Analysis and manipulation of a dBase-DB for AutoCad. Data sets from a Street- and Drain-DB are visualized and edited with AutoCad.

IT-Environment: MS-Dos, ANSI-C++ (Watcom), dBase DB, AutoCad (MS-Dos), RCS (MKS), Make (MKS), Unix env. (MKS/GNU/Linux)

08/1994 - 12/1994 Industry

Project: C++ Training

Activities: ANSI-C++ Training 1-2 times weekly.

IT-Environment: ANSI-C++, Teaching with MS-Dos and Borland-C++ 4.0

04/1994 - 08/1995 Prekwinkel AG

Projects: CAM tools, compiler- and interpreter construction, crosscompiler for different CNC-Formats, geometric and technology-attribute manipulation of CNC-Formats (optimization and insertion of machine steps and vectors), DB interface, CNC compiler and interpreter.

Activities: Building a C-like interpreting compiler. Scripts written for this module process a universal CNC-Format (FXM) and translate them to a machine specific CNC-Format. Also used to implement different CNC filters for analysis and completion of vectors and to optimize machine-cycles and vector paths. Using generic hash-lists incl. a quick-sort pass, dereferencing symbolic objects gives high performance for more complex scripts. The interpreter generates byte-code structured in an Abstract Syntax Tree (AST).

IT-Environment: MS-Dos, Unix, ANSI-C++ (Borland 4.0, Watcom, GNU-C++), Lex Yacc (MKS), RCS (MKS), Make (MKS), Unix-Env. (MKS/GNU/Linux)

02/1994 - 05/1994 S&P Media

Project: Cross compiler from SET-PR (SDL) to SDT-PR (SDL)

Activities: Development of a Specification-Description-Language (SDL) Cross Compiler from SET-PR to SDT-PR, as well as of SDL-PR to ANSI-C. The task was solved by using LEX, YACC and an ANSI-C Compiler of a SUN- and HP-Workstation.

IT-Environment: Sun- u. HP-Workstation, ANSI-C, LEX u. YACC, Make, Korn-Shell

01/1994 - 03/1994 University of Applied Sciences

Project: Solutions- and optimizing systems

Activities: Development of OO genetic algorithm incl. sample applications *Missionary and cannibals* (game simulation), as well as distance (travel-salesman) optimization.

IT-Environment: Unix, MS-Dos, ANSI-C++ (Borland 4.0), RCS, Make

03/1993 - 07/1993 University of Applied Sciences

Project: Specification and documentation of parallel Processes.

Activities: Translation of SDL-PR to SDL-GR (Graphic Display) for MS-Windows. Development of protocols for ISDN and Ethernet using SDL.

IT-Environment: MS-Windows, Unix, C++ (Borland 3.1 - Windows), ISDN, Ethernet, SDL

06/1992 - 02/1993 University of Applied Sciences

Project: ScanArts - GUI for manipulation of scanned mathematic 2D formulas (described in c't 1993/09).

Activities: Graphic programming for MS-DOS and MS-Windows. General Drag and Drop, Pixel-chain scanning, fill algorithms, drawing of Lines and circles, Matrix rotation and transformation as well as Techniques for reversible graphical editing (undo). Co-author of publication *Mathematic User Interface with Recognition of two-dimensional Formulas*²⁹. My adds here are the chapters *Graphical Editing of Graphic Formulas* as well as *User Interface for ScanArts to Maple Algebra Program*.

IT-Environment: MS-Dos u. -Windows, ANSI-C (Borland 3.1, BGI), MapleV, Word 5

²⁹ISBN 3-923216-33-5

06/1992 - 09/1992 Industry

Project: Porting a quick-Basic application to Turbo-Basic

Activities: Building translation automates for two Basic dialects in ANSI-C.

IT-Environment: MS-Dos, ANSI-C, Basic

3 Skills

1. Domains

- 3D
- Architecture, design and development
- Embedded and platform independent development
- High performance and parallel computing
- Project management and maintenance
- Training

2. Industries

- Automation techniques
- Automotive Supply Industry
- CAD/CAM - Woodworks and sewing machines
- Communication techniques
- Economics
- Electronic Industry
- Energy supply
- Engineering
- Graphics, video and multimedia product manufacturer
- Internet provider
- Software development
- Training center

3. Topics

- 3D, CAD/CAM
- Application integration (EAI, J2EE, XML, XSLT, SOAP, ..)
- Communication protocols (ISDN, TCP/IP, MOST, and special protocols e.g. IPC)
- Compiler and interpreter construction
- Controller programming ANSI-C(++) and Assembler
- DB applications and interfaces (DB2, SQL, JDBC)
- Graphic User Interfaces (GUI)
- Multimedia systems (Player software, decoder, hardware driver (mpeg2, mp2, pcm, a52))

- Network techniques (DB interfaces for HTML Server, WWW, Proxy, Ftp, News, Email clients, Firewall installation etc.)
- OO-Design (UML, Rational Rose, Paradigm Plus, Java, C++)
- Optimization automates (Genetic algorithms, Neuronal Networks etc.)
- Organizing and planning
- Parallel Computing (SDL / UML, SIMD / MIMD, OpenMP, OpenCL)
- System analysis and design
- System software
 - Communication Protocols
 - Filesystem
 - Graphic Card Driver (XFree86, Proprietary, Console)
 - Linux Kernel Development (device driver and porting)
 - OpenGL, GL ES, driver development
 - QNX Device Driver Development
- Training (C++, Java, Networks)
- Unix administration

4. Hardware

- AIC RS/6000
- CNC-Controlling
- Controller (8051, 80166, ARM, SH4)
- DSP's (TMS..)
- Graphic Chips (ATI R3xx-R6xx, Siliconmotion, Fujitsu MB86291)
- HP
- IBM PC + Compatible
- PowerPC 7xx
- SUN Sparc

5. Operating Systems

- Unix (AIX, BSD, HP, GNU/Linux (Ubuntu, Red Hat, OpenSuSE, Android), QNX, Solaris)
- VxWorks
- MacOS X
- MS-Windows (95/98/NT/2000/XP,7), MS-Dos

6. Programming Languages

- C / C++ (STL)
- Assembler (80x86, 68000, 650x)
- GLSL (OpenGL), OpenCL
- Java (1.0.2 - 1.7, J2ME)

- ...

7. Development Environment and Tools

- API: OpenGL/GLSL, OpenCL, OpenMP, ODBC/JDBC, pthreads, STL, ...
- Bugs/Requirements: Bugzilla, ..., Doors
- DB: MySQL, DB2, dBase, Oracle, ...
- Compiler: ANTLR, Lex & Yacc (Berkley, MKS, GNU), JavaCC
- Continuous Integration (CI): Jenkins/Hudson, JUnit, CppUnit, ...
- IDE: Eclipse, Netbeans, MS-Visual C++, ...
- OO/UML: Bouml, Rational Rose, Paradigm Plus, Innovator, Telelogic SDT/SDL, ArgoUML, Thorn, Umbrello, ...
- SCM: GIT, Perforce, Remedy, ClearCase, Change Synergy, CM Synergy; SCCS, RCS, CVS

8. Methodology

- Requirement Management
- UML Analysis and Design (OO, Structured, States, ..)
- SDL specification for multiprocessing / multithreading systems
- Top-Down interface specification
- Bottom-Up implementation
- Review and audit procedures
- Object oriented programming (Java, C++ and either C)
- Configuration-management, project maintenance
- Usage and implementation of platform independent standard libraries
- Debugcode with inductive proof
- OO-Design using UML iteratively
- Tests: BlackBox, WhiteBox, Unit, Continuous Integration, Regression
- Extreme- and team-programming, KnowHow Transfer

9. Server Environment

- Apache, Samba, Squid, inn(news), ftpd, routed, ipp, iptables, sendmail, VPN, squid, mysql, git, bugzilla, jenkins, ...
- GNU/Linux Server, Windows clients