## Ánoq of the Sun Detailed CV as a Computer Scientist

Ánoq of the Sun (alias Johnny Bock Andersen), Hardcore Processing \* October 18, 2013

#### Online Link for this Detailed CV

This document is available online in 2 file formats:

- http://www.hardcoreprocessing.com/home/anoq/cv/anoqcvcomputerscientist.pdf
- http://www.hardcoreprocessing.com/home/anoq/cv/anoqcvcomputerscientist.ps

## All My CVs and an Overview

All my CVs (as a computer scientist, musician and graphics artist) and an overview can be found at:

• http://www.hardcoreprocessing.com/home/anoq/cv/anoqcv.html

#### **Contents Overview**

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## About the Time Durations in This Detailed CV

#### • All time usage is only counted once:

No projects or courses count the same time or efforts more than once. So for instance, even though CeX3D Converter uses CeXL internally, I have not counted the time used for designing or implementing CeXL twice. Also, the time used for all university projects which are relevant for my company (Hardocore Processing) are only counted once in the project lists.

#### • ...except for the employment list and the skill list:

The only exception is that the list of companies where I have been employed counts the total employment time, even though the work done there is also counted in the project lists, but this is clearly stated in the headline for that section. The same goes for the skill list.

#### • References to educative material are sometimes repeated:

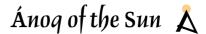
Some references to educative material are repeated more than once, when it is relevant for several projects or topics.

#### • Duration is considered as full-time work:

Whenever I write 'Duration' I mean when considered as full-time work:

- -1 day = 7.5 hours
- -1 week = 5 days
- -1 month = 22 days
- -1 year = 12 months

These durations are sometimes estimates, but most are fairly accurate - and yes, I have generally 'worked' more than full-time in my life, since many of the things I have done are also spare-time interests.

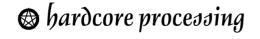


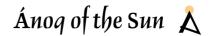
## Employment Overview (Updated on 2012-06-03) (Durations Counted Again in Project Lists)

Company	My Role	Dates	Duration 1 day=7.5 hrs
Hardcore Processing I founded this company 27th of September 1998 www.hardcoreprocessing.com	Software Developer Graphics Artist Sales and Marketing Webmaster, System Admin.	1998-now	(see project lists)
Freelance work for various companies: e.g. SimCorp, NetGroup, GateHouse	Software Developer Consultant	1998-now	(see project lists)
Ánoq Music I founded this record label December 2007	Music Composer and Producer Music Publishing Promotion	2007-now	(see musician CV)
Prevas (formerly Glaze)  www.prevas.dk  Worked for various clients, e.g.  RTX Telecom and Exensor (Sweden)	Software Developer Consultant	2004-2007	2.5 years
Casper Thorsøe Video Production	3D Graphics Artist (Partly System Administrator)	1997-1998	1 year (see graphics CV)
Visionik www.visionik.dk	Software Developer (Partly Graphics Artist)	1997	5 months
Sandlykke & Leifsgård (now called TargIT)	Software Developer	1994-1996	2 years and 5 months

## **Human Languages**

Laguage	Skill level
English	Read, write, understand, speak fluently
Danish	Read, write, understand, speak fluently - my mother tongue
Northern Juttish	Understand, speak fluently (not really a written language)
(Danish dialect)	
Modern Greek	Read, write, understand, speak fluently
French	Read, write to some extent, need practice for serious communication
German	Read, write to some extent, need practice for serious communication
Swedish	Read, understand - because it's very similar to Danish
Norwegian	Read, understand - because it's very similar to Danish





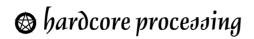
## List of Software Development Skills (Updated on 2012-06-03) (Years Are Not Full-time Durations, But Years with Active Use)

Key for "Level": 1: Expert, 2: Lots of Routine, 3: Routine, 4: Good Knowledge, 5: Some Knowledge

Skill Name / Group	Doing What	Level (1-5)	Latest Use	Years with Active Use
Programming Languages:				
· Standard ML (a.k.a. SML '97)	Programming	1	2013	16
· CeXL (language that I created)	Programming	1	2007	2
· OCaml (Standard ML dialect)	Programming	3	2002	0.2
· MLFi (OCaml dialect)	Programming	1	2011	2.5
· Haskell (lazy Standard ML dialect)	Programming	4	2003	0
· Scheme, LISP	Programming	4	1999	0.1
· C#	Programming	2	2011	2.5
· Python	Programming	2	2005	1
· Java	Programming	4	2003	0.5
· C	Programming	1	2006	9-15?
· C++	Programming	1	2006	9-12?
· Objective-C ("mix of C and Smalltalk")	Programming	2	1998	2
· Delphi/Pascal	Programming	1	2006	4
· APL		5	2011	2.5
	Programming	1		
· RenderMan Shading Language	Programming		2007	4
· MEL (Maya Embedded Language)	Scripting	3	1998	1
Other Kinds of Languages:				
· Operational Semantics (prog. lang. specification)	Language Specification	1	2010	8
· Denotational Semantics (prog. lang. proofs)	Language Specification	3	2007	0.5
· BNF-Grammar	Language Specification	1	2010	7
· Regular Expressions	Language Specification	1	2007	7
· COM/CORBA IDL (Interface Definition Lang.)	Programming	4	2001	1
· UML (Unified Modelling Language)	Software Design	2	2011	5
· GNU Make (and OMake and Microsoft NMake)	Writing	3	2011	14?
· HTML	Writing	3	2012	15?
· LATEX	Writing	1	2012	13
ь				
APIs, Interfaces, Protocols (Programming):				
· Standard ML Basis Library	Programming	1	2013	16
· Delphi Visual Component Library	Programming	1	2006	4
· Microsoft .NET Framework	Programming	3	2011	2.5
· OpenStep (MacOS X's API descends from this)	Programming	2	1998	2
· Swing	Programming	4	1997	0.1
· Document Object Model (DOM)	Programming	4	2001	0.1
· TCP/IP (Sockets)	Programming	3	2001	2
	0 0	4		
· RS232 (PC Serial Port)	Programming	4	2005	1
· Gtk+	Programming		2007	0.1
· XLib (X-Windows API)	Programming	5	1999	0.3
· SDL (Simple Direct Media Layer)	Programming	2	2007	7
· DirectX	Programming	4	2001	0.5
· RenderMan (API and RIB-files)	Programming	1	2012	6
· OpenGL	Programming	4	2007	0
· Maya Plugin API	Programming	4	2003	0
· LightWave 3D plugin API	Programming	5	2001	0
Databases (Programming Experience):				
$\cdot  ext{ MySQL}$	Programming	4	2006	1
· BTrieve, InterBase	Programming	4	1996	2.5
· ODBC (standardized database API)	Programming	4	2001	1
· SQL (Structured Query Language)	Programming	3	2006	3
	5 5			
Operating Systems (Programming Experience):				
· Windows 95/98/NT/XP/Vista/7	Programming	3	2011	9
· Linux	Programming	3	2013	15?
· Silicon Graphics IRIX, Sun Solaris	Programming	5	2001	0.2
	0	9	-001	

Skills that I Am Not Interested in Using (Or that Are Outdated):

Basic, Ada, JAM Programming Language (Jyacc App. Manager), MFC (Microsoft Foundation Classes), eXene (user-interface toolkit in Standard ML), Real 3D Programming Language, WML (WAP Markup Language), WMLScript, BeOS, AmigaOS / hardware programming, CyberGraphX (Amiga), DOS.

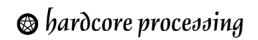




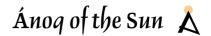
# List of Projects Related to Software Development (Updated on 2013-10-18)

	Key for "Technologies":
P:	Programming language
L:	Other kind of Language
$\mathbf{A}$ :	Application Programmer's Interface (API) or protocol
$\mathbf{T}$ :	Software development Tool
<b>O</b> :	Operating system or platform
<b>B</b> :	Significant amount of reading Books
$\mathbf{R}\mathbf{A}$ :	Significant amount of reading Research $\mathbf A$ rticles

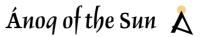
Project	Client	Dates	Duration 1 day=7.5 hrs	Technologies
· CeX3D Inverse  Advanced computer vision software for automatic construction of 3D objects from ordinary camera images  Pure software implementation, written in Standard ML, no gfx hardware used  www.cex3d.net/inverse/	Hardcore Processing www.hardcoreprocessing.com 2 DIKU reports www.diku.dk	2009- 2012	3 years and 6 months	Standard ML (P) SML/NJ, MLton (T) SDL, SDL::ML (A) Linux (O) computer vision (RA, B) computer graphics (RA, B)
• Computer Vision Software  Designed and implemented high tech computer vision software capable of detecting 3D objects in images and rectifying their surface into 2D at interactive speeds without gfx hardware (150-400ms, incl. load 100kb, save 1Mb).	(confidential)	2013-	4 months	Standard ML ( <b>P</b> ) MLton ( <b>T</b> ) Linux ( <b>O</b> )
· SimCorp Dimension: Investment management system. Design, documentation of software and development processes. Build-environment, software modules and more implemented in C# and MLFi/OCaml. Automated unit-tests and integration-tests. Integration with software sub-contractor.	SimCorp (Denmark)	2008- 2011	2.5 years	MLFi / OCaml, C# (P) .NET Framework (A) MSVS 2005/2008/2010 (T) OMake (T), APL (P) Cygwin (T), Windows (O) documentation, unit-test, specification writing
· CeXL Compiler Design, analysis and implementation of an advanced compiler for the CeXL language, including an advanced typed memory management system (garbage collector) for interactive performance (low pause-times) (unreleased)	Hardcore Processing www.hardcoreprocessing.com 2 DIKU reports www.diku.dk	2009- 2010	7.5 months	Standard ML (P) SML/NJ, MLton (T) C, x86 Assembly (P) GNU Assembler (gas) (T) GNU Make (T), Linux (O) compiler technology (RA, B)
· Ánoq SML Basis Library Design, analysis and implementation of a more consistent and larger version of the Standard ML Basis Library, compatible with both the 1997 and 2004 revisions, turning it into being 2004 compatible	Hardcore Processing www.hardcoreprocessing.com DIKU report www.diku.dk	2003- 2010	2 months	Standard ML ( <b>P</b> ) SML/NJ, MLton ( <b>T</b> ) GNU Make ( <b>T</b> ), Linux ( <b>O</b> )



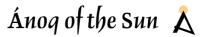
www.hardcoreprocessing.com/pro/anoqsmlbasis/ (latest version is still unreleased)



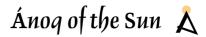
Project	Client	Dates	Duration  1 day=7.5 hrs	Technologies
· Fast CeXyMan (new version) interactive 3D renderer, mostly using the RenderMan API (actually RI::ML) internally, pure software rendering 640x480x32bit 20 frames/sec (1.7Ghz P4) written in Standard ML, no gfx hardware used (unreleased)	Hardcore Processing	2007- 2011	1 month	Standard ML (P) SML/NJ, MLton (T) SDL, SDL::ML (A) RI::ML (A) Linux (O)
· Global Illumination 3D Volume Renderer (prototype) renders an example with cloud-like procedural volume data  www.hardcoreprocessing.com/company/ (under technology examples)	Hardcore Processing www.hardcoreprocessing.com	2007	1 month	Standard ML ( <b>P</b> ) SML/NJ, MLton ( <b>T</b> ) Linux ( <b>O</b> ) 3D volume rendering ( <b>B</b> ) global illumination ( <b>B</b> ) photon mapping ( <b>B</b> )
· Wireless Headset Tests Worked on-site as consultant. Wireless headset (Bluetooth) tests with mobile phones. C/C++ code proof-reading. Substantial test-specification improvements.	Client of Prevas (formerly Glaze) (I was employed) www.prevas.dk	2006- 2007	10 months	C, C++ (bug-finding) ( <b>P</b> ) Windows ( <b>O</b> ) specification writing manual test (never again!)
• Several Projects: DECT Product tests Worked mostly on-site (Aalborg) as consultant. Documentation, specification with end-customer. Developed software for test-equipment to do automated hardware product testing, e.g.: Software flash-load, RF-tests, audio-tests, power measurements and software tests.	RTX Telecom  www.rtx.dk  Prevas (formerly Glaze) (I was employed)  www.prevas.dk	2005- 2006	7 months	C, C++ (P) TCP/IP (A) Borland C++ Builder (T) Windows (O) documentation, specification writing
· UMRA: Sensor-based vehicle detection system Worked partly on-site in Sweden as consultant. Design, documentation of system interfaces. Real-time multithreaded communication and more implemented in C and Python. Automated unit-test of implementation. Integration with hardware sub-contractor.	Exensor (Sweden)  www.exensor.se  Prevas  (formerly Glaze)  (I was employed)  www.prevas.dk	2004- 2005	1 year	C, Python (P) TCP/IP, RS232 (A) gcc (T), PC104 (O) Linux, Windows (O) documentation, unit-test, specification writing



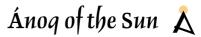
Project	Client	Dates	Duration 1 day=7.5 hrs	Technologies
- Implement CeXL parser, type-inference, interpreter Latest version unrelased: Parses and type-checks 8000 lines of CeXL code code in less than 2 seconds (1.7Ghz P4) www.cex3d.net/cex1/	Hardcore Processing	2003- 2004	1.3 months	Standard ML (P) CeXL (P) SML/NJ, MLton (T) Linux (O)
· Design of CeXL formal specification of an advanced programming language with proof of type-soundness of the core language with its novel record calculus (latest specification is unrelased)	Hardcore Processing www.hardcoreprocessing.com 2 DIKU reports www.diku.dk	1999- 2004 and 2010	1 year and 2 months	Standard ML ( <b>P</b> ) Prog. lang. semantics ( <b>RA</b> , <b>B</b> )  Lambda ( <b>L</b> )
· Software for Hospital Equipment	GateHouse www.gatehouse.dk (worked on-site at GateHouse's client)	2003	1.5 months	C/C++ ( <b>P</b> ) UML ( <b>L</b> ) Rational Rose ( <b>T</b> ) MS Visual C++ ( <b>T</b> ) Windows 2000 / CE ( <b>O</b> )
· CeX3D Converter LightWave 3D/Unreal Ed/ RenderMan RIB converter	Hardcore Processing	1999- 2001	3 months	Standard ML ( <b>P</b> ) SML/NJ, MLton ( <b>T</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· SDL::ML SDL bindings for Standard ML www.hardcoreprocessing.com/pro/sdlml/	Hardcore Processing www.hardcoreprocessing.com	1999- 2003	1 month	C, Standard ML (P) SDL (A) SML/NJ, MLton, ML Kit (T) gcc, MinGW (T) Linux, Windows (O)
· UI::ML as-of-yet unreleased user interface toolkit surpassing AbstractUI::ML	Hardcore Processing www.hardcoreprocessing.com	2002- 2003	2 months	Standard ML ( <b>P</b> ) SML/NJ, MLton, MinGW ( <b>T</b> ) SDL, SDL::ML, ( <b>A</b> ) Linux, Windows ( <b>O</b> )
· CeX3D SM in-house 3D program for subdivision surfaces	Hardcore Processing www.hardcoreprocessing.com	2000- 2002	3 months	Standard ML, CeXL (P) SML/NJ, MLton (T) MinGW (T) SDL, SDL::ML, UI::ML (A) RI::ML, Fast CeXyMan (A) Linux, Windows (O)
· Implement old CeXL parser, interpreter (used in CeX3D Converter before version 0.5)	Hardcore Processing	2000- 2002	2 months	Standard ML ( <b>P</b> ) SML/NJ, MLton ( <b>T</b> ) Linux ( <b>O</b> )



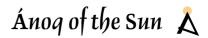
Project	Client	Dates	Duration 1 day=7.5 hrs	Technologies
· Internet Payment System (worked on design and implementation)	NetGroup www.netgroup.dk	2001- 2002	2 months	C/C++, Standard ML (P) UML, LaTeX (L) LyX, dia (T) Linux (O)
· Interactive Showreel company demo program www.hardcoreprocessing.com/company/showreel/	Hardcore Processing www.hardcoreprocessing.com	2001	5 days	Standard ML (P) SML/NJ, MLton, MinGW (T) SDL, SDL::ML, UI::ML (A) RI::ML, Fast CeXyMan (A) Linux, Windows (O)
· Fast CeXyMan (old version) interactive 3D renderer using the RenderMan API (actually RI::ML) internally. Written in Standard ML	Hardcore Processing www.hardcoreprocessing.com	2000- 2002	2 months	Standard ML ( <b>P</b> ) SML/NJ, MLton, MinGW ( <b>T</b> ) SDL, SDL::ML ( <b>A</b> ) RI::ML ( <b>A</b> ) Linux, Windows ( <b>O</b> )
· Standard ML Code generally useful SML code 2D/3D geometry, combinator parsing, etc. www.hardcoreprocessing.com/pro/smlcode/	Hardcore Processing www.hardcoreprocessing.com	1999- 2001	1 month	Standard ML ( <b>P</b> ) SML/NJ, MLton, ML Kit ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· ISAPI Plugins for Zeus Webserver programming	NetGroup www.netgroup.dk	2001	1 week	C ( <b>P</b> ) HTML ( <b>L</b> ) ISAPI, CGI ( <b>A</b> ) gcc, Zeus Webserver, IIS ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· Internet Payment System Client implementation of client and backends, ASP examples, documentation	NetGroup	2000- 2001	3 months	C/C++, ASP (P) UML, LATEX, HTML (L) COM, CGI (A) gcc, MS Visual C++ (T) Zeus Webserver, IIS (T) Linux, Windows (O)
· Misc. Other Programming	NetGroup	2000- 2001	1 month	C/C++ (P) HTML (L) CGI, MIME, (A) MS Excel ODBC (A) MS Access ODBC (A) IRIX/POSIX Shared Mem. (A) gcc, MS Visual C++ (T) MS NMake (T) Zeus Webserver, IIS (T) Linux, IRIX, Solaris, Windows (O)
· RI::ML RenderMan Interface for Standard ML www.hardcoreprocessing.com/pro/riml/	Hardcore Processing www.hardcoreprocessing.com	1999- 2005	3 weeks	Standard ML ( <b>P</b> ) RenderMan ( <b>A</b> ) SML/NJ, MLton, ML Kit ( <b>T</b> ) Linux ( <b>O</b> )



Project	Client	Dates	Duration  1 day=7.5 hrs	Technologies
· Rebild Vandrerhjem Website website programming and translation from Danish to English and Greek	Rebild Vandrerhjem www.vandrerhjem.net	2001	4 days	HTML (L) Danish, English, Greek (L) Linux, Windows (O)
· ABC Expedition game (programming) www.hardcoreprocessing.com/entertainment/	Virtual Effects & Fantasies	2000	3 weeks (14 days)	Standard ML ( <b>P</b> ) SDL, SDL::ML ( <b>A</b> ) SML/NJ, MLton ( <b>T</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
• The Unlimited Game game (programming) www.hardcoreprocessing.com/entertainment/	Virtual Effects & Fantasies	1999	8 days	Standard ML ( <b>P</b> ) SDL, SDL::ML ( <b>A</b> ) SML/NJ, MLton, ML Kit ( <b>T</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· The Sunkist Puzzle game (programming) www.hardcoreprocessing.com/entertainment/	Virtual Effects & Fantasies	1999	3 days (25 hours)	C/C++ (P) SDL (A) gcc, MinGW (T) Linux, Windows (O)
· Leaf Invaders game (programming) www.hardcoreprocessing.com/entertainment/	Virtual Effects & Fantasies	1999	8 days	C/C++ ( <b>P</b> ) SDL ( <b>A</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· Billy The Kid game (programming) www.hardcoreprocessing.com/entertainment/	Virtual Effects & Fantasies	1999	2 weeks	C/C++ ( <b>P</b> ) SDL ( <b>A</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· Misc. Programming GUI stuff, printer routines, ODBC programming in C++	Context	1999	1 month	C/C++, Delphi Pascal ( <b>P</b> ) gcc ( <b>T</b> ) ODBC ( <b>A</b> ) Delphi, C++ Builder ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· MLton for Windows port of MLton compiler for cross-compiling to Windows www.hardcoreprocessing.com/pro/mltonwin32/	Hardcore Processing	1999- 2003	1 month	C, Standard ML ( <b>P</b> ) MLton ( <b>T</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· ML Kit for Windows port of ML Kit compiler for cross-compiling to Windows www.hardcoreprocessing.com/pro/mlkitwin32/	Hardcore Processing www.hardcoreprocessing.com	1999	2 weeks	C, Standard ML ( <b>P</b> ) ML Kit ( <b>T</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )



Project	Client	Dates	Duration 1 day=7.5 hrs	Technologies
· WinMain, library for porting to Windows www.hardcoreprocessing.com/pro/winmain/	Hardcore Processing www.hardcoreprocessing.com	1999	3 days	C ( <b>P</b> ) gcc, MinGW ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· CodeTransformer reads OMG IDL files and C++ header files and generates C++ code www.hardcoreprocessing.com/pro/codetransformer/	Hardcore Processing www.hardcoreprocessing.com	1999	1 month	Standard ML (P) C++, OMG IDL (P) SML/NJ, ML Works (T) ML-Yacc, ML-Lex (L, T) Linux, Windows (O)
· The Construct old user interface builder www.hardcoreprocessing.com/pro/theconstruct/	Hardcore Processing www.hardcoreprocessing.com	1999	2 weeks	Standard ML ( <b>P</b> ) SML/NJ, ML Works ( <b>T</b> ) Linux, Windows ( <b>O</b> )
· AbstractUI::ML old user interface toolkit www.hardcoreprocessing.com/pro/abstractuiml/	Hardcore Processing www.hardcoreprocessing.com	1998- 1999	4 months	Standard ML ( <b>P</b> ) SML/NJ, ML Works ( <b>T</b> ) eXene ( <b>A</b> ) Linux, Windows ( <b>O</b> )
· A Small 3D Wireframe Demo test of Standard ML for real-life use www.hardcoreprocessing.com/ pro/asmall3dwireframedemo/	Hardcore Processing www.hardcoreprocessing.com	1997- 1998	???	Standard ML ( <b>P</b> ) SML/NJ ( <b>T</b> ) eXene ( <b>A</b> ) Linux ( <b>O</b> )
· ML Performance Test performance test of SML/NJ vs. gcc www.hardcoreprocessing.com/ home/anoq/Programming/MLSpeed.html	Hardcore Processing www.hardcoreprocessing.com	1997- 1998	???	Standard ML ( <b>P</b> ) C, Objective-C ( <b>P</b> ) SML/NJ, gcc ( <b>T</b> ) eXene ( <b>A</b> ) Linux ( <b>O</b> )
· Hardcore Processing Website huge website with auto-generated HTML code from LATEX using in-house software www.hardcoreprocessing.com	Hardcore Processing www.hardcoreprocessing.com	1998- 2012	???	HTML, IAT <sub>E</sub> X ( <b>L</b> ) Standard ML ( <b>P</b> ) ML Server Pages, PHP ( <b>P</b> ) Linux, Windows ( <b>O</b> )

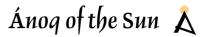


Project	Client	Dates	Duration 1 day=7.5 hrs	Technologies
· W3C's Document Object Model (DOM) implemented in C++ and can be used with or without CORBA www.hardcoreprocessing.com/pro/dominplementation/	Berlin (Open Source) www.berlin-consortium.org	1998	1 month	C, C++, OMG IDL ( <b>P</b> ) egcs (gcc), omniORB ( <b>T</b> ) Linux, CORBA ( <b>O</b> )
· Warsaw API in Berlin discussion and software/API design www.hardcoreprocessing.com/ home/anoq/Programming/Warsaw.html	Berlin (Open Source) www.berlin-consortium.org	1997- 1999	???	C, C++, OMG IDL ( <b>P</b> ) egcs, gcc, omniORB ( <b>T</b> ) Linux, CORBA ( <b>O</b> )
· GNUStep/NSXKit implemented parts of NeXT's OpenStep API for X-Windows www.hardcoreprocessing.com/ home/anoq/Programming/GNUStep.html	GNUStep (Open Source) www.gnustep.org	1997	???	C, Objective-C ( <b>P</b> ) gcc ( <b>T</b> ) Linux, X-Windows ( <b>O</b> )
· GNUStep NSAttributedString implemented classes of NeXT's OpenStep API www.hardcoreprocessing.com/ home/anoq/Programming/GNUStep.html	GNUStep (Open Source)	1997	???	C, Objective-C ( <b>P</b> ) gcc ( <b>T</b> ) Linux ( <b>O</b> )



Project  · (Misc. During Employment) interactive CD-ROM programming, game programming	Client  Visionik (I was employed)	Dates 1997	Duration 1 day=7.5 hrs 4.5 months	Technologies  Delphi Pascal (P) Delphi, Authorware (T) Director (T) Windows (O)
· Up-To-Date worked on service system for Danish optic shops. Mostly worked on the (fairly complex) part for ordering glass	Sandlykke & Leifsgård (I was employed)	1996	1 year	Delphi Pascal (P) Delphi (T) BTrieve, InterBase (T) ODBC (A) SQL (L) Windows (O)
· TankMax worked on economy system for gas stations	Sandlykke & Leifsgård (I was employed)	1995	1 month	Turbo Pascal ( <b>P</b> , <b>T</b> ) BTrieve ( <b>T</b> ) DOS ( <b>O</b> )
· ELFOs Meldesystem computer system for registering companies performing work on electrical house installations and check that the Danish laws for 'licitation' are respected	Sandlykke & Leifsgård (I was employed)	1994-1995	1 year and 4 months	Delphi Pascal ( <b>P</b> ) C, JAM Prog. Lang ( <b>P</b> ) Delphi, JAM ( <b>T</b> ) BTrieve, InterBase ( <b>T</b> ) ODBC ( <b>A</b> ) SQL ( <b>L</b> ) Windows ( <b>O</b> )
· Crossplatform GUI Toolkit (unreleased) written in C / C++ / Objective-C www.hardcoreprocessing.com/ home/anoq/Programming/GUIDevTool.html	(Private)	1995-1997	???	C, C++, Objective-C ( <b>P</b> ) Lattice C / SAS C (Amiga) ( <b>T</b> ) gcc (Amiga / x86 PC) ( <b>T</b> ) AmigaOS, NetBSD (Amiga) ( <b>O</b> ) Linux (x86 PC) ( <b>O</b> )
· Amiga Games programming for 1 whole and 2 halve games (unreleased) www.hardcoreprocessing.com/	(Private)	1990-1994	???	C ( <b>P</b> ) Lattice C (Amiga) ( <b>T</b> ) AmigaOS ( <b>O</b> )

home/anoq/Programming/AmigaGames.html



## My M.Sc. in Computer Science (2004-2010)

	Key for "Institution":
DIKU:	Cumputer Science Department at the University of Copenhagen, Denmark
ITU:	IT-University of Copenhagen, Denmark

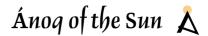
	Key for "Course Material":
<b>B</b> :	$\mathbf{B}$ ook
$\mathbf{N}$ :	Special course Notes
$\mathbf{R}\mathbf{A}$ :	Research Articles

# M.Sc. Projects in Computer Science (See Project List for Project Details and Time-Usage)

	Course	Institution	Dates	ECTS	Result	Downloadable Report
-	0.042.00					1
	Typed Interactive Memory	DIKU	2010	30.0	Part of CeXL Compiler	Not Yet
	Management (Master's Thesis)					
	Advanced Compiler	DIKU	2009-2010	20.0	Part of CeXL Compiler	Not Yet
	Middle and Back-Ends				•	
	Ánoq SML Basis Library	DIKU	2010	7.5	Part of Ánoq SML Basis Library	Not Latest
	Version 0.8.9 (preliminary number)				www.hardcoreprocessing.com/pro/anoqsmlbasis/	
	Ksi-Calculus Records	DIKU	2010	15.0	Part of Design of CeXL	Not Yet
	Camera Registration	DIKU	2009	7.5	Part of CeX3D Inverse	Yes
	from Image Correspondences				www.cex3d.net/inverse	
	Image Correspondences	DIKU	2009	7.5	Part of CeX3D Inverse	Yes
	for Camera Registration				www.cex3d.net/inverse	

#### M.Sc. Courses in Computer Science

Course	Institution	Dates	Duration	Course Material	Made My Notes
			1  day=7.5  hrs		Downloadable
Program Inversion and	DIKU	2009	2 months	Lecture notes $(N)$ and	No
Reversible Computation				Misc articles $(\mathbf{R}\mathbf{A})$	
Medical Image Analysis	DIKU	2009	2 months	Lecture notes $(N)$ and	No
				Misc articles $(\mathbf{R}\mathbf{A})$	
Formal Semantics of	DIKU	2007	2 months	'Formal Semantics of	No
Programming Langauges				Programming Langauges' ( <b>B</b> )	
				Misc articles ( <b>RA</b> )	
Program Analysis	DIKU	2005	1 week	'Program Analysis	No
and Transformation				and Transformation' $(\mathbf{N})$	
Types and Programming	DIKU	2004	2 months	'Types and Programming	No
Langauges				Langauges' $(\mathbf{B})$	
				Misc articles $(\mathbf{R}\mathbf{A})$	
Topics in Language	ITU	2001	1 week	Misc articles $(\mathbf{R}\mathbf{A})$	No
Based Security					
(Ph.D. summer course)					
Advanced Compiler	DIKU	2000	2 months	'Modern Compiler	No
Construction				Implementation in ML' (B)	
				Misc articles (RA)	



## My B.Sc. in Computer Science and Mathematics (1998-2004)

	Key for "Institution":
Ath:	Maths Department at the University of Athens, Greece
DIKU:	Cumputer Science Department at the University of Copenhagen, Denmark
HCØ:	Maths Department at the University of Copenhagen, Denmark
ØEI:	Eastern Europe Institute at the University of Copenhagen, Denmark

	Key for "Course Material":
<b>B</b> :	Book
$\mathbf{N}$ :	Special course Notes
RA:	Research Articles

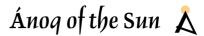
Key for "Made My Notes Downloadable":
Tells which courses I wrote publicly available notes for at:
http://www.hardcoreprocessing.com/articles/maths/summaries/
http://www.hardcoreprocessing.com/articles/humlang/greek/

#### **B.Sc.** Courses in Mathematics

Course	Institution	Dates	Duration Course Material		Made My Notes
			$1 \text{ day}{=}7.5 \text{ hrs}$		Downloadable
Mat 2AL	HCØ	2003-2004	2 months	'Algebra' (B)	Yes
Measure Theory	Followed at <b>Ath</b>	2002-2004	2 months	$\Theta \epsilon \omega \rho i \alpha \ M \epsilon \tau \rho o v' \ (\mathbf{B})$	Yes
/ Mat 3MI	exam at $HC\emptyset$			'Mål- og integralteori' ( <b>B</b> )	
Probability I	Ath	2002-2003	2 months	$\Theta\epsilon\omega\rho i\alpha \Pi\iota\theta\alpha u o au\dot{\eta} au\omega u$	Yes
				$και Εφαρμογές Ι' (\mathbf{B})$	
Mat 3GT	HCØ	2002-2003	2 months	'Topology' ( <b>B</b> )	Yes
Mat 2KF	HCØ	2002-2003	2 months	'Kompleks Funktionsteori' (B)	Yes
Mat 3GE	HCØ	2002	2 months	'Elemental Differential	Yes
				Geometry' ( <b>B</b> )	
Mat 2AN	HCØ	2001-2002	2 months	'Metriske Rum' ( <b>B</b> )	Yes
				'Hilbert Rum' (B)	
Mat Y	HCØ	2001	1 month	'Introduktion til	A few
				abstrakt matematik' $(\mathbf{B})$	
Mat 1GB	HCØ	1999	2 months	'Linear Algebra' ( <b>B</b> )	A few
Mat 1GA	HCØ	1998	2 months	'Linear Algebra' (B)	A few
Mat XX	HCØ	1998	2 months	'Aspects of Combinatorics' (B)	No

#### Additional B.Sc. Course in Modern Greek Grammar

Course	Institution	Dates	Duration	ation Course Material	
			$1~\mathrm{day}{=}7.5~\mathrm{hrs}$		Downloadable
Grammatik	ØEI	2004	1.5 months	'Lærebog i græsk for universitetsstuderende' (B)	Yes
				'Lille kompendium i græsk grammatik' (B)	

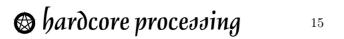


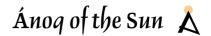
## B.Sc. Courses in Computer Science

Course	Institution	Dates	Duration 1 day=7.5 hrs	Course Material	Made My Notes Downloadable
Bachelor's Thesis 'Definition of CeXL' (see Design of CeXL in project list)  www.cex3d.net/cex1/	DIKU	2003	(counted in project list)	'Definition of Standard ML' (B) Loads of other books and articles (B, RA) (see thesis litterature list)	Thesis
Dat 1F	DIKU	2002-2003	2 months	'Operating System Concepts' ( <b>B</b> ) 'Computer Networking' ( <b>B</b> ) 'Multiprogrammering' ( <b>N</b> ) 'Programmering på Digital Alpha-arkitekturen' ( <b>N</b> )	No
Dat 2A	DIKU	2001	2 months	'Introduction to Algorithms' (B) 'Branch & Bound Algorithms & Generelle Optimeringsheuristikker' (N)	No
Dat 1E	DIKU	1999	2 months	'Computer Organization & Design' (B) 'Arkitekturdelen' (N) 'SimSys' (N) 'Oversætterdelen' (N) 'Basics of Compiler Design' (N)	No
Dat 2V Grafik	DIKU	1999	2 months	'Computer Graphics Principles and Practice' (B)	No
Dat 2V Programmeringssprog	DIKU	1999	2 months	Lecture notes on operational semantics (N)	No
Dat 0	DIKU	1998-1999	4 months	'ML for the Working Programmer' (B) 'Introduction to ML' (B) 'Data Structures & Problem Solving Using Java' (B) 'UML Distilled' (B) 'Funktioner og simple datastrukturer' (N) 'Videregående algoritmer, datastrukturer og typer' (N)	No

## **Basic Education and Misc Courses**

Education	Institution	Dates	Duration 1 day=7.5 hrs	Education Material
Modern Greek for ERASMUS students	University of Athens Greece	2002-2003	4 months (twice a week for 1 year)	'Ελληνικά για ERASMUS'
Modern Greek evening course	Københavns Kommunes Aftenskole	2000-2001	2 weeks (once a week for 1 year)	'Ελληνικά $T \omega \rho \alpha \ 1 + 1$ '
High School (mathematical line with high level maths and high level music)	Dronninglund Gymnasium	1991-1994	3 years	
Elementary School (up till 9th grade)	Dybvad Skole	1981-1991	10 years	





## Conferences Education (Ph.D.-level) (Updated on 2012-06-03)

Key for "Course Material":

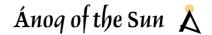
B: Book

RA: Research Articles

CD: CD-ROM, DVD-ROM or USB

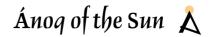
## Conference Paper Sessions (Ph.D.-level Presentations of Latest Research)

Conference / Symposium	Dates	Duration	Conference Material
		$1 \text{ day}{=}7.5 \text{ hrs}$	
CVPR www.pamitc.org/cvpr13/	2013	3  days	(CD)
Visionday www.visionday.dk	2013	1 day	
Visionday www.visionday.dk	2012	1 day	
EuroGraphics www.eg.org	2012	$3.5  \mathrm{days}$	'Computer Graphics Forum Volume 31 Number 2' (B, RA)
ICCV www.iccv2011.org	2011	5  days	(CD)
SIGGRAPH www.siggraph.org/s2011/	2011	4 days	'acm Transactions on Graphics August 2011, Vol 30, Nr 4' (B, RA)
CVPR www.cvpr2011.org	2011	3  days	(CD)
Visionday www.visionday.dk	2011	3  days	
EuroGraphics www.eg.org	2011	$3.5  \mathrm{days}$	'Computer Graphics Forum Volume 30 Number 2' (B, RA)
VISAPP www.eg.org	2011	3 days	(CD)
SIGGRAPH www.siggraph.org/s2010/	2010	4 days	'acm Transactions on Graphics August 2010, Vol 29, Nr 4' (B, RA)
Visionday www.visionday.dk	2010	3  days	
EuroGraphics www.eg.org	2010	$3.5  \mathrm{days}$	'Computer Graphics Forum Volume 29 Number 2' (B, RA)
SIGGRAPH www.siggraph.org/s2009/	2009	4 days	'acm Transactions on Graphics August 2009, Vol 28, Nr 3' (B, RA)
Visionday www.visionday.dk	2009	3 days	Online slides
EuroGraphics www.eg.org	2009	3 days	'Computer Graphics Forum Volume 28 Number 2' (B, RA)
SIGGRAPH www.siggraph.org/s2008/	2008	4 days	'acm Transactions on Graphics August 2008, Vol 27, Nr 3' (B, RA)
Volume and	2008	1 day	'Volume and Point-Based Graphics 2008' (B, RA)
Point-Based Graphics			
Symposium on	2008	3 days	
Geometry Processing			
EuroGraphics www.eg.org	2008	3  days	'Computer Graphics Forum Volume 27 Number 2' (B, RA)
Parallel Graphics	2008	2 days	
and Visualization			
EuroGraphics www.eg.org	2007	3  days	'Computer Graphics Forum Volume 26 Number 3' (B, RA)
International Symposium	2007	$1.5  \mathrm{days}$	'Volume Graphics 2007' (B, RA)
on Volume Graphics			
Symposium on Point-Based	2007	$0.5  \mathrm{days}$	'Symposium on Point-Based Graphics 2007' (B, RA)
Graphics (I missed 1st day!)			
SIGGRAPH www.siggraph.org/s2007/	2007	4 days	'acm Transactions on Graphics July 2007, Vol 26, Nr 3' (B, RA)
SIGGRAPH www.siggraph.org/s2006/	2006	4 days	'acm Transactions on Graphics July 2006, Vol 25, Nr 3' (B, RA)
SIGGRAPH www.siggraph.org/s2005/	2005	4 days	'acm Transactions on Graphics July 2005, Vol 24, Nr 3' (B, RA)
SIGGRAPH www.siggraph.org/s2004/	2004	4 days	'acm Transactions on Graphics Aug. 2004, Vol 23, Nr 3' (B, RA)
SIGGRAPH www.siggraph.org/s2001/	2001	3 days	'SIGGRAPH 2001 Conference Proceedings' (B, RA)
SIGGRAPH www.siggraph.org/s2000/	2000	3 days	'SIGGRAPH 2000 Conference Proceedings' (B, RA)
SIGGRAPH www.siggraph.org/s99/	1999	3 days	'SIGGRAPH 1999 Conference Proceedings' $(\mathbf{B},\mathbf{R}\mathbf{A})$



## Additional Conference Courses (Mostly Ph.D.-level) (Last Updated 2009)

Course	Conference	Dates	Duration 1 day=7.5 hrs	Course Material
GPU-Based Volume Ray-Casting	EuroGraphics	2009	1 day	
with Advanced Illumination (Tutorial T4)	www.eg.org			
Interactive Shape Modelling	EuroGraphics	2009	$0.5  \mathrm{day}$	
and Deformation (Tutorial T3)	www.eg.org			
Mesh Parameterization:	SIGGRAPH	2007	1 day	'Mesh Parameterization Methods
Theory and Practice (course 2)	www.siggraph.org/s2007/	200.	1 day	and Their Applications' (B)
Digital Modeling of the	SIGGRAPH	2006	3 hours	'SIGGRAPH 2006 Full
Appearance of Materials (course 12)	www.siggraph.org/s2006/			Conference DVD-ROM' ( $CD$ )
Discrete Differential Geometry: An	SIGGRAPH	2005	1 day	'SIGGRAPH 2005 Full
Applied Introduction (course 14)	www.siggraph.org/s2005/			Conference DVD-ROM' (CD)
Discrete Differential Geometry: An	SIGGRAPH	2005	1 day	'SIGGRAPH 2005 Full
Applied Introduction (course 14)	www.siggraph.org/s2005/	2004	1 3	Conference DVD-ROM' (CD)
Point-Based Computer Graphics (course 6)	SIGGRAPH	2004	1 day	'SIGGRAPH 2004 Full Conference DVD-ROM' ( <b>CD</b> )
Graphics (course o)	www.siggraph.org/s2004/			Conference DVD-ROW (CD)
How to Give a Great	SIGGRAPH	2001	3 hours	'How to Give a Great
SIGGRAPH Talk (course 41)	www.siggraph.org/s2001/			SIGGRAPH Talk' (B, CD)
Aquisition and Visualization	SIGGRAPH	2001	3 hours	'Aquisition and Visualization
of Surface Light Fields	www.siggraph.org/s2001/			of Surface Light Fields' $(\mathbf{B}, \mathbf{CD})$
(course 46) (only first half)				
State of the Art in	SIGGRAPH	2001	1 day	State of the Art in
Monte Carlo Ray Tracing	www.siggraph.org/s2001/			Monte Carlo Ray Tracing
for Realistic Image Synthesis (course 29)				for Realistic Image Synthesis' (B, CD)
Advanced Global	SIGGRAPH	2001	3 hours	'Advanced Global
Illumination (course 20)	www.siggraph.org/s2001/	2001	o nours	Illumination' (B, CD)
Obtaining 3D Models	SIGGRAPH	2001	3 hours	'Obtaining 3D Models
with a Hand-Held	www.siggraph.org/s2001/			with a Hand-Held
Camera (course 2)				Camera' $(\mathbf{B}, \mathbf{CD})$
Advanced Issues in	SIGGRAPH	2000	1 day	'Advanced Issues in
Level of Detail (course 41)	www.siggraph.org/s2000/		- 3333	Level of Detail' (B, CD)
Approaches for Procedural	SIGGRAPH	2000	1 day	'Approaches for Procedural
Shading on Graphics	www.siggraph.org/s2000/			Shading on Graphics
Hardware (course 27)				$Hardware'(\mathbf{B}, \mathbf{CD})$
A Practical Guide to	SIGGRAPH	2000	3 hours	'A Practical Guide to
Global Illumination using	www.siggraph.org/s2000/			Global Illumination using
Photon Maps (course 8)	CICCDADII	9000	2 1	Photon Maps' (B, CD)
Developing Efficient Graphics Software	SIGGRAPH	2000	3 hours	'Developing Efficient Graphics Software' ( <b>B</b> , <b>CD</b> )
(course 6) (only first half)	www.siggraph.org/s2000/			Graphics Software (B, CD)
(course o) (only mist han)				
Subdivision for Modelling	SIGGRAPH	1999	1 day	'Subdivision for Modelling
and Animation (course 37)	www.siggraph.org/s99/			and Animation' $(\mathbf{B}, \mathbf{CD})$
Advanced RenderMan: Beyond	SIGGRAPH	1999	1 day	'Advanced RenderMan:
the Companion (course 25)	www.siggraph.org/s99/	40		Beyond the Companion' (B, CD)
From Fourier Analysis	SIGGRAPH	1999	1 day	'From Fourier Analysis
to Wavelets (course 5)	www.siggraph.org/s99/			to Wavelets' $(\mathbf{B}, \mathbf{CD})$



## Other Education (Books, Research Articles etc.)

Mostly covers things I learned myself. There are other ways to learn than from schools, universities and conferences.

	Key for "Material":
<b>B</b> :	$\mathbf{B}$ ook
$\mathbf{S}$ :	Specification
$\mathbf{R}\mathbf{A}$ :	Research Articles

Topic	Material	
Semantics of	'Types and Programming Languages' (B)	
programming languages	'The Formal Semantics of Programming Languages' (B)	
	'Programming Languages: Concepts and Constructs' (B)	
	'The Definition of Standard ML' ( <b>B</b> , <b>S</b> )	
	Research articles $(\mathbf{R}\mathbf{A})$	
Compiler technology	'Modern Compiler Implementation in ML' (B)	
	'Compilers, Principles, Techniques & Tools' (B)	
	'Advanced Compiler Design Implementation' (B)	
	'The Implementation of Functional Programming Languages' (B)	
	'Partial Evaluation and Automatic Program Generation' (B)	
	Research articles $(\mathbf{R}\mathbf{A})$	
Programming	Material about specific languages and APIs (see my skill list)	
RenderMan	'The RenderMan Companion' (B)	
	'Advanced RenderMan: Creating CGI for motion pictures' (B)	
	'The RenderMan Interface Specification' (S)	
3D Computer Graphics	The RenderMan material listed above	
The state of the s	'Principles of Digital Image Synthesis' (B)	
	'Advanced Animation and Rendering Techniques' (B)	
	'Computer Graphics: Principles and Practice' (B)	
	'3D Computer Graphics' (B)	
	'Advanced Global Illumination' (B)	
	'Realistic Image Synthesis Using Photon Mapping' (B)	
	'Radiosity and Global Illumination' (B)	
	'Point-Based Graphics' (B)	
	'Level Set Methods and Dynamic Implicit Surfaces' (B)	
	'Introduction to Implicit Surfaces' (B)	
	'Real-Time Rendering' (B)	
	'Real-Time Volume Rendering' (B)	
	'3D Game Engine Design' (B)	
	'Graphics Gems I, II, III, IV' (B)	
	'High Dynamic Range Imaging' (B)	
	'Texturing and Modelling' (B)	
	'The Art and Science of Digital Compositing' (B)	
	'Building a 3D game engine in C++' (B)	
	Many SIGGRAPH Course Notes Books (B)	
G . Tri	Many research articles (e.g. SIGGRAPH, EuroGraphics) (RA)	
Computer Vision	'Multiple View Geometry' (B)	
	'An Introduction to Computer Vision Techniques and Algorithms' (B)	
	'Computer Vision Algorithms and Applications' (B)	
	'3D Computer Vision' (B)	
	'Image Alignment and Stitching: A Tutorial' (B)	
	Many research articles (e.g. CVPR, ICCV, ECCV) (RA)	
Misc	'The CORBA specifications' (S)	
	'Developing Business Applications with OpenStep' (B)	
	'Artificial Intelligence Agents in Virtual Reality Worlds' $(\mathbf{B})$	

