CV Torben Trindkær Nielsen

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PROFILE

Dedicated software developer with years of experience in embedded software and software development on Windows, Linux, and UNIX systems, with many more productive years ahead.

Throughout my career, I have worked in multiple areas, telecommunication, profesional audio and video encoders, headsets and bioscience; and I have consistently demonstrated the ability to understand and align both the technical and business aspects of product development in each of them.

Being a team player, I work best in groups with others, not only software developers, but also the other professional groups in the company and business area. I have with success been doing pair-programming resulting in fast developed effective solutions and with the benefit of knowledge transfer among the group.

PRIVATE

Married, with two adult non-resident children.
Playing badminton with my wife and friends.
Running twice a week with old colleagues, and having participated in DHL stafet and Royal Runs.
Active football player in Måløv Boldklub, where we, as the oldest team, have formed a small association of about 40 members with me as chairman, with our own statutes and social events all around the year.

TECHNICAL SKILLS

- **Languages**: C, C++, C#, Java; scripting languages including Lua, Tcl
- **Platforms**: Windows, Linux, UNIX, Embedded Systems
- **Frameworks & Libraries**: .NET, OpenCV, wxWidgets
- **Databases**: Oracle, PostgreSQL, mySQL, Microsoft SQL Server, SQLite
- **Version Control:** SVN, CVS, ClearCase, Visual SourceSafe
- **Installers & Deployment**: Inno Setup, NSIS
- **Domains**: Bioscience Instrumentation, Scientific Software, Image Analysis, Electrophysiology, Telecommunications Systems, Instrument Control
- **Familiar Technologies:** Python, Git, Docker, Virtual Machines.

Sophion Bioscience - Software Developer (bioscience)

Period: 2017 - 2026
Responsibilities:

- Developed analysis of data recorded by existing instruments QPatch and Qube, and presentation of those data on Windows.This also included improving exiting methods and fixing errors.
- Control of instruments QPatch and Qube on Windows and Linux, including new functions and fixing errors.
- Explored options and methods for the innovation and new technology project Organ-On-a-Chip.

Achivements:

- Mainly due to my mathematical background, I successfully improved several existing and created new analysis methods securing the QPatch and Qube stayed in top of advanced patch clamping instruments.
- Became the main expert on deploying the software using first NSIS, then later introducing Inno Setup as a better alternative.
- Became the main expert on databases, updated deployment and software to use Oracle 19, also introduced PostgreSQL in the company.
- Developed all the PC software for the Organ-On-a-Chip prototype, controlling the
- instrument:
  - setting up electrical stimulation of the muscle tissues
  - moving cameras to relevant positions
  - recording data (video) : 4 video streams each at 150 frames per second, compressed via NVIDIA GPU and saved to rotating hardisks on the fly
  - analysis and presentation of data: calculating muscle contractions in the videos and afterwards time series analysis of those contractions.

  The prototype software was used by Rie Kjær Christensen to generate images, plot and results in her Ph.D thesis at DTU.
  The project ended up being the first extension of the product portfolio, stepping up from cell analysis to analyse muscle and heart tissue matured from induced pluripotent stem cells.
  It is now sold under the Sophion brand Ethica M.

Tools:

- Java, C++, C#
- Subversion (SVN) version control system
- NSIS, Inno Setup installations program tools
- OpenCV, wxWidgets
- Oracle database, mySQL, PostgreSQL

ChemoMetec A/S - Software Developer (bioscience)

Period: 2007 - 2017
Responsibilities:

- Developed PC software for the company's 2nd generation fluorescence microscopes.
- Main PC software architect and developer for the company's 3nd generation fluorescence microscopes.
- Supported a technology project for advanced analysis of milk.

- Updated the company's stand-alone 1st generation fluorescence microscopes to be able to transfer data to newer Windows systems (Windows Vista/7 from previously only Windows XP).

Achivements:

- Introduced and added software version control for the company software (CVS).
- Introduced and added deployment of the company software (Inno Setup).
- Completed the 2nd generation fluorescence microscope PC software into a marketable product.
  It contained a simple scripting language to allow biologist to develop dedicated protocols for analysing cells. I extended that scripting to a full-blown interpreter with variables, procedures with parameters, if statements, loops etc. Most of the syntax similar to standard 3rd party scripting lanuages.
- Main developer on the 3rd generation fluorescence microscope PC software with highly advanced image analysis and data presentation on both Windows and Ubuntu. The software also complied with FDA's 21 CFR part 11 regulations.
- Created PC software for controlling piezoelectric actuators for the milk analysis project, which was later discontinued.
- Specified and outsourced Windows PC software to transfer data from the 1st generation fluorescence microscopes, so that this could also be done on newer Windows systems, all within time and budget.
- Collaborated with the American company De Novo Software to develop the ImageCytometry standard format to store collected data for exchange with other systems; previously we could only store data in the FlowCytometry format.

Tools:

- C/C++, Lua
- CVS version control system
- Inno Setup installations program tool
- OpenCV, wxWidgets
- SQLite database

GN Netcom - PC Software Engineer (headsets)

Period: 2006 - 2007

Responsibilities:

- Development on Windows of a framework for controlling USB headsets, especially in connection with integration to IP telephony.
- Embedded software in headsets as a substitute for 2 who went on maternity leave.

Achivements:

- Documented and implemented framework using the USB HID specifications.
- I introduced Inno Setup to the company.
- I implemented interface between the company's headsets and Skype using the developed framework, so that it was possible to use headsets to initiate and receive Skype IP telephony calls. Was used internally in the company and as a demonstration of the use of the developed framework.
- I implemented necessary new features in headsets in embedded software, so that e.g. HW development was not on hold while the embedded software people were on maternity leave.

Tools:

- C# and .NET, C++, C (embedded)
- CVS version control system

- Inno Setup installations program tool

Scientific Atlanta (former BarcoNet, later Cisco) - Software Engineer (audio/video)

Period: 2000 - 2005
Responsibilities:
- Management of the company's professional audio/video encoders on the Windows platform.
- Control of the company's Axis ATM switch via Internet browser (Java applet).
- Management of in-sourced Alcor ATM switch for setting up end-to-end connections.
- Embedded software in video encoders.

Achivements:
- I developed an emulator for a next-generation audio device, enabling parallel development of the Windows user interface and significantly reducing overall project risk and development time. This was the first time that the user interface was finished before the device.
- I changed the handling of internal restrictions during a device user interface upgrade so that errors and missing bindings could be corrected and implemented in 2 hours instead of the previously up to several weeks of turnaround time.
- I designed simple generic upload/download of settings in the devices, which worked even with internal bindings of parameters to setup in the devices.
- I took over the Java applet controlling the Axis ATM switch when the main developer left the company. I added surveillance of the TCP/IP connection to the device, which resultet in pin-pointing a crash the the device software and not a bug in the Java applet.
- I implemented embedding of video into IP stream for video encoders.
- I specified and implemented synchronization of teletext in video encoders for the TV2 regions. Project was delivered on-time and without any errors.
- I specified and implemented set up of end-to-end ATM connections to Alcor ATM switch, which our salespeople were incredibly happy with.

Tools:
- C++, C, Java
- Visual SourceSafe, PVCS version control system
- Microsoft SQL server

NOKIA - Senior Specialist (mobile telecom)

Period: 1998 - 2000
Responsibilities:
- Development on NOKIA's SMI platform (HP UNIX main frame with CORBA) for setting up the mobile IN network at, among others, Sonofon and Mobilix.
- Project manager for upgrading SMI to new Oracle database version and additional new features on the SMI platform (small group of 4-5 developers).

Achivements:
- All new features were implemented by the project group and delivered on time.
- I designed n+1 protection of SMI server with about 300 lines of C++ and Java code. Originally it was specified by the Finnish side as 1+1 protection of the Oracle server, but the un-stable part was the SMI.

Tools:
- C++, Java, Tcl

- ClearCase version control system
- Oracle, CORBA

NetMan/DSC - Software Engineer (backbone telenet with optical fibers)

Period: 1993 - 1998, first employed at NetMan and worked as a consultant at NKT Elektronik. Then, when NKT Elektronik was acquired by DSC, I switched to a permanent position at DSC.
Responsibilities:

- Development on Digitial's TeMIP platform (Digital UNIX main frames) for control and management of SDH equipment, especially from NKT Elektronik, Marconi, DSC etc.
- Development of network functions on the same platform (operator controlled setup of end-to-end connections in the backbone network).

Achivements:

- I implemented the protocol for the NKT FOCUS equipment and collected alarms from there. Later they wanted to include my protocol handling software into the PC management system they had for the PDH systems.
- I implemented control and alarm collection from Marconi equipment (TCP/IP connection) and the first network functions. Here I also specified the interface between the network model and the many different types of equipment in the backbone network.
- I became involved in all network functions, both specifications, implementation and tests, etc., and the systems were sold to, among others, TeleDanmark and Telenor.
- I also took over support from an external company for the purpose of monitoring and managing DSC's own SDH switches. I specified what they should implement, as well as which tests should be performed upon handover.

Tools:

- C, C++, Tcl
- CVS version control system
- Oracle database

DIKON/DIAX Telecommunications A/S - Software Engineer

Period: 1988 - 1993
Responsibilities:

- Development of software for digital telephone exchanges.
- Specified and implemented functions for the new local radio stations (DIRA) in collaboration with JTAS.
- Responsible for the operating system on the 1st generation exchanges.
- Software team leader for the development of a new product (DIAmuX) in collaboration with Ericsson.

Achivements:

- Developed functions on the upcoming MegaNet exchanges (pre-ISDN) with user-initiated 2 Mbit/s uplink connections in a project group of about 10 people. The MegaNet exchanges and their functions were a great success, so much so that the other major telecom companies such as Ericsson, Nokia and others wanted to develop the same types of exchanges. Nokia was unsuccessful, and Ericsson ended up buying the company DIKON and changing the name to DIAX (a contraction of DIKON and AXE). I was sent to the Telecom fair in Geneva in the summer of 1992, where we presented the MegaNet exchanges. Although we were a small company of about 120 employees at the time, we ended up on the front page of

the fair newspaper twice that week. MegaNet was used for video meetings, the transfer of X-ray images between hospitals in Germany and Switzerland, and local radio stations in Denmark.
PS: MegaNet was later out-dated with the fixed ADSL and fiber internet connections.

- Enabled the Danish telecommunications companies to transmit audio in CD quality between the local radio studio and the transmitter mast, and the local radiostations could even share the transmitter mast.
- As software teamleader for 3 newly employed engineers on DiamuX, I designed the software system, and we all implemented the needed features in the device.
  DIAmuX later became an advanced deferred subscriber step for Ericsson's AXE exchanges with the standardized V5.1 and V5.2 protocols.

Tools:

- Pascal, 8085 CPU assembler, proprietary embedded operating system, telecomm standards (CCITT, ETSI)
- SCCS version control system

Jydsk Telefon, Optolab- Student programmer

Period: Sommer of 1987, 3 months
Responsibilities:

- In connection with a commercial Ph.D project for the analysis and simulation of laser light through an optical fiber with Gaussian noise, a Fortran program was created that needed to be modified to perform many more simulations simultaneously (speed optimization).

Achivements:

- The speed optimization method was implemented by me, but the idea was theirs.
- In addition, I also optimized some approximations that were made in the original program. This was mentioned in the final business Ph.D report.

Tools:

- Fortran, numerical methods.

Education

1990-1992: First part of HD (erhversøkonomiske diplomprøve) at Midtjysk Handelshøjskolecenter in Herning.
Never started second part as I moved to Copenhagen.

1984-1988: Aarhus Universitet, master of science in mathematics
partly bachelor in computer science

1980-1984: Aarhus University, bachelor in mathematics and physics

Publications

2025: 2017: Partly involved in
Advancing contractile tissue engineering: Insights from Ethica M

2017: Partly involved in
Convolutional neural networks for segmentation and object detection of human semen
https://arxiv.org/abs/1704.00498 og Automatic Motility Analysis of Human Sperm

2014: Article on CodeProject.com, original link is
An-Implementation-Of-The-Connected-Component-Label,
but CodeProject.com is now closed. The article can be found via
The Wayback machine (web.archive.org) using link above,
or alternatively a copy I have at my own server server
An-Implementation-Of-The-Connected-Component-Labelling-Algorithm

1991: Springer Verlag in Lecture Notes in Mathematics series, Volume 1472,
Bose Algebras: The Complex and Real Wave Representations.