

CURRICULUM VITÆ

JOACHIM NILSSON

PERSONAL DATA

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Language skills: English, Swedish and some limited understanding of French

EDUCATION

1999–2000 Masters Degree in Real-Time Systems, Dept. of Computer Engineering, University of Mälardalen, Västerås. Thesis: *Modular Scheduling in RTLinux*, supervisors: Prof. Gerhard Fohler and Mikael Bergqvist, Frontec AB.

February 2000 Introduction to Tornado 2/VxWorks 5.4, Frontec AB.

Spring 1999 Separate courses in English, University of Mälardalen, Västerås.

1995–1998 Bachelor of Science in Computer Engineering.
University of Mälardalen, Västerås.

1994–1995 Service engineer for medical devices, civil service.

1993–1994 Fourth year college engineer, specialised in “Industrial electronics”.
Rinmansskolan, Eskilstuna.

1990–1993 Three years of technical college. Final work in *Nuclear Physics*.
Thomasgymnasiet, Strängnäs.

1981–1990 Elementary school, Vasaskolan, Strängnäs

THESIS

“Modular Scheduling in RTLinux”; a thesis work with Daniel Rytterlund <daniel.rytterlund@vmlinux.org>. The task was to examine existing real-time solutions for Linux, choosing the most suitable, from some basic criteria, and to implement a couple of well known scheduling algorithms. The goal was to lay a foundation for a completely modular scheduler capable of scheduling all types of tasks; sporadics, aperiodics and periodics.

Abstract

Traditionally, the only choice a software engineer had was closed source commercially, or in-house, developed real-time operating systems. Similarly, in the academic world several experimental real-time operating systems have been developed.

During the course of the last decade a new operating system and a new software development model has been gaining momentum. The Linux operating system has paved the road for the Open Source model of software development.

The freely available Linux operating system, combined with the expert knowledge of real-time systems within academia, has recently given birth to several Linux based real-time operating systems, some of which have proven to be viable alternatives to the existing commercial ones.

RTLinux, RTAI, KURT, and RED-Linux are the four real-time Linux based operating systems which have been examined. RTLinux, originating from the New Mexico Institute of Technology, is a hard RTOS characterised by a stand-alone real-time kernel running the standard Linux kernel as its lowest priority task. Similar in operation is RTAI, developed at Politecnico di Milano, which in addition employs an abstraction layer between the two kernels. As opposed to the two former hard real-time operating systems, KURT as well as RED-Linux are soft RTOSs. In the latter two cases the standard Linux kernel has been enhanced with real-time capabilities.

Our contributions consists of an investigation of the four mentioned RTOSs and an implementation of a modular scheduler for RTLinux. The implementation is mainly concerned with the separation of the scheduling policy from the scheduling module in RTLinux, making it a separate interchangeable module. This simplifies the development of various scheduling algorithms in RTLinux.

Included in the appendix are, not only a complete listing of our modifications to the source code, but also a glossary of acronyms and abbreviations. Moreover, we also provide an installation manual for RTLinux as well as a cross compiler tutorial. The installation manual covers topics such as retrieving necessary components, installing, configuring the real-time kernel and running the bundled examples. The cross compiler tutorial is a short description of how to build and use a cross development environment for an embedded system.

WORKING EXPERIENCE

2000–2002	R&D Engineer at RealFast Operating Systems AB, Västerås
1998–1999	Software developer at ABB Network Partner AB, Västerås
1996, 1997	Summer vacation temp., service engineer for medical devices at two hospitals, Kullbergska sjukhuset in Katrineholm and Nyköpings lasarett
1995	Service engineer for medical devices, Kullbergska sjukhuset, Katrineholm
1989	Summer holiday work in production, Hemglass AB, Strängnäs
1987, 1988	Summer holiday work in production, Drinkit AB, Strängnäs

CIVIL SERVICE

1994–1995 Service engineer for medical devices.
Pliktverket <<http://www.pliktverket.se/>>

REFERENCES

These persons are familiar with both my professional qualifications and character:

Lennart Lindh, Ph.D., RealFast AB, +46-(0)70-668 95 17
Lennart Lindh <lennart.lindh@realfast.se>

Prof. Gerhard Fohler, Ph.D., MRTC¹, Västerås, +46-(0)21 10 31 58.
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