CARSTEN THUESEN

Electrical Engineer (B. Sc.)

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30/04-1982

EDUCATION

Electrical Engineer (B. Sc.)
Engineering College of Aarhus
2005-2008

HTX student
Grenaa Technical Highschool
1999-2002

PROFILE

Embedded application developer in C++ for both bare-metal microcontroller designs as well as RTOS and Embedded Linux solutions. I'm a technical person that enjoy to dive deep into the details whenever I get an assignment – but at the same time I understand the need to get a task solved efficiently and within the deadline. I'm pragmatic and quality minded, and I always attempt to deliver the best solution within the scope of the project.

From my several years of experience I have tried many facets of product development. So even though my main focus has been software development I also have a broad understanding of hardware and mechanical design. It is always important to be able to look outside you own domain and be able to see the product as a whole. This ultimately results in the best solution and satisfied customers.

I'm a specialist at heart, but I'm also able to take the lead in the group. I have worked as a technical lead before, where I had to interact with colleagues, subcontractors, external consultants and production in parallel with core software development. Of course this is not optimal, but it is sometimes required to achieve the goals in the group and for the company. A challenge I'm willing to take.

WORK EXPERIENCE

Embedded Software Consulant (freelance)
Thucon ApS
2022-

Currently I have my own company, where I work as a freelance embedded software consultant.

A range of services I offer:

- Bringup of embedded linux on custom HW platform (yocto, buildroot etc.)
- C++ application development
- Embedded driver development (both for bare-metal and linux targets)
- Protocol implementation
- Test and requirement specification

Embedded Linux Consulant
Homatic A/S
2022

Worked as an Embedded Linux consultant. The main tasks was to implement yocto recipes, patch and configure kernel drivers and to implement new user space services written in C++.

Main technologies:

COURSES

Master in Technical IT (1. sem)
2013

1. semester of master degree in Technical IT:

- Systems Engineering
- Advanced Digital Signal Processing
- Information Theory and Coding
- Nonlinear Signal Processing and Pattern Recognition
- Computer Vision
- Wireless Sensor Networks

ESD-course
2012

Handling of ESD challenges in production. The course was held by HYTEK.

LabVIEW Core 2
2011

Event-driven programming, Programmatic control of user interface, Techniques to optimize reuse of existing code, Use of binary file I/O functions, and error handling practices.

Fuzzy Control (web course)
2011

fuzzy set theory, fuzzy logic, modelling, linear controller design, controller test, fuzzy linear controller, fuzzy nonlinear controller, and self-organising control

LANGUAGES

Danish ●●●●●
English ●●●●○
German ●○○○○

- Modern C++
- Embedded Linux, Yocto
- LoRaWAN
- NFC
- GSM/GPRS

Development Engineer and Team Lead
ROMO Wind A/S
2015-2022

Technical lead and responsible for ROMO Winds embedded linux platform. Implemented the patented measurement algorithms for the iSpin sensors to accurately compute the wind in front of the turbine. The algorithms were implemented in C++.

Gitlab was used both for source code repositories and to make daily builds and deploy releases via the integrated CI/CD pipelines.

To be independent of any host environment and to support CI/CD, docker containers were used extensively. On top of that docker was used to maintain and scale the backend of ROMO Winds SCADA system. Finally docker was used to share demo applications with customers and to work more efficiently with third parties to align protocols and interfaces before integration in the turbines.

Besides being an application programmer I also had to handle suppliers, manufacturers and customer requests (making offers) as well as doing technical support with the installation team.

Main technologies:

- Modern C++
- Embedded Linux, Yocto
- Docker
- Git, gitlab

Protocols:

- Modbus
- CANbus
- CANOpen

Software Engineer
PR Electronics A/S
2013-2015

Part of the development team that created the PR 7501 Field-mounted HART display.

My main contributions was to introduce and lead C++ and RTX RTOS for embedded systems (Freescale Kinetis Cortex-M0+ MCUs) in the R&D department as part of the PR 7501 Field-mounted HART display (link).

S K I L L S

Programming

- Modern C++
- C
- Python
- Bash
- LabVIEW

Tools

- Git, Gitlab, CI/CD
- Docker, Docker swarm
- Nginx, Reverse Proxy
- JIRA, Confluence
- Visual Studio Code
- KiCAD, EasyEDA
- GCC, Make, Bash

Platforms

- Linux, Arch, i3wm
- FreeRTOS, Zephyr
- Yocto, Prevas Industrial Linux (PIL)
- Buildroot
- Keil µVision, Keil RTX RTOS
- STM32CubeMX, Code generator

Protocols

- Modbus
- CANbus & CANOpen
- HART 5/7
- Bluetooth
- NFC

Processors

- Microchip (PIC, AVR)
- STM32
- Freescale (Kinetis)
- Beaglebone, Raspberry Pi
- NXP (i.MX6, i.MX8)

Software Engineer

Dantherm Power A/S
2009-2012

Responsible for implementing and maintaining controls for micro power plants (uCHP). The power plants were based on natural gas reformers and LTPEM fuelcells. All controls were done in LabVIEW.

Primary maintainer on a big inhouse core library based on OOP in LabVIEW, to increase code-reuse between multiple projects and products.

Part of the everyday work was to model, implement and tweak classical regulators (PI, PD and PID) to control pumps, heaters, compressors etc. - and to present realtime measurements on a GUI to the scientists and technical people in the team.

To keep cost down and to be flexible in the construction of uCHP systems, Beckhoffs vast portfolio of PLC modules were used as the DAQ platform.

Development Engineer

T&O Stelectric A/S
2008

Part of team developing software to control LTPEM fuelcells.

Were responsible for implementing FAT16 file system onto a SD card, and to introduce SVN in the team.

Engineering internship

Carlo Gavazzi Industri A/S
2007

Main focus area was to introduce new measurement principles for capacitive and optical sensors.

12 months conscription

Den Kongelige Livgarde
2002-2003

Served as a private at the Royal Guard.

PERSONALITY

- Specialist
- Detailed
- Pragmatic
- Listener
- Teamplayer

PRIVATE LIFE

My sparetime is used for diving into technical and nerdy stuff. Sometimes it is work related, where I have to understand some details – other times it is to try new technologies.

Apart from that I enjoy running in our local forrest, and to walk with my wife and our dog.