



Mikkel Kirkgaard Nielsen

Tjaereborg Stationsvej 1, 1. sal • 6731 Tjaereborg, Denmark • +45 28139066 • cv@mikini.dk

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○ Profile

Software developer and architect with a hardware background, possessing relaxed attitude, analytical and communicative skills. Always striving for technical perfection but has a well developed commercial sense.

Broad experience within the field of embedded software on numerous hardware platforms, operating systems and programming languages. Core competency lies in the intersection between hardware and software.

Also experienced with development, operation and administration of back-end web-based server applications, solutions and deployments.

Pitches generic, configurable and modular architectures in the pursuit of attaining flexible and reusable system components. Dedicated and fierce solution hunter when faced with a problem that needs to be solved.

Advocating standardisation and cooperation on a technical level wherever possible. Firm believer in open and collaborative development as practiced in the FOSS (Free & Open Source Software) communities.

Family status

Single

Two daughters born 2001+2005

Born

1977-01-17

○ Education

B.Sc. E.E., Bachelor of Science in Electronic and Electrical Engineering Digital Signal Processing (DSP)

Aalborg Universitet Esbjerg (Esbjerg, Denmark)

1997 - 2001, 1st - 7th semester

High school (STX, studentereksamen)

Esbjerg Gymnasium (Esbjerg, Denmark), Aarhus Akademi (Aarhus, Denmark)

1996 - 1997, 3g, Aarhus

1993 - 1996, 1g - 3g, Esbjerg

Primary school

Blåbjerggårdskolen (Esbjerg, Denmark), Nuussuup Atuarfia (Nuuk, Greenland)

1983 - 1989, 0th-5th grade, Denmark

1989 - 1992, 5th-8th grade, Greenland

1992 - 1993, 9th grade, Denmark

○ Skills

Embedded software development

Serial based communication (RS232/RS485/TTL/SPI/I2C/CAN/USB/Modbus RTU)

Device drivers (proprietary operating systems/Linux kernel)

MCU interrupt routines

Concurrent and realtime programming

Generic middleware layers

GUI programming (Ultimate++, Ogre, CEGUI, wxWidget)

Hardware platform experience

m68k based; MC68331

x86 based; dedicated boards using SoM STX, COM-Express and PC/104 form factor

ARM based; EFM32HG/Cortex-M0+, EFR32BG/Cortex-M4, STM32F103/Cortex-M3

(Blue/Black Pill), AM3358/Cortex-A8 (BeagleBone), i.MX6/Cortex-A9

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AVR based; ATmega328P (Arduino Uno)
Other; ESP8266/Xtensa L106

Software platform experience

VRTXmc realtime kernel
Linux kernel (customisation, patching & building, driver maintenance)
GNU user space tools
Debian/Ubuntu based NU/Linux distributions
Yocto embedded GNU/Linux meta-distribution
POSIX API (ISO/IEC 9945, IEEE Std 1003.1)
Ultimate++ (C++ framework)

Back-end platform experience (cloud)

Ubuntu 16.04 Server
Apache HTTP server
REDIS cache
Mosquitto MQTT broker
Firebird RDBMS
VMware based virtual hosting environment
Microsoft Azure Cloud environment

Hardware experience

Telit GE864/xE910 (GSM/UMTS/LTE modems)
u-blox M8 (GNSS/GPS receiver)

Protocols experience

MQTT - loose coupled lightweight messaging (OASIS, ISO/IEC 20922)
NMEA - GNSS/GPS geo data (NMEA 0183)
OPC UA - industrial control (IEC 62541)

Programming languages

ISO/ANSI C (Microtec m68k, GCC x86, GCC Atmel AVR)
ISO C++ (Microtec m68k, GCC x86)
POSIX Shell scripting (GNU Bash)
PHP (server side scripting)
Javascript (Node.js console application)
Python (Telit Easy Script in embedded modem, various minor glue scripts)
Java (JRE desktop / JavaCard smartcard application)
Interest in various other high level languages (LISP, Go, REBOL, Clojure, Rust, GNU Guile, Erlang/Elixir etc.).

Preferred tools

POSIX shell (command line)
Emacs
Git

Other experiences, tools and platforms

Subversion
MKS RCS
Redmine project management
Trac issue management
Jira issue management
ThingWorx IoT platform
Telit AppZone IDE (Eclipse based)
CODESYS PLC environment (IEC 61131)
Electronics schematic reading capabilities
Curious, but lacking experience, about various HDL languages (VHDL, Verilog, Chisel etc.).

Human languages

Danish, native textually and orally
English, near native textually and experienced orally
German, somewhat intelligible orally, not recommended textually
Generally very meticulous about written communication

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○ Experience

2021-05-01 -> now (full time)
2007-03-01 -> 2021-04-30 ("on-the-side")
Mikini Services, Tjæreborg, Denmark

C*O, embedded and open source consultancy/freelancer

- Development of firmware for Silicon Labs EFR32 based RF controller platform, with E-Ink/EPD display, touch, proximity/ambient sensor and custom UI framework
- Development and maintenance of firmware for remote measurement platform based on Telit modems in Python and C (AppZone IDE/C/Python)
- Development of firmware for STM32 based platform on top of Arm CMSIS, device driver for proprietary protocols and I2C IMU device (VSCode, GCC, Gitlab CI/CD)

2013-12-01 -> 2021-04-30
Vestergaard Company A/S, Bramming, Denmark

Software developer, Data Transmission Systems department

- Development of software component acting as gateway between OPC UA (industrial standard for process control) and ThingWorx (proprietary IoT platform).
- Daily operations of hosted PHP applications (web and M2M APIs) deployed in external datacenter (Linux server setup, management and administration in dedicated VMware vCloud environment and Microsoft Azure Cloud).
- Maintenance and development of embedded firmware for airport Ground Support Equipment (GSE) vehicles for aircraft deicing, water removal and refilling. Primarily in languages Delphi and C++.
- Development of software client using Node.js and MQTT for receiving, enhancing and relaying ADS-B transponder information from embedded devices deployed at airports to backend server for utilisation of flight data in deicing workflow.
- Upgrade of embedded Linux system from using standard distribution to using a reconfigurable build process utilising the Yocto meta distribution.
- General Linux and systems "go-to guy" for the department.

2001-02-01 -> 2013-11-31
CompuGame-DAE A/S (until 2012 Compu-Game A/S), Esbjerg, Denmark
Software developer (senior), R&D department

- Maintenance of firmware for existing AWP (amusement with payout) slot machine gaming platform at system level (ie. not specifically game design). m68k based hardware, VRTXmc microkernel, software mostly C intermixed with a few components in C++.
- Development and maintenance of firmware for an AWP interconnection box, which reports revenue and earnings directly to the Danish tax authorities. m68k based hardware, VRTXmc microkernel, software mostly C intermixed with a few components in C++.
- Member of industry wide standard group coordinating the development and operation of the above mentioned system for tax reporting.
- Key developer (HW specification, SW architecture design and SW implementation) of AWP gaming platform. x86 based hardware, Linux kernel, lower middleware layers in C, higher level application layers in C++.
- Release management and tool-chain responsible for the entire department.

○ Volunteer Experience

Member of board in local Esbjerg Danish Society of Engineers (IDA) association.
Co-founder of local makerspace GeekLabs.
Previously active in educational organisation Coding Pirates, Esbjerg.
Active in various open data and open source projects, including:

- Wikipedia, open encyclopedia
- OpenStreetMap, open geographical data
- TED Open Translation project, subtitling of the great TED talks

○ Personal Facts

Man of nature, working to achieve a minimalistic and resource-conscious lifestyle. Avoids alcohol, bottled water, heavily processed food and programmed television. Avid runner since 2008 (from 2012 mostly barefooted), completed 3 marathons. Enjoys driving a Honda NC700XA motorcycle.