

Ankit Kalbande

EMBEDDED ENGINEER · SECURITY EXPERT

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Summary

I am currently working as a 'Embedded Design and Security Engineer (Team Lead)' at EFR GmbH, Munich. I have more than 2 years of experience specializing in embedded Linux and bare-metal application development. I am interested in devising a better problem-solving method for challenging tasks, and learning new technologies and tools if the need arises.

Education

TUM(Technical University of Munich)

Munich, Germany

MASTERS OF SCIENCE IN COMMUNICATION ENGINEERING

Oct. 2013 - Oct. 2015

- Embedded System and Security
- Wireless Sensor Network
- Network Planning
- Software Defined Networking
- System on Chip Design
- HW-SW Co-design System
- VLSI Design
- Electronic Design Automation
- Broadband Communication

VNIT(Visvesvaraya National Institute of Technology)

Nagpur, India

BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING

Aug. 2009 - Sept. 2013

- Digital and Analog Circuit Designing
- Embedded System
- Analog and Digital Communications
- Mobile Communication
- Network Planning
- Real-time Operating System

Work Experience

Europäische Funk-Rundsteuerung(EFR) GmbH

Munich, Germany

EMBEDDED DESIGN ENGINEER & SECURITY EXPERT (TEAM LEAD)

Jun. 2016 - PRESENT

- Designed BSI compliant secured software architecture for SMGW (Smart Meter Gateway).
- Implemented secured Linux boot workflow for Atmel's SAM5D35 MCU (ARM cortex A5).
- Integrated smart card with SMGW and ported crypto related functionalities to smart card.
- Developed RESTful API client to communicate with energy management server.
- Making the SMGW CC(Common Criteria) compliant (ISO/IEC 15408).
- Tools :- Openssl, Buildroot, Wireshark, Eclipse, CMake, Doxygen etc.
- Protocol :- ISO7816, Ethernet, TLS/SSL 1.2, HTTP, NTP, SOCKSV5 etc.
- Platform :- Atmel's SAM5D35 (ARM Cortex A5), Broadcom's BCM2837(ARM Cortex A53).

Department for Integrated Systems, TUM

Munich, Germany

DIGITAL DESIGN AND RESEARCH ENGINEER

Dec. 2015 - May. 2016

- Ported the digital design from Chipit to ProFPGA hardware.
- Debugging the bugs in digital design of Network Adapter for InvasIC micro-architecture.
- Tools :- Synplify Pro, Chipitpro, Chipscope, Modelsim and grmon.
- Protocol :- AHB-AMBA, APB-AMBA.
- Platform :- Chipit (Xilinx Vertex-5), ProFPGA (Xilinx Vertex-7).

Department for Real-Time Systems, TUM

Munich, Germany

EMBEDDED DESIGN WERKSTUDENT

Aug. 2015 - Oct. 2015

- Developed RSSI based local positioning system for BLE module NRF51822 using iBeacon.
- Integrated the developed module with existing modules on ARM cortex-M0+ of NRF51822.
- Tools :- GCC, Eclipse, Keil, NRF Studio, GDB etc.
- Protocol :- BLE 3.0 (Bluetooth Low Energy), iBeacon.
- Platform :- NRF51822 (ARM Cortex M0), iBeacon.

Department for Integrated Systems, TUM

Munich, Germany

DIGITAL DESIGN WERKSTUDENT AND LAB TUTOR

Nov. 2014 - Jul. 2015

- Developed a new module for HW-SW Co-design lab and wrote the lab manual for the same.
- Developed a video processing accelerator on FPGA (Zynq-7000) and its software counterpart on ARM cortex-A9 processor.
- Modified Xillybus Linux driver to adapt with the application requirements.
- Lab tutor for HW-SW Co-design lab.
- Tools :- Vivado, ISE, Modelsim, GCC etc.
- Protocol :- Xillybus, AHB-AMBA, AXI-AMBA etc.
- Platform :- Xilinx Zynq-7000.

Siemens (Corporate Research)

WIRELESS RESEARCH WORKSTUDENT

Munich, Germany

Jan. 2014 - Jun. 2015

- Developed and implemented algorithm for motion sensing using RSSI values of Wi-Fi communication.
- Worked on distance measurement using time of arrival of Wi-Fi packets.
- Evaluated communication power of Atmel's Wi-Fi module.
- *Tools* :- Matlab, Wireshark, Tshark, GCC etc.
- *Protocol* :- IEEE 802.11 n (WiFi).

Prespicas Wireless Solutions Pvt.Ltd

BACHLORE INTERNSHIP

Pune, India

May. 2012 - Aug. 2012

- Developed a web-socket (over GPRS) based firmware updating system for Atmega128.
- Developed a custom bootloader for ATmega128 and ATmega8.
- Integrated flow sensor using I2C and SPI interface with ATmega128.
- Setting up FreeRTOS on ATmega128.
- *Tools* :- Eclipse, GCC, Eagle.
- *Protocol* :- GPRS, I2C, SPI.
- *Platform* :- Atmel's ATmega128 and ATmega8.

Project Experiance (Academic)

Department for Integrated Systems, TUM

Munich, Germany

CACHE COHERENCY IN MULTICORE, MULTI-TILE INVASIC ARCHITECTURE (MASTER THESIS)

May. 2015 - Sept. 2015

- Developed an IP core to establish coherency over the InvasIC micro-architecture using NoC.
- Performed all front end design related tasks.
- *Tools* :- ModelSim, Synplify(Synopsys), Vivado, GCC.
- *Protocol* :- AHB-AMBA, APB-AMBA.
- *Platform* :- Chipit (Xilinx Vertex-5).

Department for Electronics and Communication Engineering, VNIT

Nagpur, India

RFID BASED HEALTH ASSISTANCE & MONITORING SYSTEM (BACHELOR THESIS)

Aug. 2012 - Feb. 2013

- Developed a smart glove to monitor the vital heath parameters and log the data on server.
- Developed an Android application for client side and web-application for server side.
- Hardware & software integration of temprature sensor and humidity sensor using I2C; and heartbeat sensor.
- Hardware & software integration of Bluetooth communication module using USART.
- *Tools* :- Netbean, Eclipse, GCC, Eagle.
- *Protocol* :- Bluetooth, I2C.
- *Platform* :- Atmel's ATmega 128.

Skills

Programming Skills

- C, C++, Assembly
- Shell, Perl, Python Scripting
- MATLAB, Octave

- VHDL, Verilog, SystemC
- Android, JAVA
- Omnet++

Job-related Skills

- Embedded Linux Development
- Embedded Security
- Embedded System Architecture

- Linux Kernel Module and Driver Development
- Network Architecture and Protocol Development
- Digital Designing and Verification

Tools Skills

- Buildroot, Yocto
- GCC, CMake, Automake
- Wireshark, Tshark

- Openssl, MbedTLS, OpenPGP, OpenSC
- Eclipse, Netbean, Keil, Dave
- Vivado, ISE, Modelsim, Synplify Pro

Publications

- Ankit Kalbande and Divyesh Dixit "Guardian Protocol for Mobile Wireless Sensor Networks" International Conference on Electronics, Communication and Computational Engineering(ICECCE 2014), Tamil Nadu, India.
- Ankit Kalbande, Divyesh Dixit and K.M Bhurchandi "RFID Based Health Assistance and Monitoring System through a Handmounted Embedded Device" IEEE 4th ICCCN 2013, Tamil Nadu, India.
- Ankit Kalbande "Guardian Protocol for Wireless Sensor Networks" IEEE International Conference on Emerging Trends in Electronics, Communication and Networking 2012(Dec), SVNIT, Surat.
- Ankit Kalbande "Laser-based, Low cost and High Accuracy Local Positioning System (LPS)" ICECE(International Conference On Electronics and Communication Engineering) 2012, Chennai.
- Ankit Kalbande, Divyesh Dixit, Prof. Eswar Rao "Optimized, Low cost and Low Power Flash ADC Design" National Conference for VLSI Design and Embedded System 2011, CEERI, Pilani.