

# Christian Ammann, PhD

## Personal Data

Date of Birth 02.11.1981 in Hildesheim/Germany

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## Education

10/2009 – 04/2015 University of Osnabrück  
Doctorate (PhD)  
Final Degree: Doctorate in Natural Sciences  
**Final Grade: Very Good**

10/2003 – 04/2009 University of Oldenburg  
Computer Science focussing on „Embedded Systems“  
Final Degree: Diploma in Computer Science  
**Final Grade: Good**

07/1994 – 06/2002 Scharnhorstgymnasium Hildesheim, Allgemeine Hochschulreife

## Work Experience

07/2015 – Now **Freelancer, CEO**  
PhoboSys GmbH  
*Software Engineering*

03/2013 – 06/2015 **Software Developer**  
Fraunhofer Institute for Integrated Circuits IIS, Germany  
*Embedded Systems, Android Development, Smart Cameras based on OMAP4, Project Management, Trade Shows*

10/2009 – 02/2013 **Scientific Researcher**  
University of Applied Sciences Osnabrück, Germany  
*Implementation of Prototypes with Java, UML, Model-Driven Development, Conference Talks, Supervisor of Student Workers*

06/2006 – 06/2009 **Student Worker**  
University of Oldenburg, Germany  
*Design and Implementation of Algorithms with C++*

## Certificates

iSAQB Certified Professional for Software Architecture Foundation Level

## **Finished Projects**

### 11/2019 – Jetzt, Camera Developer

Inhalt: We develop an industrial camera solution which is controlled via the GVCP protocol. It runs on a ATSAME54 mikrocontroller and allows users to configure the IP address, read or write registers, etc.

Tools and Technologies: C, Atmel, Arm, Gigvision, GVCP, LwIP Stack, ATSAME54, UDP

### 01/2019 – 10/2019, Telephone Company

Inhalt: We develop video streaming functionality for a „Voice over IP“ telephone. The corresponding device runs an Android firmware. Therefore, the telephone app has to be extended to show a live video of the caller. Furthermore, we patch the Linux kernel and the underlying Android OS to stream H264 video of a connected web cam.

Tools and Technologies: C/C++, Linux, Android, Firmware, H264, Streaming, Ninja, Freescale

### 07/2018 – 12/2018, Energy Supplier

Inhalt: We develop a serverless web application for our customer which allows visualisation and configuration of power grids. It is hosted in the Amazon cloud. Instead of using conventional components like a web server and a relational database, the whole application consists of lambda functions and S3 buckets.

Tools and Technologies: Python, AWS Amazon Cloud, Lambda, S3 Buckets

### 07/2018 – 12/2018, Lighting Production Company

Description: In this project, we are developing an Android app which controls lighting installations. The app consists of a native and a C++ part, which is shared between iOS and Android. The C++ code contains the business logic and an automatically generated Java/Object-C interface.

Tools and Technologies: Android, C++, NDK, Boost, Djinni, REST

### 01/2017 – 06/2018, Retail

Description: The project goal is the implementation of retail store processes. Employees use a smartphone app to perform inventory counts, do complaints processing or order new products. An application server receives the results and writes them into a SQL database. Unit tests increase the software quality.

Tools and Technologies: Android, J2EE, REST, SQL, Jboss, Spring, Junit, Mockito

#### 01/2016 – 06/2018, Lighting Production Company

Description: Implementation of a test framework for an embedded system which controls lighting installations. It runs Linux and provides a REST interface. The interface is accessed by a smartphone app which allows users to dim lights, program a timer, etc. The aim of the project is to develop a framework which automatically tests the whole system which consists of a smartphone app, the embedded controller and cloud functionality.

Tools and Technologies: Android, Java, REST, DALI-Bus, Linux, Espresso, Scrum, Swing

#### 05/2015 – 11/2016, Startup Company

Description: Ampero is a startup company which develops a sharing system for powerbanks. A user with low power can rent and return a powerbank in restaurants, airports, etc. Therefore, a smartphone app is developed which contains a map, a QR code scanner and payment functionality.

Tools and Technologies: Android, Java, Cordova, Camera Autofocus

#### 07/2015 – 09/2015, Automotive Company

Description: Building an infotainment system for a car which consists of several touch displays and allows the integration of a smartphone using wireless technology. During the project, a first stage boot loader and a Linux kernel driver were written. The kernel driver controls a display deserializer chip.

Tools and Technologies: C++, ARM Assembler, Linux Kernel, Apple CarPlay, Android Auto, TCP, Renesas „System on Chip“

#### 11/2014 – 04/2015, Fraunhofer IIS

Description: Design of a prototype for trade shows which analyses customer emotions using face detection algorithms. The system consists of a native library which encrypts meta data like age, emotion and gender and sends it to a server to a server using a network interface.

Tools and Technologies: Java, C++, Android Studio, TCP, UDP, SSL

#### 07/2014 – 02/2015, Fraunhofer IIS

Description: Implementation of a camera application with Java which adds graphical overlays in real-time to a H264 video stream. A patent was submitted to protect the technology.

Tools and Technologies: Java, Android Studio, Git, OpenGL, Patents

#### 04/2014 – 06/2014, Fraunhofer IIS

Description: Implementation of a RTMP library for Android. It allows Android-Apps to stream video/audio content to services like Twitch or Ustream. Therefore, an x86 Linux library had to be crosscompiled for Android ARM architecture.

Tools and Technologies: C/C++, Git, GDB, Android Native Development Kit, RTMP, Wireshark

### 09/2013 – 02/2014, Fraunhofer IIS

Description: Design of an android-based, embedded camera system for cars which records the driving experience and allows an analysis for quality assurance. It reads data from an image sensor, processes the resulting video with a H264 encoder, stores the result in a SD card or streams via a network interface.

Tools and Technologies: C/C++, OMAP4 Processor from Texas Instruments, GDB, Git, MS Visio, Android Studio, Linux Kernel, RTP Protocol, Wireshark

### 10/2010 – 02/2013, University of Applied Sciences Osnabrück

Description: Implementation of an ultrasound-based system using Java which monitors workers and automatically detects failures in their assembly process.

Tools und Technologien: Java, UML, Xtext, Finite State Machines, Google Web Toolkit, XML

### 06/2014 – 06/2015, Private Project

Description: Controlling a photovoltaic module with a raspberry pi. The system measures power consumption and adjusts maximum power rating (Pmax). The core of this system is a modified C library.

Tools and Technologies: Linux für Raspberry-Pi, SSH, Serial Interface, Yasdi

## **Talks**

C. Ammann, Hyperion: Implementation of a PE-Crypter, Berlinsides 2012

C. Ammann, Implementation of Runtime Packer and -Crypter, Backtrack-Day 2011

C. Ammann, 8-Bit Wonderland - Executing custom Code on the Nintendo Game Boy, PH-Neutral 2010

## **Publications**

C. Ammann, Verknüpfung von formaler Verifikation und modellgetriebener Entwicklung, Dissertation, Erschienen in „FB06 – E-Dissertationen“, 29.4.2015

C. Ammann, Verification of Web Applications with a Model Checker, 2012, Will be published at: The 16th IASTED International Conference on Software Engineering and Applications

C. Ammann, Formal Verification of Web Applications, TAV 32 Workshop: Testen von geschäftskritischen und sicherheitskritischen Anwendungen, in Softwaretechnik-Trends, Band 32 Heft 1, 2011

C. Ammann, Verification of Behavioral Domain-Specific Languages with a Model Checker, 3rd International Asia Conference on Informatics in Control, Automation and Robotics (CAR 2011), Mechanical Engineering and Technology - Advances in Intelligent and Soft Computing, Vol. 125, ISBN 978-3-642-27328-5, 2011

C. Ammann, S. Kleuker und E. Pulvermüller, From Business Modeling to Verified Applications, In Workshop "Protokoll-basierte Modellierung von Geschäftsinteraktionen" at Informatik 2011, GI-Edition - Lecture Notes in Informatics (LNI), ISBN 978-3-88579-286-4, 2011

- C. Ammann, Verifikation von UML-Statecharts unter besonderer Berücksichtigung von Speicherverbrauch und Laufzeit des Model Checkers, in Softwaretechnik-Trends, Band 31 Heft 3
- C. Ammann, Integration von Model-Driven Development und formaler Verifikation in den Softwareentwicklungsprozess - eine Fallstudie mit einem 3D-Tracking-System, in Softwaretechnik-Trends, Band 30 Heft 4, 2010