



**Senior Security Analyst**

**Tim Hummel**

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**Abstract**

Freelance Security Analyst helping customers remote and on-site in evaluating their products, aiding development or consulting them on security.

In the last years I evaluated among others embedded Linux systems, mobile payment solutions, secure boot implementations, bootloaders, IoT products with and without TPMs, mobiles devices, entertainment systems, Trusted Execution Environments, TEE operation systems, car MCUs, white box crypto solutions, and transport cards.

To obtain the assets and test the security of a product, I apply techniques like source code analysis, design reviews, binary reverse engineering, PCB/hardware analysis, Fault Injection, and Side Channel Analysis.

As a Freelance Security Expert I am personally responsible for the quality of a project and execute it from start to finish. If available I coordinate the technical activities with a team.

Next to the security evaluations I give trainings to customers or develop new attack tools.

**Freelance Projects**

**Freelancer**  
Security Consultant/Expert

Delft, Netherlands  
Jan 2019 – Today

**Names & Details are omitted due to existing nondisclosure agreements**

**Network penetration test**

2 weeks  
Retail market

- On-site test simulating an attacker
- Testing various endpoints also simulating internal attackers
- Verifying internal application infrastructure and network design

**Development and architecture e-infrastructure component**

2.5 month  
E-Mobility market

- Software design based on existing hardware
- Secure boot, communication, data storage...
- Embedded Linux Operation System

- High security requirements
- C, Bash, Hardware Security, Production
- Consultancy & Training to employees

#### Security Evaluation Automotive Head Unit

1 month  
Automotive market

- Embedded Linux Operation System including Software and Hardware
- High safety and security requirements
- Team lead, 3 person team
- C, C++, Assembly, Hardware Security

#### Security Evaluation DRM System

2 month  
Pay TV market

- Linux, custom operation system, C, C++, Assembly
- Billions of assets and 300-500 Million users affected
- Team lead, 3 person team
- Training of junior analysts

#### Development white box crypto attack tooling

1 week  
DRM market

- Internal tool development C, Python

#### Multiple evaluations of Payment Systems

2 months  
Retail market

- Technical lead, single person projects
- Android, Mobile Security, Hardware Security, Java, C, Gitlab, Git

<b>Employment History</b>
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**Riscure B.V.**  
Security Analyst

Delft, Netherlands  
Jan 2015 – Jan 2019

- Performing evaluations mostly in the markets of embedded products, payment and content protection worth several 100.000€ a year
- Emerging technologies including Trusted Execution Environments and Host-Card Emulation
- Freeform or requirements driven evaluations
- Handling of technical communication to customers both remote and on-site
- Performing and designing of external and company internal trainings
- Development of hardware/software tools for evaluations
- Languages:
  - C, C++, Python, assembly x86, assembly MIPS, other assemblies, Bash , Shell, PHP, Java, Android Java, Kotlin,
- Operation environments:
  - Linux, embedded Linux, u-boot, ARM trusted Firmware, Android, custom systems
- Architectures:
  - ARM, x86, MIPS
- Development environments:
  - Eclipse CDT, Eclipse Java, GIT, Android Studio, IntelliJ IDEA

**Riscure B.V.**  
Graduate Researcher

Delft, Netherlands  
Feb 2014 - Juli 2014

- 6 month Thesis: "Exploring Effects of Electromagnetic Fault Injection on a 32-bit High Speed Embedded Device Microprocessor" ([www.essay.utwente.nl/65596/](http://www.essay.utwente.nl/65596/))
- ARM Assembly, C, Python, TI development environment

**Security Research Labs Berlin**  
Security Specialist

Berlin, Germany  
Nov 2012 - Dec 2013

- Development and research in the field of embedded devices, hardware security, Android and mobile communication.
- Phone, Malware and embedded system reverse engineering

**Festool GmbH**  
Junior Software Developer

Wendlingen, Germany  
May 2011 - Sep 2011

**University of Stuttgart**  
Java Tutor

Stuttgart, Germany  
Apr 2010 - Jul 2010

**Institute for machine parts**  
Research Assistant

Stuttgart, Germany  
Oct 2009 - Jan 2011

## Education

**EIT ICT Labs Masterschool**  
MSc Security and Privacy

Netherlands &  
Berlin, Germany  
May 2012 - Aug 2014

- Quadruple Security and Privacy Master at the TU Berlin, Germany and the TU Twente, TU Eindhoven RU Nijmegen, Netherlands
- Additional Innovation and Entrepreneurship Minor

**University Stuttgart**  
BSc Electrical and Information Eng.

Stuttgart, Germany  
Oct 2008 - Apr 2012

## Talks/Presentations

**Expert Panel Darknet**  
Dutch cartel office

De Hague, Netherlands  
2017

- Opportunities and risks of the Darknet for the Dutch cartel office

## Awards and Scholarships

**EIT ICT scholar**

May 2012 - Aug 2014

- European scholarship program awarded for academic excellence. Financial support for complete study costs, living costs and study related travel expenses.