

Jianhua Qu

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Chinese, Male, born in Dec.1979, Married, 14 years of work experience

Update by January 19, 2021

Technical skills

•Work flow

Editor— Vim, an awesome editor I have been using for a long time.

VCS— git, svn

Cryptography— openssl, I used its toolkit a lot in my work such as keypair generation, encryption/decryption, digest, signing, and so forth

shell— zsh, bash - I am using .oh-my-zsh a lot

Misc— screen, tmux, fzf, etc; Those help me work efficiently

•Programming Languages

Programming— C, C++, Java, Golang, ARM-Asm

Scripting— Python, Bash, CMake, Makefile, SQL

•My Special

Common skills— Linux coding; Socket programming; C/C++ programming; Design Pattern

TEE skills— ¹ ARM TrustZone® knowledge; Secure OS development experience;

Android skills— Android Application/Framework development experience;

•Something Learned by Myself just for fun

Database— MySQL, Redis, MongoDB

Cloud— docker, Kubernetes, AWS EC2(with testing account for free), Aliyun(with my own account)

Iot related stuff—

1 Iot system: Samsung things

2 Protocol: Coap

Job Experience

•March 2008~ December 2020, Samsung Electronics

January 2014~December 2020— Beijing Samsung Communications Technology Research Co., Ltd

Back to Beijing China from Korea, I led two projects, and, I am responsible for 2 applications design, architecture, and development.

- **passwordless payment feature**—

I led the second project on which I was the main developer, too.

This feature has been implemented by 2 middlewares to support both Alipay and WeChat Payment separately since they are not compatible. Those 2 middlewares are running only on Samsung Android devices.

¹TEE: Trusted Execution Environment

Alipay and WeChat are the giant android application in China. To support Alipay and Wechat using biometrics such as a fingerprint to do the passwordless payment, I develop those middlewares to support Alipay and WeChat using biometrics technology on Samsung devices. Also, I use TEE technology to persist user sensitive data and RSA key-pair.

The architecture of this feature consists of the Android AIDL interface, Android Service, Android HIDL interface, Linux service daemon, CA² library, and TA³.

Those features run in 3 chipset vendors: Qualcomm, Samsung Exynos, and MediaTek;

There are 2 passwordless payment standards from Alipay and Tencent respectively as below:

1 IIFAA⁴ (International Internet Finance Authentication Alliance)

2 SOTER⁵ is a biometric standard as well as a platform held by Tencent.

- **GlobalRoaming** GlobalRoaming is a complex Android application that includes a user interface logic, Service provider, SoftSIM logic, Middleware between Modem and Application Processor, Modem RIL, Modem Program, etc.

This is the first project I led, and as the main role of design and development.

This application would be used when users go abroad to access the local data service from a local telecom vendor. IMSI profile data from telecom vendors are stored into the TEE side for security reasons and implemented USIM related specifications of 3GPP to complete communication to BSS. During this project, I referred to and implemented ISO7816-4, ETSI TS 131-102/121, ETSI TS 135 208.

Also, I used cryptography algorithms, such as RSA, AES, to exchange cipher key and encrypt/decrypt data/cipher.

Those features run in 3 chipset vendor: Qualcomm, Samsung Exynos, and MediaTek;

It has been commercialized on Samsung devices since 2015, it was transferred to another subsidiary of Samsung;

January 2012~January 2014— Samsung electronics Korea Headquarter

Joined the Global Mobility Program to move to Headquarter for working in Suwon Korea;

- During those two years working in Korea, worked with Korean colleague to develop **Secure OS**⁶ based on Samsung Chipset Exynos. This was my first time known about TEE(Trusted Execution Environment). And, we conform with GlobalPlatform⁷ specification to implement Secure OS.

I was responsible for Device Driver's model development for a secure OS. And, I designed and implemented a secure LCD evaluation application. Because of that, I shared the quarter best employee award with my colleague.

March 2008~January 2012— Beijing Samsung Communications Technology Research Co., Ltd

- Android Application developer since 2010 I was a developer and maintainer of Android application of MusicPlayer;
- SAP(Samsung Application Platform) Application developer, this was a deprecated feature phone platform.

•July 2006~March 2008, TechFaith (NASDAQ: CNTF)

Linux driver developer— Worked in TechFaith

- Linux device driver engineer

I used to be a device driver engineer. My task was to develop device drivers for Linux mobile phones, such as LCD driver, Camera driver, FM driver, and so on. The application processors we always used were PXA270 and PXA310 delivered by Intel, now it belongs to Marvell.

²CA: Client Application

³TA: Trusted Application

⁴IIFAA: <http://ifaa.org.cn/>

⁵SOTER github: <https://github.com/Tencent/soter>

⁶Secure OS: works in the secure mode of ARM with trustzone supported

⁷GlobalPlatform: <https://globalplatform.org/>

- Board bring-up developer

Also, used to be a board bring-up developer, at that time, blob or uboot was a loader to boot the Linux kernel. My routine was that update a bootloader according to hardware design to load the Linux kernel.

Languages

•can speak and listen

Chinese, English, Korean

•can read and write

Chinese, English

Education

•Master Degree(Mechanical Manufacture and Automation Major)

September 2003~July 2006— China Agriculture University(<https://www.cau.edu.cn/>)

•Bachelor Degree(Mechanical Design Manufacture and Automation Major)

September 1999~July 2003— HeBei Agriculture University(<http://www.hebau.edu.cn/>)

Self Introduction

- My family and I are living in Stockholm Sweden now
- I am job hunting now since I just quit my job from Samsung Electronics(*Beijing China*) where I had been working for 12 years.
- My favorite job is to be a programmer, I like to learn new technical skills and to accept new challenges that could offer me new opportunities.
- It is nice to spend some quality time with my family; playing video games is one of our favorite activities. We also love sports activities such as playing table-tennis, hiking, jogging, etc.