Jia Wan

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EDUCATION

Queen's University **Sep. 2016 – Present**

❖ **Degree:** MSc ❖ **Major:** Computer Science

Huazhong University of Science and Technology **Sep. 2007 – Jun. 2009**

❖ **Degree:** MEng ❖ **Major:** Communication and Information Engineering

China University of Geosciences **Sep. 2003 – Jun. 2007**

❖ **Degree:** BEng ❖ **Major:** Communication Engineering

RESEARCH EXPERIENCE

Queen's Reliable Software Technology Group **Sep. 2016 – Present**

My research is in mobile security. I have implemented a complete Android app protection approach.

❖ ***App Cache Protection:*** Conduct the research and implement an app cache protection solution to defend the integrity of app behavior. The solution runs on Android Runtime (ART) and can be compatible with most of the recent Android versions (5 to 8). One paper is accepted by ISPEC 2017.

❖ ***App Anti-debugging:*** Implement a solution to protect app through anti-debugging, which can prevent app privacy from being leaked to attackers. The paper is written and on its way for submission.

INDUSTRIAL EXPERIENCE

Research Intern, Irdeto Corporation (Ottawa) **May. 2017– Aug. 2017**

Duty: *Develop a solution for app protection through anti-tampering and anti-debugging*

❖ ***App Anti-tampering:*** Analyze the latest version of ART and exploit the vulnerability of cache loading process to launch an attack. Implement a solution to defeat the cache tampering attack.

❖ ***App Anti-debugging***: launch Android instrumentation attacks for app behavior tracking and implement a solution to counteract debugging.

Senior System Engineer, IQIYI Corporation (shanghai) **Jun. 2014 – Aug. 2016**

Duty: *Android system and system app development for IQIYI TVGUO (a device like Chromecast)*

❖ ***Multiscreen Project Development:*** developed a system app on box and a protocol plug-in library for mobile application based on DLNA technology to share the digital media content (Movies, Music or Pictures) from phone to the TV screen. The library is implemented in Java for Android and C++ for IOS app.

❖ ***Voice Recognition Application:*** developed a mobile app and a system app for box to integrate voice wakeup, voice recognition, speech synthesizer so as to control the behaviors of box like movie selection by voice, operation guidance, etc.

❖ ***Music sharing:*** IOS application library development to receive music data from BT.

Software Engineer, Intel Asia-Pacific Research & development Ltd. (Shanghai) Oct. 2012 – Jun. 2014

Duty: *Android framework development on Intel phone/tablet boards based on Atom series CPU*

❖ ***Framework/App Debugging and Patching:*** solved issues like memory leak problems, instability and bad user experience (SystemUI, Gallery and Camera etc.). Submitted related patches to google android open source Gerrit and patches have been approved and merged in the latest android system.

- ***Multi-window UI Solution Design for Tablets:*** designed the UI and animation of the windows; Developed a multi-window demo designed for Application Engineer for exhibition
- ***Multi-display Demo Implementation:*** developed a demo supporting multi-display with multi-touch and different apps are responding to interaction separately on different screens.

Linux BSP Engineer, Marvell Technology Group Ltd. (Shanghai) Jun. 2009 – Oct. 2012

Duty: *PXA9xx and Armada series BSP development and technical supports*

- ***Power Management Driver Development:*** developed the drivers for PXA9xx series chips to enable dynamic frequency scaling and power saving modes management in Android devices
  - ✧ Designed the clock tree architecture to control modules' clocks
  - ✧ Implemented the system reboot and power off process
  - ✧ Conducted statistics on DDR, VPU, GPU performance, analyzed the statistical data and designed dynamic frequency management schemes to save power
  - ✧ Developed power management interfaces for engineers to debug and analyze
- ***Camera Driver Development:*** developed camera drivers for PXA9xx and Armada series chips which support front and rear cameras on mobile phone reference design platforms
  - ✧ Aligned camera sensor driver to support one sensor on different platforms
  - ✧ Wrote camera driver usage code for QA and HAL engineers' reference
  - ✧ Subscribe Linux media mailing-list, submit camera driver, report problems about common interface to open source community and patches proved
  - ✧ Gained solid knowledge about Linux media V4L2 and videobuf2 architecture
- ***Technical Supports for RIM:*** went to Canada for two months acting as technical support engineer to provide technical supports for RIM in developing Linux camera drivers, power management drivers and kernels (Nov. 2010 – Dec. 2010)

PROFESSIONAL SKILLS

- **Attacks on Android ART (1 years of development experience)**
  - ✧ Familiar about ART cache and method invocation mechanism, OAT and DEX structure. ART instrumentation toolkits development
- **Android Framework and Application Development (4 years of development experience)**
  - ✧ Framework GUI, multimedia framework, Input system, WMS, AMS, DMS development for feature differentiation; Surface Flinger, Binder architecture
  - ✧ Android system and application development, DLNA, UPNP technology
  - ✧ Develop IOS app library for data transmission through BT
- **Linux BSP Development (3 years of development experience)**
  - ✧ Linux camera framework V4L2 and its open projects: soc-camera, media controller
  - ✧ Linux power management architecture, such as cpufreq, cpuidle, devfreq, etc.
  - ✧ Linux drivers like I2C, RTC, keypad, touch screen, charger, battery, GPIO, LCD, sensor etc.
- **Linux Network Programming (2 years of development experience)**
  - ✧ Embedded environment and network domain development; TCP/IP protocol stack; Linux network and multi-thread programming
- **Programing Languages and Scripts**
  - ✧ C, C++, Java, JavaScript, Python, Shell script, Git integration

PUBLICATION

- "Defending Application Cache Integrity of Android Runtime" is accepted by ISPEC 2017.
- ZUO Dong-hong, **WAN Jia**.A p2p media streaming delivery scheduling algorithm for embedded system[J]. Journal of Chinese Computer Systems, 2009, 30(9):1882-1884.