



TAEJOON PARK

Principal Research Engineer
Samsung Advanced Institute of Technology
Mt. 14-1, Nongseo-Dong, Giheung-Gu, Yongin-Si,
Gyeonggi-Do, Korea 449-712
park.taejoon@gmail.com (e-mail)
82-10-9984-2389 (cellular)
82-31-280-9623 (office)
82-31-280-9555 (fax)

OBJECTIVE Research and teaching in software systems with emphasis on computer & network security as well as mobile & wireless networking.

EDUCATION **2005.7 UNIVERSITY OF MICHIGAN**, Ann Arbor, MI, USA
Electrical Engineering and Computer Science, Ph.D. (GPA: 8.357 / 9.0)
Dissertation LiSP: Lightweight Security Protocols for Wireless Sensor Networks
– Advisor: Prof. Kang G. Shin
– Committee: Prof. Stéphane Lafortune, Prof. Brian Noble, Prof. Mingyan Liu
1994.2 KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST), Taejon, Korea
Electrical Engineering, M.S. (GPA: 3.7 / 4.3) – Advisor: Prof. Hyung-Myung Kim
1992.2 HONGIK UNIVERSITY, Seoul, Korea
Electrical Engineering (*summa cum laude*), **B.S.** (GPA: 4.44 / 4.5)

RESEARCH EXPERIENCE **2005.8 ~ present SAMSUNG ELECTRONICS**, Gyeonggi-Do, Korea
Principal Research Engineer

- Lead a project on *lightweight* anti-virus/worm/spam/hacking technique for mobile handsets
 - Implement an *immune system* for mobile handsets inspired by biological immune system
- Lead/conduct a co-project with RTCL, University of Michigan (PI: Prof. Kang G. Shin)
 - Develop a scheme for *behavioral detection* of malicious programs on mobile handsets
- Lead/conduct a co-project with University of Illinois at Chicago (PI: Prof. Gyungho Lee)
 - Develop an architecture for *validating* low-level program control/data flows

2001.5 ~ 2005.7 UNIVERSITY OF MICHIGAN, Ann Arbor, MI, USA
Graduate Student Research Assistant

- Conducted research in security and routing in wireless sensor/ad-hoc networks
 - Developed an energy-efficient security framework, called *Lightweight Security Protocols* (LiSP), featuring secure routing, distributed & group-based key management, attack-tolerant services, soft tamper-proofing via program integrity verification, and intrusion detection
 - Developed Position-based Energy-Aware Routing for Large-scale ad-hoc networks (PEARL)
- Participated in the following research projects:
 - ONR and NRL-sponsored project that develops lightweight security protocol for sensor networks
 - NSF and Cisco-sponsored project that deals with software-based tamper proofing via program integrity verification in sensor networks
 - DARPA-sponsored project that makes tradeoffs among dimensions of security, performance and fault-tolerance in sensor networks

2000.2 ~ 2000.6 **LG ELECTRONICS**, Seoul, Korea

Senior Research Engineer

- Developed middleware for ATSC and DIRECTV-compatible HDTV systems, 2000

1994.2 ~ 2000.1 **LG ELECTRONICS**, Seoul, Korea

Research Engineer

- Developed middleware for ATSC and DIRECTV-compatible HDTV systems, 1999
 - Designed APIs for HDTV software systems
 - Designed/developed middleware for Advanced Program Guide (APG) processing
- Developed BskyB-compatible digital Set-Top Boxes (STBs), 1997~1998
 - Developed software for electronic program guide, quality control, and device serialization
 - Designed API for IEEE 1394 (Firewire) subsystem
 - Invented, and filed with USA, a format converter among digital interfaces
- Designed a CDMA module (per IS-95 spec) for PDAs with built-in cellular phones, 1996
- Developed HDTV systems with built-in DVCR, 1995~1996
 - Designed/developed an interface subsystem between HDTV and DVCR
 - Developed middleware for Electronic Program Guide processing
 - Authored or co-authored patents on interfacing techniques for digital devices
- Designed & developed copyright protection techniques for digital contents, 1994~1996
 - Invented **essential patents for the 4C (Philips, Sony, Pioneer & LGE) DVD licensing pool**
 - Designed copy protection (or DRM) algorithms for digital storage/broadcasting systems, leading to patents worldwide
 - Developed a prototypical copy protection system for HDTV

1992.3 ~ 1994.1 **KAIST**, Taejon, Korea

Research Assistant

- Conducted research in mobile wireless communications, 1993
 - Analyzed & evaluated performance of multipath fading channels
 - Proposed & developed a wideband fading channel simulation algorithm
- Conducted research in image processing & pattern recognition, 1992
 - Developed DSP software for image processing and pattern recognition

PUBLICATIONS **International Journal Papers**

- **Taejoon Park** and Kang G. Shin, "Secure Routing Based on Distributed Key Sharing in Large-scale Sensor Networks," to appear in *ACM Transactions on Embedded Computing Systems*, accepted November 2006.
- **Taejoon Park** and Kang G. Shin, "Soft Tamper-Proofing via Program Integrity Verification in Wireless Sensor Networks," *IEEE Transactions on Mobile Computing*, vol. 4, no. 3, pp. 297-309, May/June 2005.
- **Taejoon Park** and Kang G. Shin, "Optimal Tradeoffs for Location-Based Routing in Large-scale Ad Hoc Networks," *IEEE/ACM Transactions on Networking*, vol. 13, no. 2, pp. 398- 410, April 2005.
- **Taejoon Park** and Kang G. Shin, "LiSP: A Lightweight Security Protocol for Wireless Sensor Networks," *ACM Transactions on Embedded Computing Systems*, vol. 3, no. 3, pp. 634-660, August 2004.

Journal Papers in Submission

- **Taejoon Park** and Kang G. Shin, "Attack-Tolerant Localization via Iterative Verification of Locations in Sensor Networks," under revision at *ACM Transactions on Embedded Computing Systems*, revision submitted January 2007.

Book Chapters

- **Taejoon Park** and Kang G. Shin, "Optimal Tradeoffs for Location-Based Routing in Large-scale Ad Hoc Networks," Chapter 10 in *Performance Analysis of Mobile and Ad Hoc Networks*, Chansu Yu and Chita R. Das (Eds.), Nova Science Publishers, 2006. (invited contribution)

Conference and Workshop Papers

- Yixin Shi, Arnold Lee, Gyungho Lee, **Taejoon Park**, Tae-chul Jung, and Byung-chang Kang, "Indirect Branch Validation Unit for Secure Program Execution," IEEE Symposium on Low-Power and High-Speed Chips (COOL Chips), Yokohama, Japan, April 2007.
- Xin Hu, **Taejoon Park** and Kang G. Shin, "Attack-Tolerant Time-Synchronization in Wireless Sensor Networks," submitted to ACM SenSys, April 2007.
- Abhijit Bose, Xin Hu, Kang G. Shin, and **Taejoon Park**, "Behavioral Detection of Malicious Programs on Mobile Handsets," submitted to ACM SIGCOMM, February 2007.
- **Taejoon Park** and Kang G. Shin, "On Building a Lightweight Security Architecture for Sensor Networks," presented at the TRUST'06, *LNCS 4097: EUC'06 Workshops*, X. Zhou et al. (Eds.), Seoul, Korea, August 2006.
- Taejin Ahn, **Taejoon Park**, Tae-chul Jung, Byubg-chang Kang, and Christopher H. Ko, "Alarming Malware Invasion in Mobile Handsets Inspired by Biological Immune System," Samsung Tech. Conference, 2006.

PATENTS

Copy Protection & DRM : DVD Essential Patents

- **Taejoon Park**, "Copy Prevention Method and Apparatus for Digital Video System," U.S. Patent RE 39,319 (32 claims), 2006.
- **Taejoon Park**, "Copy Prevention Method and Apparatus for Digital Video System," U.S. Patent 6,347,144 (31 claims), 2002.
- **Taejoon Park**, "Copy Prevention Method and Apparatus of a Digital Recording / Reproducing System Employing a Marker Including Copy Protection Information and Code Data for Descrambling," U.S. Patent RE 37,052 (88 claims), 2001.
- **Taejoon Park**, "Method and Apparatus for Communicating Scrambled Digital Data," U.S. Patent RE 36,919 (35 claims), 2000.
- **Taejoon Park**, "Copy Prevention Method and Apparatus for Digital Video System," U.S. Patent 6,028,932 (24 claims), 2000.
- **Taejoon Park**, "Recording Method of Digital Magnetic Recording Medium for Copyright Protection and Variable Speed Playback," U.S. Patent 5,832,084 (19 claims), 1998.
- Yung G. Kim and **Taejoon Park**, "Illegal View / Copy Protection Method and Apparatus for Digital Broadcasting System," U.S. Patent 5,799,081 (31 claims), 1998.
- **Taejoon Park**, "Apparatus for Limiting Reproducible Number of Magnetic Recording Medium," U.S. Patent 5,796,826 (19 claims), 1998.
- **Taejoon Park**, "Copy Prevention Method and Apparatus for Digital Video System," U.S. Patent 5,761,302 (16 claims), 1998.
- **Taejoon Park**, "Illegal View and Copy Protection Method in Digital Video System and Controlling Method Thereof," U.S. Patent 5,757,909 (35 claims), 1998.
- **Taejoon Park**, "Copy Prevention Method and Apparatus of Digital Magnetic Recording / Reproducing System," U.S. Patent 5,689,559 (38 claims), 1997.

Digital Broadcasting : HDTV, DVD, etc.

- **Taejoon Park**, "Format Converting Apparatus and Digital Broadcasting Receiver," U.S. Patent 6,717,961 (23 claims), 2004.
- Jin T. Ro, Dong C. Kang, Jae H. Lee, **Taejoon Park**, and Kang S. Seo, "Multi-rate Optical Disc Recording and Reproducing Apparatus," U.S. Patent 6,341,112 (20 claims), 2002.
- Jin T. Ro, Dong C. Kang, Jae H. Lee, **Taejoon Park**, and Kang S. Seo, "Information Recording Method with Protection Function of Previously Recorded Information," U.S. Patent 6,288,989 (12 claims), 2001.
- Yung G. Kim et al., "Video Signal Recording and Reproducing Apparatus for Digital Video Cassette Tape Recorder," U.S. Patent 6,014,492 (16 claims), 2000.
- Jin T. Ro, Dong C. Kang, Jae H. Lee, **Taejoon Park**, and Kang S. Seo, "Multi-rate Optical Disc Recording and Reproducing Apparatus," U.S. Patent 5,982,726 (4 claims), 1999.
- **Taejoon Park**, "Transport Bit Stream Recording / Reproducing Apparatus and Method," U.S. Patent 5,953,489 (24 claims), 1999.
- Yung G. Kim et al., "Tape-independent Video Signal Recording & Reproducing Apparatus," U.S. Patent 5,937,135 (20 claims), 1999.

Software Protection for Mobile Handsets

- **Taejoon Park** and Tae-chul Jung, "Method of Security Management for Wireless Mobile Device and Apparatus for Security Management Using the Method," U.S. Patent Application, 2006.
- **Taejoon Park** and Tae-chul Jung, "Apparatus for Restricting Access to Application Module in Mobile Wireless Device and Method of Restricting Access to Application Module Using the Same," U.S. Patent Application, 2006.
- **Taejoon Park**, Taejin Ahn, and Tae-chul Jung, "Apparatus and Method for Detecting Malware in Mobile Handheld Devices," in preparation, 2007.
- Taejin Ahn, **Taejoon Park**, and Tae-chul Jung, "Apparatus for Detecting Intrusion Code and Method Using the Same," in preparation, 2007.
- Gyungho Lee, **Taejoon Park**, Yixin Shi, Tae-chul Jung and Byung-chang Kang, "Indirect Branch Validation Unit for Secure Program Execution," in preparation, 2007.
- Abhijit Bose, Xin Hu, Kang G. Shin, and **Taejoon Park**, "Method for Behavioral Detection of Malicious Programs on Mobile Handsets," in preparation, 2007.
- Abhijit Bose, Xin Hu, Kang G. Shin, and **Taejoon Park**, "A Behavioral Detection System for Mobile Handsets," in preparation, 2007.

AWARDS AND HONORS

- Marquis Who's Who in the World, 2007
- Bonus from LG ELECTRONICS in compensation for all DVD-related patents, 2006
- Gold prize from SAMSUNG HumanTech Paper Competition, Feb. 2002
- Fellowship for graduate study at KAIST, 1992.3~1994.2
- The highest honor degree at graduation (B.S.) – ranked 1st in the university, Feb. 1992
- Fellowship from HONGIK University, 1988.3~1992.2
KRW 620,000 every month with full tuition (approx. KRW 700,000 per semester) waiver

RELEVANT COURSEWORK

Computer Networks, Advanced Computer Networks, Communication Networks, Computer and Network Security, Principles of Real-Time Computing, Digital Communication & Codes, Digital Communication Theory, Visual Communication, Estimation Filtering & Detection, Advanced Digital Signal Processing, Multidimensional Signal Processing, Random Process.