Hyoungshick Kim

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RESEARCH INTERESTS

Usable security, user authentication, software security and social network analysis

EDUCATION

Ph.D Computer Laboratory, University of Cambridge, UK,　　　　　　　　　**2008–2011**
- Supervisor: Prof. Ross Anderson
- Thesis: Complex network analysis for secure and robust communications (Examiners – Prof. Jon Crowcroft and Prof. Alessandro Acquisti)

M.S. Division of Computer Science, KAIST, Korea,　　　　　　　　　**1999–2001**
- Supervisor: Prof. Kyung-Yong Chwa
- Thesis: A Distributed Algorithm for Maintaining a Minimum Spanning Tree in Dynamic Network

B.S. Department of Information Engineering, Sungkyunkwan University, Korea,　　　**1995–1999**
- Supervisor: Prof. Youngik Eom
- Thesis: Distributed Mutual Exclusion Algorithm for Maintaining Tree-Height Balance in Mobile Computing Environments

PROFESSIONAL EXPERIENCE

Sungkyunkwan University, Suwon, Korea
Associate Professor – Security Engineering Laboratory　　　　　　　　　**2013–present**
- Is researching security engineering.

CSIRO Data61, Marsfield, Australia
Distinguished Visiting Researcher – Distributed Systems Security Group　　　**2019–2020**
- Researched AI security and software security.

University of British Columbia, Vancouver, BC, Canada
Postdoctoral Fellow – Laboratory for Education and Research in Secure Systems Engineering **2012**
- Researched human authentication and information diffusion in online social networks.

Samsung Electronics, Digital Media R&D Center, Suwon, Korea
Senior Engineer – Core S/W Component Laboratory　　　　　　　　　**2008**
- Designed and developed DRM applications for home networks.

Samsung Electronics, Software Laboratories, Seoul/Suwon, Korea
Engineer/Senior Engineer – Home Software Platform Team　　　　　　　**2004–2007**
- Designed and developed DRM interoperability solutions (DLNA and Coral).

TEACHING

Lecturer, Sungkyunwan University: Security Engineering (2013–2021)

Lecturer, Sungkyunwan University: Computer Security (2017–2021)

Lecturer, Sungkyunwan University: Computer Algorithms (2020–2021)

Lecturer, Sungkyunwan University: Blockchain and Smart Contracts (2017–2021)

Lecturer, Sungkyunwan University: Network Project (2019)

Lecturer, Sungkyunwan University: Data Structures (2014–2018)

Lecturer, Yonsei University: Database Security (2015–2017)

Lecturer, Sungkyunwan University: C Programming Language (2015–2016)

Lecturer, Sungkyunwan University: Introduction to Computer Networks (2013)

Lecturer, Sungkyunwan University: Matlab and Python Programming (2013–2014)

Organizer, Sungkyunwan University: Freshmen Seminar (2013)

Guest Lecturer, University of British Columbia: Computer Security (2012)

ACADEMIC SERVICES (SELECTED)	**Consultant**	
	Technical Consultant at LG Electronics	**2018–present**
	Privacy Policy Consultant at Kakao	**2018–present**
	Technical Consultant at Financial Security Institute	**2018–2019**
	Technical Consultant at Samsung Electronics	**2013–2018**

Program Committee Member

European Symposium on Research in Computer Security (ESORICS)	**2021**
Information Security Conference (ISC)	**2020–2021**
Conference on Security and Privacy in Communication Networks (SecureComm)	**2019–2020**
Australasian Conference on Information Security and Privacy (ACISP)	**2019, 2021**
ACM Asia Conference on Computer & Communications Security (ASIACCS)	**2018**
International Conference on Advanced and Trusted Computing (ATC)	**2016–2018**
ACM/SIGAPP Symposium on Applied Computing (SAC)	**2016–2021**
International Symposium on Foundations and Practices of Security (FPS)	**2012–2021**
Workshop on Simplifying Complex Networks for Practitioners (SIMPELX)	**2014–2015**

Program Committee Chair

World Conference on Information Security Applications (WISA)	**2021**
Asia Joint Conference on Information Security (AsiaJCIS)	**2017**
International Conference on Software Security and Assurance (ICSSA)	**2015–2020**
Workshop on Simplifying Complex Networks for Practitioners (SIMPLEX)	**2014**

Editorial Board Member

IEEE Consumer Electronics Magazine	**2015–Present**
KSII Transactions on Internet and Information Systems	**2017–Present**
International Journal of Privacy and Health Information Management	**2012–Present**
International Journal of Computer & Software Engineering	**2016–Present**

HONOURS AND AWARDS	The best paper award, PLP 2021	**2021**
	The best paper prize, Cybersecurity research competition	**2020**
	The 2nd prize, Cybersecurity research competition	**2018–2019**
	The best impacts, joint award, IEEE Consumer Electronics Magazine	**2017**
	The excellent paper award, ISS	**2017**
	The 1st prize, Cybersecurity research competition	**2017**
	The award for research excellence, Sungkyunkwan University	**2016–2019**
	The best paper award, CISC 2016	**2016**
	The Korean Ministry of Interior award for research excellence, NETSEC-KR 2016	**2016**
	The best student paper award, ICCSA 2015	**2015**
	The best paper award, WISA 2014	**2014**
	The runner-up award, SIMPEX 2014	**2014**
	The 2nd place winner of the Facebook Hackathon, University of British Columbia	**2012**
	NSERC Postdoctoral Fellowship Award, NSERC ISSNet	**2012–2013**
	Research Studentship, Northrop Grumman Corporation	**2010–2011**
	Silver Medal in Samsung Electronics Annual Award, Samsung Electronics	**2007**

Selected
Publications

Beom Heyn Kim and **Hyoungshick Kim**, "Rocky: Replicating Block Devices for Tamper and Failure Resistant Edge-based Virtualized Desktop Infrastructure," *ACSAC: The 37th Annual Computer Security Applications Conference*, 2021.

Larry Huynh, Manh Duy Thai Nguyen, Joshua Goh, **Hyoungshick Kim**, and Jin Hong, "ARGH!: Automated Rumor Generation Hub," *CIKM: The 30th ACM International Conference on Information and Knowledge Management*, 2021.

Muhammad Ejaz Ahmed, **Hyoungshick Kim**, Seyit Camtepe, and Surya Nepal, "Peeler: Profiling Kernel-Level Events to Detect Ransomware," *ESORICS: The 26th European Symposium on Research in Computer Security*, 2021.

Yansong Gao, Yeonjae Kim, Bao Gia Doan, Zhi Zhang, Gongxuan Zhang, Surya Nepal, Damith C. Ranasinghe, and **Hyoungshick Kim**, "Design and Evaluation of a Multi-Domain Trojan Detection Method on Deep Neural Networks," *IEEE Transactions on Dependable and Secure Computing*, 2021.

Geumhwan Cho, Sungsu Kwag, Jun Ho Huh, Bedeuro Kim, Choong-Hoon Lee, and **Hyoungshick Kim**, "Towards Usable and Secure Location-based Smartphone Authentication," *SOUPS: The 17th Symposium On Usable Privacy and Security*, 2021.

William Aiken, **Hyoungshick Kim**, Simon Woo, and Jungwoo Ryoo, "Neural Network Laundering: Removing Black-Box Backdoor Watermarks from Deep Neural Networks," *Computers & Security*, 2021.

Bedeuro Kim, Alsharif Abuadbba, Yansong Gao, Yifeng Zheng, Muhammad Ejaz Ahmed, Surya Nepal, and **Hyoungshick Kim**, "Decamouflage: A Framework to Detect Image-Scaling Attacks on CNN," *DSN: The 51st IEEE/IFIP International Conference on Dependable Systems and Networks*, 2021.

Siqi Ma, Juanru Li, **Hyoungshick Kim**, Elisa Bertino, Surya Nepal, Diet Ostry, and Cong Sun, "Fine with "1234"? An Analysis of SMS One-Time Password Randomness in Android Apps," *ICSE: The 43rd International Conference on Software Engineering*, 2021.

Beomjin Jin, Jusop Choi, **Hyoungshick Kim** and Jin B. Hong, "FUMVar: A Practical Framework for Generating Fully-working and Unseen Malware Variants," *SAC: The 26th ACM/SIGAPP Symposium On Applied Computing*, 2021.

Sharif Abuadbba, **Hyoungshick Kim** and Surya Nepal, "DeepiSign: Invisible Fragile Watermark to Protect the Integrity and Authenticity of CNN," *SAC: The 26th ACM/SIGAPP Symposium On Applied Computing*, 2021.

Alsharif Abuadbba, Kyuyeon Kim, Minki Kim, Chandra Thapa, Seyit A. Camtepe, Yansong Gao, **Hyoungshick Kim**, and Surya Nepal, "Can We Use Split Learning on 1D CNN Models for Privacy Preserving Training?," *ASIACCS: The 13rd ACM Asia Conference on Computer and Communications Security*, 2020.

Joon Kuy Han, Simon Woo, and **Hyoungshick Kim**, "A Graphical-Textual Hybrid Fallback Authentication System," *ASIACCS: The 13rd ACM Asia Conference on Computer and Communications Security*, 2020.

Yansong Gao, Minki Kim, Sharif Abuadbba, Yeonjae Kim, Chandra Thapa, Kyuyeon Kim, Seyit A. Camtepe, **Hyoungshick Kim**, and Surya Nepal, "End-to-End Evaluation of Federated Learning and Split Learning for Internet of Things," *SRDS: The 39th International Symposium on Reliable Distributed Systems*, 2020.

Geumhwan Cho, Jun Ho Huh, Soolin Kim, Junsung Cho, Heesung Park, Yenah Lee, Konstantin Beznosov, and **Hyoungshick Kim**, "On the Security and Usability Implications of Providing Multiple Authentication Choices on Smartphones: The More, the Better?," *ACM Transactions on Privacy and Security*, 2020.

Muhammad Ejaz Ahmed, Ilyoup Kwak, Jun Ho Huh, Iljoo Kim, Taekkyung Oh and **Hyoungshick Kim**, "Void: A fast and light voice liveness detection system," *USENIX Security: The 29th USENIX Security Symposium*, 2020.

Eun yong Cheon, Yonghwan Shin, Jun Ho Huh, **Hyoungshick Kim** and Ian Oakley, "Gesture Authentication for Smartphones: Evaluation of Gesture Password Selection Policies," *S&P: The 41th IEEE Symposium on Security and Privacy*, 2020.

Simon Woo, Hanbin Jang, Woojung Ji and **Hyoungshick Kim**, "I've Got Your Packages: Harvesting customers' delivery order information using package tracking number enumeration," *WWW: The 29th International World Wide Web Conference*, 2020.

Jusop Choi, Soolin Kim, Junsung Cho, Kuyju Kim, Seok Hong and **Hyoungshick Kim**, "ACIDroid: A Practical App Cache Integrity Protection System on Android Runtime," *SAC: The 35th ACM/SIGAPP Symposium On Applied Computing*, 2020.

Mohsen Alawami and **Hyoungshick Kim**, "LocAuth: A Fine-grained Indoor Location-based Authentication System using Wireless Networks Characteristics," *Computers & Security*, 2020.

Seungjin Lee and **Hyoungshick Kim**, "On the robustness of Lightning Network in Bitcoin," *Pervasive and Mobile Computing*, 2020.

Yujin Kwon, **Hyoungshick Kim**, Yung Yi and Yongdae Kim, "An Eye for an Eye: Economics of Retaliation in Mining Pools," *AFT: The 1st ACM conference on Advances in Financial Technologies*, 2019.

Yuri Son, Geumhwan Cho, **Hyoungshick Kim** and Simon Woo, "Understanding Users Risk Perceptions about Personal Health Records Shared on Social Networking Services," *ASIACCS: The 12th ACM Asia Conference on Computer and Communications Security*, 2019.

Yujin Kwon, **Hyoungshick Kim**, Jinwoo Shin and Yongdae Kim, "Bitcoin vs. Bitcoin Cash: Co-existence or Downfall of Bitcoin Cash?," *S&P: The 40th IEEE Symposium on Security and Privacy*, 2019.

Mahdi D Firoozjaei, Minchang Kim, Jaeseung Song and **Hyoungshick Kim**, "O2TR: Offline OTR Messaging System under Network Disruption," *Computers & Security*, 2019.

Jusop Choi, Jaegwan Yu, Sangwon Hyun and **Hyoungshick Kim**, "Digital forensic analysis of encrypted database files in instant messaging applications on Windows operating systems," *DFRWS EU: Digital Forensic Research Workshop EU*, 2019.

Muhammad Ejaz Ahmed, Saeed Ullah and **Hyoungshick Kim**, "Statistical Application Fingerprinting for DDoS Attack Mitigation," *IEEE Transactions on Information Forensics and Security*, 2019.

Humberto Cervantes, Rick Kazman, Jungwoo Ryoo, Junsung Cho, Geumhwan Cho, **Hyoungshick Kim** and Jina Kang, "Data-driven selection of application frameworks during architectural design," *HICSS: The 52nd Hawaii International Conference on System Sciences*, 2019.

Julian Rauchberger, Sebastian Schrittwieser, Tobias Dam, Robert Luh, Damjan Buhov, Gerhard Pötzelsberger and **Hyoungshick Kim**, "The Other Side of the Coin: A Framework for Detecting and Analyzing Web-based Cryptocurrency Mining Campaigns," *ARES: The 13th International Conference on Availability, Reliability and Security*, 2018.

DaeHun Nyang, **Hyoungshick Kim**, Woojoo Lee, Sung-bae Kang, Geumhwan Cho, Mun-Kyu Lee and Aziz Mohaisen, "Two-Thumbs-Up: Physical Protection for PIN Entry Secure against Recording Attacks," *Computers & Security*, 2018.

Ian Oakley, Jun Ho Huh, Junsung Cho, Geumhwan Cho, MD. Rasel Islam and **Hyoungshick Kim**, "The Personal Identification Chord: A Four Button Authentication System for Smartwatches," *ASIACCS: The 11th ACM Asia Conference on Computer and Communications Security*, 2018.

Youngbae Jeon, Minchul Kim, Hyunsoo Kim, **Hyoungshick Kim**, Jun Ho Huh and Ji Won Yoon, "I'm Listening to your Location! Inferring User Location with Acoustic Side Channel," *WWW: The 27th International World Wide Web Conference*, 2018.

Eunjo Lee, Jiyoung Woo, **Hyoungshick Kim** and Huy Kang Kim, "No Silk Road for Online Gamers!: Using Social Network Analysis to Unveil Black Markets in Online Games," *WWW: The 27th International World Wide Web Conference*, 2018.

Sangwon Hyun, Jinyoung Kim, **Hyoungshick Kim**, Jaehoon Jeong, Susan Hares, Linda Dunbar and Adrian Farrel, "Interface to Network Security Functions for Cloud-based Security Services," *IEEE Communications Magazine*, 2018.

Soyoung Kim, Sora Lee, Geumhwan Cho, Muhammad Ejaz Ahmed, Jaehoon Paul Jeong and **Hyoungshick Kim**, "Preventing DNS amplification attacks using the history of DNS queries with SDN," *ESORICS: The 22nd European Symposium on Research in Computer Security*, 2017.

Geumhwan Cho, Jun Ho Huh, Junsung Cho, Seongyeol Oh, Youngbae Song and **Hyoungshick Kim**, "SysPal: System-guided Pattern Locks for Android," *S&P: The 38th IEEE Symposium on Security and Privacy*, 2017.

Jun Ho Huh, **Hyoungshick Kim**, Rakesh B. Bobba, Konstantin Beznosov and Swathi Sri V Rayala, "I'm too busy to reset my LinkedIn password: On the effectiveness of password reset emails," *CHI: The 35th ACM SIGCHI Conference on Human Factors in Computing Systems*, 2017.

Seunghun Cha, Sungsu Kwag, **Hyoungshick Kim** and Jun Ho Huh, "Boosting the Guessing Attack Performance on Android Lock Patterns with Smudge Attacks," *ASIACCS: The 10th ACM Asia Conference on Computer and Communications Security*, 2017.

Junsung Cho, Jaegwan Yu, Sanghak Oh, Jungwoo Ryoo, Jaeseung Song and **Hyoungshick Kim**, "Wrong Siren! A location spoofing attack on indoor positioning systems: the Starbucks case study," *IEEE Communications Magazine*, 2017.

Andrea Bianchi, Ian Oakley and **Hyoungshick Kim**, "PassBYOP: Bring Your Own Picture for Securing Graphical Passwords," *IEEE Transactions on Human-Machine Systems*, 2016.

Eunjo Lee, Jiyoung Woo, **Hyoungshick Kim**, Aziz Mohaisen and Huy Kang Kim, "You are a Game Bot!: Uncovering game bots in MMORPGs via self-similarity in the wild," *NDSS: The 23rd Network and Distributed System Security Symposium*, 2016.

Jun Ho Huh, Seongyeol Oh, **Hyoungshick Kim**, Konstantin Beznosov, Apurva Mohan, and S. Raj Rajagopalan, "Surpass: System-initiated user-replaceable passwords," *CCS: The 22nd ACM Conference on Computer and Communications Security*, 2015.

Jun Ho Huh, **Hyoungshick Kim**, Rakesh B. Bobba, Masooda Bashir and Konstantin Beznosov, "On the Memorability of System-generated PINs: Can Chunking Help?," *SOUPS: The 11st Symposium On Usable Privacy and Security*, 2015.

Jaeseung Song, **Hyoungshick Kim** and Soojin Park, "Enhancing Conformance Testing using Symbolic Execution for Network Protocols," *IEEE Transactions on Reliability*, 2015.

Eunhyun Kim, Kyung-won Park, **Hyoungshick Kim** and Jaeseung Song, "Design and analysis of enumeration attacks on finding friends with phone numbers: a case study with KakaoTalk," *Computers & Security*, 2015.

Youngbae Song, Geumhwan Cho, Seongyeol Oh, **Hyoungshick Kim** and Jun Ho Huh, "On the Effectiveness of Pattern Lock Strength Meters Measuring the Strength of Real World Pattern Locks," *CHI: The 33rd ACM SIGCHI Conference on Human Factors in Computing Systems*, 2015.

Hyoungshick Kim and Ross Anderson, "An Experimental Evaluation of Robustness of Networks," *IEEE Systems Journal*, Vol. 7(2), 2013.

Hyoungshick Kim, Jon Crowcroft and Fernando M.V. Ramos, "Efficient Channel Selection Using Hierarchical Clustering," *WoWMoM: The 13th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks*, 2012.

John Tang, **Hyoungshick Kim**, Cecilia Mascolo and Mirco Musolesi, "STOP: Socio-Temporal Opportunistic Patching of Short Range Mobile Malware," *WoWMoM: The 13th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks*, 2012.

Antoine Boutet, **Hyoungshick Kim** and Eiko Yoneki, "Whats in Your Tweets? I Know Who You Supported in the UK 2010 General Election," *ICWSM: The 6th International AAAI Conference on Weblogs and Social Media*, 2012.

Hyoungshick Kim and Jun Ho Huh, "PIN selection policies: are they really effective," *Computers & Security*, Vol. 31(4), 2012.

Hyoungshick Kim, John Tang and Ross Anderson, "Social Authentication: Harder than it Looks," *FC: The 16th IFCA International Conference on Financial Cryptography and Data Security*, 2012.

Hyoungshick Kim, John Tang, Ross Anderson and Cecillia Mascolo, "Centrality Prediction in Dynamic Human Contact Networks," *Computer Networks*, Vol. 56(3), 2012.

Hyoungshick Kim and Ross Anderson, "Temporal Node Centrality in Complex Networks," *Physical Review E*, Vol. 85(2), 2012.

Hyoungshick Kim, Ji Won Yoon and Jon Crowcroft, "Network Analysis of Temporal Trends in Scholarly Research Productivity," *Journal of Informetrics*, Vol. 6(1), 2012.

Hyoungshick Kim and Jaehoon Jeong, "RAD: Recipient-Anonymous Data Delivery based on Public Routing Proxies," *Computer Networks*, Vol. 55(15), 2011.

Ji Won Yoon, **Hyoungshick Kim** and Jun Ho Huh, "Hybrid Spam Filtering for Mobile Communication", *Computers & Security*, Vol. 29(4), 2010.

SELECTED
PATENTS

Sanghoon Jeon, **Hyoungshick Kim**, Minsoo Kim, Kyungwon Park, Junsung Cho and Jaegwan Yu, "Method of sharing key between devices using physical access restriction", *US Patent* (10298557B2), 2019.

Bogyeong Kang, **Hyoungshick Kim**, Youngbae Song, Jin-A Kang, Jung-Je Son and Duckey Lee, "Method and apparatus for supporting login through user terminal", *US Patent* (9602506B2), 2017.

Hyoungshick Kim and S. Jae Oh, "Method of and Apparatus for Sharing Secret Information between Devices in Home Network", *EP Patent* (2181521B1), 2016.

Seong-Ho Cho and **Hyoungshick Kim**, "Authentication information management method in home network and an apparatus therefor", *EP Patent* (2264940B1), 2016.

Hyoungshick Kim and S. Jae Oh, "Method of and Apparatus for Sharing Secret Information between Devices in Home Network", *US Patent* (9094192), 2015.

Wonseok Kwon and **Hyoungshick Kim**, "Digital rights management method and apparatus", *US Patent* (8931104), 2015.

Hyoungshick Kim, "Method and System for Providing DRM License", *US Patent* (8805742), 2014.

Hyoungshick Kim, Seongho Cho, Ho-Yeon Park, Dongshin Jung and Wonseok Kwon, "Method and apparatus for generating a mashup graph, and method and apparatus for recommending mashup services", *US Patent* (8813102), 2014.

Hyoungshick Kim and Myungsoo Chang, "Method and apparatus for providing content service", *US Patent* (8582759), 2013.

Hyoungshick Kim and Sanghyeon Kim, "Apparatus and Method for Providing Domain Information", *US Patent* (8526445), 2013.

Hyoungshick Kim and Joo-yeol Lee, "Method and apparatus of ensuring security of communication in home network", *US Patent* (8464055), 2013.

Seong-Ho Cho and **Hyoungshick Kim**, "Method and apparatus for managing authentication information in home network", *US Patent* (8347079), 2013.

Hyoungshick Kim, Kyung-mo Park and Myungsoo Chang, "Device and method for providing video stream having integrity", *US Patent* (8185742), 2012.

Hyoungshick Kim, "Method and system for providing DRM license", *US Patent* (8103593), 2012.

Kyung-mo Park, S. Jae Oh, **Hyoungshick Kim** and Yungsun Ryu, "Apparatus and Method for Providing Security Service in Home Network", *US Patent* (8060739), 2011.

Hyoungshick Kim, Myungsoo Chang and Sanghyeon Kim, "Method and apparatus for providing content service", *US Patent* (8019080), 2011.

Hyoungshick Kim, "Method and apparatus for electronic commerce using digital ticket to provide anonymity" *US Patent* (7730314), 2010.

Referees

Professor Ross Anderson
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University of Cambridge
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