

# HYUNGJOON KOO

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**Assistant Professor, Sungkyunkwan University, Department of Computer Science and Engineering,**  
*College of Computing and Informatics* Feb 2021 – Present

## EDUCATION

- Postdoc., Georgia Tech, School of Computer Science, College of Computing** Jun 2019 – Dec 2020
- Adviser: Taesoo Kim (Systems Software & Security Lab)
  - Research Area: Software Security, Artificial Intelligence for Security
- Ph.D., Stony Brook University, Department of Computer Science** Aug 2013 – May 2019
- Adviser: Michalis Polychronakis (Hexlab)
  - Research Area: Binary Protection, Software Diversification against Code Reuse Attacks
  - Thesis: Practical Software Specialization against Code Reuse Attacks
- M.Sc., Korea University, Information Management and Security** Mar 2008 – Feb 2010
- Adviser: Sangjin Lee (Digital Forensic Lab)
  - Thesis: Pre-detection Model for Trusted Insider's Leaks and Manipulation from a Forensic Perspective
- B.Sc., Hanyang University, Industrial Engineering** Mar 1998 – Aug 2005
- Graduated with College Honors Cum Laude

## PUBLICATIONS

- Practical Binary Code Similarity Detection with BERT-based Transferable Similarity Learning, Sunwoo Ahn, Seonggwon Ahn, **Hyungjoon Koo** and Yunheung Paek, In the 38th Annual Computer Security Applications Conference (ACSAC '22)
- DeView: Confining Progressive Web Applications by Debloating Web APIs, ChangSeok Oh, Sangho Lee, Chenxiong Qian, **Hyungjoon Koo** and Wenke Lee, In the 38th Annual Computer Security Applications Conference (ACSAC '22)
- IoTivity Packet Parser for Encrypted Messages in Internet of Things Hyeonah Jung, **Hyungjoon Koo**, and Jaehoon (Paul) Jeong. In the 24th International Conference on Advanced Communications Technology (ICACT '22)
- A Look Back on a Function Identification Problem **Hyungjoon Koo**, Soyeon Park, and Taesoo Kim. In the 37th Annual Computer Security Applications Conference (ACSAC '21)
- Software Watermarking via a Binary Function Relocation Honggoo Kang, Yonghwi Kwon, Sangjin Lee and **Hyungjoon Koo**. In the 37th Annual Computer Security Applications Conference (ACSAC '21)
- Inference of Compiler Provenance from Malware, Hohyun Jang and **Hyungjoon Koo**, Poster in the the 22nd World Conference on Information Security Applications (WISA '21)
- Slimium: Debloating the Chromium Browser with Feature Subsetting, Chenxiong Qian, **Hyungjoon Koo**, Changseok Oh, Taesoo Kim, and Wenke Lee. In the 27th ACM Conference on Computer and Communications Security (CCS '20)
- Configuration-Driven Software Debloating, **Hyungjoon Koo**, Seyedhamed Ghavamnia, and Michalis Polychronakis. In the 12th European Workshop on Systems Security (EuroSec), 2019
- Compiler-assisted Code Randomization, **Hyungjoon Koo**, Yaohui Chen, Long Lu, Vasileios P. Kemerlis, and Michalis Polychronakis. In the 39th IEEE Symposium on Security & Privacy (S&P), 2018 Top 10 Finalist, Cyber Security Awareness Week (CSAW), 2018
- Defeating Zombie Gadgets by Re-randomizing Code Upon Disclosure, Micah Morton, **Hyungjoon Koo**, Forrest Li, Kevin Z. Snow, Michalis Polychronakis, and Fabian Monroe. In the 9th International Symposium on Engineering Secure Software and Systems (ESSoS), 2017
- The Politics of Routing: Investigating the Relationship between AS Connectivity and Internet Freedom, Rachee Singh, **Hyungjoon Koo**, Najmehalsadat Miramirkhani, Fahimeh Mirhaj, Leman Akoglu, and Phillipa Gill. In the 6th USENIX Workshop on Free and Open Communications on the Internet (FOCI), 2016
- Return to the Zombie Gadgets: Undermining Destructive Code Reads via Code-Inference Attacks, Kevin Z. Snow, Roman Rogowski, Jan Werner, **Hyungjoon Koo**, Fabian Monroe, and Michalis Polychronakis. In the 37th IEEE Symposium on Security & Privacy (S&P), 2016
- Juggling the Gadgets: Binary-level Code Randomization using Instruction Displacement, **Hyungjoon Koo** and Michalis Polychronakis. In the 11th ACM Asia Conference on Computer and Communications Security (ASIACCS), 2016

	<ul style="list-style-type: none"> <li>Identifying Traffic Differentiation in Mobile Networks, Arash Molavi Kakhki, Abbas Razaghpanah, Anke Li, <b>Hyungjoon Koo</b>, Rajeshkumar Golani, David Choffnes, Phillipa Gill, and Alan Mislove. <i>In the 15th ACM Internet Measurement Conference (IMC)</i>, 2015</li> </ul>	
<b>OTHERS</b>	<ul style="list-style-type: none"> <li>Semantic-aware Binary Code Representation with BERT, Hyungjoon Koo, Soyeon Park, Daejin Choi and Taesoo Kim (ArXiv '21)</li> </ul>	
<b>WORK EXPERIENCE</b>	<p><b>Research Assistant</b>, <i>Stony Brook University</i> May 2014 – May 2019</p> <ul style="list-style-type: none"> <li>System / Software Security (Michalis Polychronakis)</li> <li>Traffic Differentiation / Internet Censorship (Philipa Gill)</li> </ul> <p><b>Intern</b>, <i>Fujitsu Laboratories of America</i> Jun 2018 – Aug 2018</p> <p><b>Teaching Assistant</b>, <i>Stony Brook University</i> Aug 2013 – Dec 2017</p> <ul style="list-style-type: none"> <li>[CSE102] Introduction to Web Design and Programming (Ahmad Esmaili), Fall 2013</li> <li>[CSE130] Introduction to Programming in C (Ahmad Esmaili), Fall 2013</li> <li>[CSE312] Legal, Social, and Ethical Issues in Information Systems (Robert Johnson), Spring 2014</li> <li>[CSE408] Network Security (Undergraduate level; Robert Johnson), Spring 2014</li> <li>[CSE508] Network Security (Graduate level; Michalis Polychronakis), Fall 2017</li> </ul> <p><b>Intern</b>, <i>Fujitsu Laboratories of America</i> Jun 2016 – Aug 2016</p> <p><b>Lecturer</b> Mar 2013 – Jul 2013</p> <ul style="list-style-type: none"> <li>Security Essentials, Korea Productivity Center, July 2013</li> <li>Network Security for Rwanda government officials, KISA, Mar 2013</li> </ul> <p><b>Security Researcher at Security Compliance Team</b>, <i>Shinhan Bank</i> Jul 2011 – Sep 2012</p> <p><b>Assistant Manager at Information Security Team</b>, <i>Samsung SDS</i> Jan 2006 – Jul 2011</p>	
<b>PROFESSIONAL ACTIVITIES</b>	<p><b>Invited Talks</b></p> <ul style="list-style-type: none"> <li>Binary Code Representation for Deep Learning and its Applications, Software Convergence Symposium (SWCS '22) (Apr. 2022)</li> <li>Semantic-aware Binary Code Representation with Deep Learning, Fall KAIST Security Colloquium (Nov. 2021)</li> <li>Executable Binary Code Representation with Deep Learning, In the 21ST KOCSEA Technical Symposium Program (Nov. 2021)</li> <li>Crash Course on Deep Learning for Security, Soongsil University (Jul. 2021)</li> <li>Toward (Better) Binary Code Representation with Deep Learning, Seoul National University (Jun. 2021)</li> <li>Software Protection via Code Randomization, University of Tennessee (Nov. 2020)</li> <li>Practical Software Specialization against Code Reuse Attacks, Sungkyunkwan University and KAIST (Feb. 2019)</li> <li>Practical Software Hardening against Code Reuse Attacks, Georgia Tech (Nov. 2018)</li> <li>Software Hardening with Code Diversification, CS Colloquium at SUNY Korea (Jun. 2018), Korea University and Samsung Research (May 2018)</li> <li>Software Hardening, Cyber Symposium by the Stony Brook Computing Society (Apr. 2018)</li> <li>Elaborate Attacks with Existing Tools, National Computing &amp; Information Agency (May 2013)</li> <li>Anonymizing Yourself with Tor, Korea Internet &amp; Security Agency (Apr. 2013)</li> </ul> <p><b>Invited Lectures</b></p> <ul style="list-style-type: none"> <li>Software Security, Seoul Science High School (Jan. 2022)</li> <li>Security with AI, Kepco KDN (Nov. 2021)</li> </ul> <p><b>Committee / (External) Review Services</b></p> <ul style="list-style-type: none"> <li>NYU's CSAW '22 Program Committee (2022)</li> <li>IEEE Security &amp; Privacy Magazine (S&amp;P, 2019-21)</li> <li>NYU's CSAW '21 Program Committee (2021)</li> <li>NYU's CSAW '20 Program Committee (2020)</li> <li>Frontiers of Information Technology &amp; Electronic Engineering (FITEE, 2020)</li> <li>International Journal of Information Security (IJIS, 2020)</li> <li>The Network and Distributed System Security Symposium (NDSS, 2020)</li> <li>NYU's CSAW '19 Program Committee (2019)</li> </ul>	

- IEEE Access (2019)
- IEEE/ACM Transactions on Networking (TON, 2019)

#### **Translation of Technical Books/Articles into Korean**

- Gray Hat C# (ISBN: 1593277598, 2018)
- Logging and Log Management (ISBN: 1597496359, 2014)
- Practical Malware Analysis (ISBN: 1593272901, 2013)
- Malware Analyst's Cookbook and DVD (ISBN: 0470613033, 2011)
- Cryptography Engineering (ISBN: 0470474246, 2010)
- OWASP Top10, SANS Top20 and ISM Top10 (2007, 2010)

#### **Grant/Participation**

- International Symposium on Research in Attacks, Intrusions, and Defenses in Crete (Sep 2018)
- ACM Asia Conference on Computer & Communications Security in Incheon (Jun 2018)
- NSF Cybersecurity TTP Workshop in New York (Apr 2018)
- Student Grant for the 26th USENIX Security Symposium in Vancouver (Aug 2017)

#### **Poster Presentation**

- CSAW '18 North America Applied Research Competition (Nov 2018)
- Young Faculty Award Meeting, DARPA Conference Center (Jul 2018)

#### **Write-ups**

- Keychain Analysis for Mac OS X, Kyeongsik Lee and **Hyungjoon Koo** (2013)
- Hunting OS X Rootkit in Memory, Kyeongsik Lee, Jinkook Kim, and **Hyungjoon Koo** (2013)
- A Guidebook for Building and Operating CERT by KISA (2007)

#### **CERTIFICATIONS**

- EnCE (EnCase® Certified Examiner), Guidance Software (2010)
- CHFI (Computer Hacking Forensic Investigator), EC-Council (2010)
- RHCT (Red Hat Certified Technician), RedHat (2009)
- CC (Common Criteria Evaluation), NCSC (2009)
- GCIH (Certified Incident Handler), GIAC (2008)
- CISA (Certified Information Systems Auditor), ISACA (2008)
- CISSP (Certified Information Systems Security Professional), (ISC)2 (2008)
- SIS (Specialist for Information Security), KISA (2007)
- CCNA (Cisco Certified Network Associate), Cisco (2006)