

# Taejoong (Tijay) Chung

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*Assistant Professor (tijay@vt.edu, <https://taejoong.github.io>)*

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## Education

- 09/2009–02/2015 **Ph.D.**, Computer Science and Engineering, Seoul National University, Seoul, Korea.  
◦ Supervisors: Prof. Yanghee Choi and Prof. Ted “Taekyoung” Kwon
- 03/2005–09/2009 **B.S.**, Computer Science and Engineering, POSTECH (Pohang University of Science and Technology), Pohang, Korea.

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## Professional Experiences

- 08/2020–present **Assistant Professor**, Department of Computer Science, Virginia Tech, Blacksburg, VA, United States.
- 02/2023–present **Adjunct Professor**, Department of Computer Science, POSTECH, Pohang, South Korea.
- 08/2018–07/2020 **Assistant Professor**, Department of Computer Science, Rochester Institute of Technology (RIT), Rochester, NY, United States.
- 09/2015–08/2018 **Postdoctoral Researcher**, Northeastern University, Boston, MA, United States.

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## Honors and Awards

- 2023 Mutually Agreed Norms for Routing Security (MANRS) Mentor
- 2022 Best Paper Honorable Mention Award, ACM CCS’22
- 2022 Mutually Agreed Norms for Routing Security (MANRS) Research Fellow
- 2019 Distinguished Paper Award, ACM IMC’19
- 2019 Applied Networking Research Prize (ANRP), IETF’105
- 2017 Distinguished Paper Award, USENIX Security’17
- 2015 Microsoft Azure Research “Award Program: Microsoft Azure for Research Supports \$20,000”

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## Grants

- 2023 RoVISTA: Understanding the Current Validation Status of RPKI  
◦ Google, Unrestricted Gift. 08/2023. Primary Investigator \$30,000 (VT)
- 2023 IMR: MT: Tools for Measuring Route Origin Validation in Resource Public Key Infrastructure (RPKI) at Scale  
◦ National Science Foundation. CNS-2323137, 12/2023 – 11/2025. Primary Investigator \$599,997 (VT), \$599,997 (total)
- 2023 SaTC: CORE: Medium: Cryptographic accumulators and revocation of credentials  
◦ National Science Foundation. CNS-2247306, 01/2023 – 01/2025. Primary Investigator, joint with Foteini Baldimtsi (GMU), Anna Lysyanskaya (Brown), Charalampos Papamanthou (Yale), Alan Mislove (NEU). \$240,000 (VT), \$1,200,000 (total)

- 2023 A Study on Key Management Structure for Multi-Metaverse Avatar Authentication and Anonymization Assurance
- Ministry of Science and ICT, 01/2023 – 01/2026, Primary Investigator, \$225,000 (VT), \$163 M (total)
- 2022 Towards a complete view of Route Origin Validation in RPKI
- Comcast Innovation Fund, 06/2022 – 05/2023, Primary Investigator, \$75,000
- 2021 Enhancing the Privacy and Reliability of Massive-scale Bluetooth Low Energy Contact Tracing
- Commonwealth Cyber Initiative, 06/2021 – 05/2022. Co-Primary Investigator, joint with Daphne Yao (VT), Carol Fung (VCU) \$100,000 (VT), \$150,000 (total)
- 2019 CNS Core: Large: Collaborative Research: Towards an Evolvable Public Key Infrastructure
- National Science Foundation. CNS-1901090, 06/2019 – 05/2022. Primary Investigator, joint with Dave Levin (UMD), Bruce M. Maggs (Duke University), Alan Mislove (NEU), Christo Wilson (NEU), Bryan Parno (CMU). \$300,000 (VT), \$2,000,000 (total)
- 2019 CRII: SaTC: Measuring and Improving the Management of Resource Public Key Infrastructure (RPKI)
- National Science Foundation. CNS-1850465, 10/2019 – 09/2021. Primary Investigator. \$166,561
- 2015 Personal Recommendation System and Privacy Protection through Big Data Analysis on Online Social Networks
- National Research Foundation of Korea (NRF). NRF-2016018668, 03/2015 – 02/2016. Primary Investigator. ₩50,000,000 ( $\approx$  \$44,000)

## Refereed Conference Publications

- HotNets'23 **No Root Store Left Behind**  
James Larisch, Waqar Aqeel, [T. Chung](#), Eddie Kohler, Dave Levin, Bruce Maggs, Bryan Parno, and Christo Wilson  
ACM HotNets, Cambridge, USA, December 2023
- ACSAC'23 **Delegation of TLS Authentication to CDNs using Revocable Delegated Credentials**  
Daegeun Yoon, [T. Chung](#), and Yongdae Kim  
ACSAC, Austin, United States, Canada, December 2023
- IMC'23 **RoVista: Measuring and Understanding the Route Origin Validation (ROV) in RPKI**  
Weitong Li, Zhexiao Lin, Mohammad Ishtiaq Ashiq Khan, Emile Aben, Romain Fontugne, Amreesh Phokeer, and [T. Chung](#)  
ACM IMC, Montreal, Canada, October 2023
- USENIX Security'23 **You've Got Report: Measurement and Security Implications of DMARC Reporting**  
Mohammad Ishtiaq Ashiq Khan, Weitong Li, Tobias Fiebig, and [T. Chung](#)  
USENIX Security, Anaheim, United States, August 2023
- PAM'23 **Exploring the Evolution of the TLS Certificate Ecosystem**  
Syed Muhammad Farhan and [T. Chung](#)  
Virtual, March 2023
- PAM'23 **Measuring TTL Violation of DNS Resolvers in the Wild**  
Protick Bhowmick, Mohammad Ishtiaq Ashiq Khan, Casey Deccio, and [T. Chung](#)  
Virtual, March 2023

- IMC'22 **A Comparative Analysis of Certificate Pinning in Android & iOS**  
Amogh Pradeep, Muhammad Talha Paracha, Protick Bhowmick, Ali Davanian, Abbas Razaghpanah, [T. Chung](#), Martina Lindorfer, Narseo Vallina-Rodriguez, Dave Levin, and David Choffnes  
ACM IMC, Nice, France, October 2022
- CCS'22 **Hammurabi: A Framework for Pluggable, Logic-based X.509 Certificate Validation Policies**  
James Larisch, Waqar Aqeel, Christo Wilson, Alan Mislove, [T. Chung](#), Dave Levin, Bryan Parno, and Bruce Maggs  
ACM CCS, Los Angeles, CA, USA, Nov 2022
- USENIX Security'22 **Under the hood of DANE mismanagement in SMTP**  
H. Lee, I. Ashiq, M. Muller R. van Rijswijk-Deij, T. Kwon, [T. Chung](#)  
USENIX Security, Boston, United States, August 2022
- SIGCOMM'21 **IP Unbound: Robust, Responsive CDN-scale service without CDN-Scale Addresses**  
M. Fayed, V. Giotsas, L. Bauer, S. Kerola, M. Majkowski, P. Odintsov, J. Sitnicki, [T. Chung](#), D. Levin, A. Mislove, N. Sullivan, and C. Wood  
ACM SIGCOMM, Virtual Conference, Aug. 2021
- PAM'21 **Measurement and Analysis of Automated Certificate Reissuance**  
O. Omolola, R. Roberts, I. Ashiq, [T. Chung](#), D. Levin, and A. Mislove  
PAM, Virtual Conference, Mar. 2021
- IMC'20 **The Reality of Algorithm Agility: Studying the DNSSEC Algorithm Life-Cycle**  
M. Mueller, W. Toorop, [T. Chung](#), J. Janssen, and R. van Rijswijk-Deij  
IMC, Pittsburgh, United States, Oct. 2020
- FCS'20 **Assertion-Carrying Certificates**  
W. Aqeel, Z. Hanif, J. Larisch, O. Omolola, [T. Chung](#), D. Levin, B. Maggs, A. Mislove, B. Parno, and C. Wilson  
the Workshop on Foundations of Computer Security, Boston, United States, June 2020
- USENIX Security'20 **A Longitudinal and Comprehensive Study of the DANE Ecosystem in Email**  
H. Lee, A. Gireesh, R. van Rijswijk-Deij, T. Kwon, [T. Chung](#)  
USENIX Security, Boston, United States, August 2020
- CCS'19 **You Are Who You Appear to Be: A Longitudinal Study of Domain Impersonation in TLS Certificates**  
R. Roberts, Y. Goldschlag, R. Walter, [T. Chung](#), A. Mislove, D. Levin  
ACM CCS, London, United Kingdom, Nov. 2019
- IMC'19 **RPKI is Coming of Age: A Longitudinal Study of RPKI Deployment and Invalid Route Origins**  
[T. Chung](#), E. Aben, T. Bruijnzeels, B. Chandrasekaran, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, R. van Rijswijk-Deij, J. P. Rula, and N. Sullivan  
ACM IMC, Amsterdam, The Netherlands, Oct. 2019
- IMC'19 **Roll, Roll, Roll your Root: A Comprehensive Analysis of the First Ever DNSSEC Root KSK Rollover**  
M. Müller, M. Thomas, D. Wessels, W. Hardaker, [T. Chung](#), W. Toorop, and R. van Rijswijk-Deij  
ACM IMC, Amsterdam, The Netherlands, Oct. 2019
- NDSS'19 **maTLS: How to Make TLS middlebox-aware?**  
H. Lee, Z. Smith, J. Lim, G. Choi, S. Chun, [T. Chung](#), and T. Kwon  
NDSS, San Diego, USA, Feb. 2019
- IMC'18 **Is the Web Ready for OCSP Must Staple?**  
[T. Chung](#), J. Lok, B. Chandrasekaran, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, J. Rula, N. Sullivan, and C. Wilson  
ACM IMC, Boston, USA, Nov. 2018

- CSCW'18 **Privacy Leakage in Event-based Social Networks: A Meetup Case Study**  
T. Chung, J. Han, D. Choi, T. Kwon, J. Rha, and H. Kim  
ACM CSCW, Jersey City, USA, Nov. 2018
- IMC'17 **Understanding the Role of Registrars in DNSSEC Deployment**  
T. Chung, R. van Rijswijk-Deij, D. Choffnes, A. Mislove, C. Wilson, D. Levin, and B. M. Maggs  
ACM IMC, London, UK, Nov. 2017
- USENIX Security'17 **A Longitudinal, End-to-End View of the DNSSEC Ecosystem**  
T. Chung, R. van Rijswijk-Deij, B. Chandrasekaran, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, and C. Wilson  
USENIX Security, Vancouver, Canada, Aug. 2017
- IMC'16 **Measuring and Applying Invalid SSL Certificates: The Silent Majority**  
T. Chung, Y. Liu, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, and C. Wilson  
ACM IMC, Santa Monica, CA, USA, Nov. 2016
- IMC'16 **Tunneling for Transparency: A Large-Scale Analysis of End-to-End Violations in the Internet**  
T. Chung, D. Choffnes, and A. Mislove  
ACM IMC, Santa Monica, CA, USA, Nov. 2016
- CCS'16 **Measurement and Analysis of Private Key Sharing in the HTTPS Ecosystem**  
F. Cangialosi, T. Chung, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, and C. Wilson  
ACM CCS, Vienna, Austria, Oct. 2016
- COSN'15 **Characterizing Conversation Patterns in Reddit: From the Perspectives of Content Properties and User Participation Behaviors**  
D. Choi, J. Han, T. Chung, Y. Ahn, B. Chun, and T. Kwon  
ACM COSN, Stanford, CA, USA, Nov. 2015
- COSN'15 **Sharing Topics in Pinterest: Understanding Content Creation and Diffusion Behaviors**  
J. Han, D. Choi, A. Choi, T. Chung, T. Kwon, J. Rha, and C. Chuah  
ACM COSN, Stanford, CA, USA, Nov. 2015
- ANCS'14 **CoRC: Coordinated Routing and Caching for Named Data Networking**  
H. Choi, J. Yoo, T. Chung, N. Choi, T. Kwon, and Y. Choi  
IEEE ANCS, Marina del Rey, CA, USA, Oct. 2014
- WWW'14 **Unveiling Group Characteristics in Online Social Games: A Socio-Economic Analysis**  
T. Chung, J. Han, D. Choi, T. Kwon, H. K. Kim and Y. Choi  
ISOC WWW, Seoul, Korea, Apr. 2014
- IFIP Networking'13 **Spatial and Temporal Locality of Content in BitTorrent: A Measurement Study**  
T. Chung, J. Han, H. Lee, J. Kangasharju, T. Kwon, and Y. Choi  
IFIP Networking, Brooklyn, NY, USA, May 2013
- SIGMETRICS'12 **Bundling Practice in Bittorrent: What, How, and Why**  
J. Han, S. Kim, T. Chung, T. Kwon, H. Kim, and Y. Choi  
ACM SIGMETRICS, London, UK, Jun. 2012
- IFIP Networking'12 **Content Publishing and Downloading Practice in BitTorrent**  
S. Kim, J. Han, T. Chung, T. Kwon, H. Kim, and Y. Choi  
IFIP Networking, Prague, Czech, May 2012
- GLOBECOM'12 **Bandwidth Allocation for BitTorrent under Multi-Torrent Environments**  
J. Choi, J. Han, T. Chung, E. Cho, T. Kwon, and Y. Choi  
IEEE GLOBECOM, Houston, Texas, United States, Dec. 2011

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## Journal Publications

### **Privacy Guarantees of BLE Contact Tracing: A Case Study on COVIDWISE.**

Salman Ahmed, Ya Xiao, **T. Chung**, Carol Fung, Moti Yung, and Danfeng (Daphne) Yao.  
IEEE Computer Society, 2021

### **Rolling with Confidence: Managing the Complexity of DNSSEC Operations**

Moritz Muller, **T. Chung**, Alan Mislove, and Roland van Rijswijk-Deij  
IEEE Transactions on Network and Service Management (IEEE TNSM), 2019

### **Predicting Content Consumption from Content-to-Content Relationships**

Jinyoung Han, Daejin Choi, **T. Chung**, Chen-Nee Chuah, Hyun-chul Kim, and Ted “Taekyoung” Kwon

Elsevier Journal of Network and Computer Applications (JNCA), Vol. 132, pp. 1, April 2019

### **A First Look at Certification Authority Authorization (CAA)**

Quirin Scheitle, **T. Chung**, Jens Hiller, Oliver Gasser, Johannes Naab, Roland van Rijswijk-Deij, Oliver Hohlfeld, Ralph Holz, Dave Choffnes, Alan Mislove, and Georg Carle

ACM SIGCOMM Computer Communications Review (CCR), Vol. 48, pp. 2, Apr. 2018

### **An End-to-End View of DNSSEC Ecosystem Management**

**T. Chung**, R. van Rijswijk-Deij, B. Chandrasekaran, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, and C. Wilson

USENIX Magazine ;login:, Vol. 42, No. 4, Dec. 2017

### **A Target-centric Surveillance System based on Localization and Social Networking**

J. Han, N. Choi, **T. Chung**, T. Kwon, and Y. Choi

Multimedia Tools and Applications (MTAP), Vol. 73, Issue 1, pp. 241-265, Nov. 2014

### **Strategic Bundling for Content Availability and Fast Distribution in BitTorrent**

J. Han, **T. Chung**, S. Kim, H. Kim, J. Kangasharju, T. Kwon, and Y. Choi

Computer Communication (COMCOM), Vol. 43, pp. 64-73, May 2014

### **Bundling Practice in Bittorrent: What, How, and Why**

J. Han, S. Kim, **T. Chung**, T. Kwon, H. Kim, and Y. Choi

ACM SIGMETRICS Performance Evaluation Review, Vol. 40, No. 1, pp. 77-88, Jun. 2012.

### **How Prevalent is Content Bundling in BitTorrent?**

J. Han, **T. Chung**, S. Kim, T. Kwon, H. Kim, and Y. Choi

ACM SIGMETRICS Performance Evaluation Review, Vol. 39, No. 1, pp. 319-320, Jun. 2011.

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## Posters

IMC'19 **Tracking Registrar Support for DNSSEC: It's Slowly Getting Better**

Spencer Roth, R. van Rijswijk-Deij, and **T. Chung**

IMC, Amsterdam, The Netherlands, USA, Aug. 2017

SIGCOMM'17 **The Root Canary: Monitoring and Measuring the DNSSEC Root Key Rollover**

R. van Rijswijk-Deij, **T. Chung**, D. Choffnes, A. Mislove, and W. Toorop

SIGCOMM, Los Angeles, CA, USA, Aug. 2017

ACNS'14 **Toward Terabyte-scale Caching with SSD in a Named Data Networking Router**

W. So, **T. Chung**, H. Yuan, D. Oran, and M. Stapp

ANCS, Marina del Rey, CA, USA, Oct. 2014

PAM'13 **Spatial and Temporal Locality of Swarm Dynamics in BitTorrent**

**T. Chung**, J. Han, H. Lee, J. Kangasharju, T. Kwon, and Y. Choi

PAM, Hong Kong, March. 2013.

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## Non-Refereed Conference Publications

- TPRC'17 **Investigating End-To-End Integrity Violations in Internet Traffic**  
A. Mislove, D. Choffnes, and **T. Chung**  
TPRC, Arlington, VA, USA, Sept. 2017

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## Fellowships

- 2012–2016 **Samsung Ph.D. Industrial Scholarship.**  
2010–2012 **Hyundai (Hajung) Scholarship.**  
Summer 2007 **POSTECH Student Exchange Program to UCLA.**  
2005–2008 **National Science & Technology Scholarship, KOSAF(Korea Student Aid Foundation).**

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## Service

### **Award Committee Member.**

- '23 IETF/IRTF Applied Networking Research Prize (ANRP)
- '22 IETF/IRTF Applied Networking Research Prize (ANRP)
- '21 IETF/IRTF Applied Networking Research Prize (ANRP)
- '21 ACM Student Research Competition (SRS) for SIGCOMM poster and demo session

### **General Chair.**

- '22 The ACM/IRTF Applied Networking Research Workshop (ANRW)

### **Steering Committee Member.**

- '23 The ACM/IRTF Applied Networking Research Workshop (ANRW)

### **Program Committee Member.**

- '24 ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)
- '23 ACM Asian Conference on Internet Engineering (AINTEC)
- '23 IEEE SecWeb
- '23 IEEE MetaCom Workshop
- '23 The Passive and Active Measurement (PAM)
- '23 ACM Conference on SIGMETRICS/Performance
- '23 IEEE Symposium on Security and Privacy (Oakland)
- '22 ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)
- '22 ACM Internet Measurement Conference (IMC)
- '22 IEEE International Conference on Network Protocols (ICNP)
- '22 The Passive and Active Measurement (PAM)
- '22 ACM Conference on SIGMETRICS/Performance
- '21 ACM Conference on Computer and Communications Security (CCS) – External reviewer
- '21 The ACM/IRTF Applied Networking Research Workshop (ANRW)
- '21 ACM Internet Measurement Conference (IMC)
- '21 IEEE International Conference on Network Protocols (ICNP)
- '21 The Passive and Active Measurement (PAM)

- '20 The ACM/IRTF Applied Networking Research Workshop (ANRW)
- '20 The Network Traffic Measurement and Analysis Conference (TMA)
- '20 The Passive and Active Measurement (PAM)
- '19 ACM Internet Measurement Conference (IMC)
- '19 International Conference on Social Informatics (SocInfo)
- '19 The Passive and Active Measurement (PAM)
- '19 International AAAI Conference on Web and Social Media (ICWSM)
- '18 International AAAI Conference on Web and Social Media (ICWSM)
- '17 International AAAI Conference on Web and Social Media (ICWSM)
- '17 IEEE International Conference on Ubiquitous Computing and Communications (IUCC)
- '14 Poster Selection Committee of ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS)

**Shadow Program Committee Member.**

- '18 ACM Internet Measurement Conference (IMC)
- '17 ACM Internet Measurement Conference (IMC)

**Artifact Evaluation Member.**

- '20 International Conference on emerging Networking EXperiments and Technologies (CoNEXT)

**Web Chair.**

- '22 ACM SIGCOMM
- '21 ACM SIGCOMM
- '21 ACM Internet Measurement Conference (PAM)
- '19 ACM Internet Measurement Conference (IMC)

**Travel Grant Chair.**

- '22 ACM Internet Measurement Conference (IMC)

**Registration Chair.**

- '18 ACM Internet Measurement Conference (IMC)

**Journal Reviewer.**

- '22 IEEE Transactions on Dependable and Secure Computing
- '21 Elsevier Computers & Security
- '21 IEEE/ACM Transactions on Networking
- '20 ACM Computer Communication Review
- '19 IEEE Transactions on Dependable and Secure Computing
- '19 IEEE/ACM Transactions on Networking
- '19 ACM Transactions on Privacy and Security
- '19 ACM Computer Communication Review
- '16 ACM Computer Communication Review

**Proposal Reviewer.**

- '21 The Commonwealth Cyber Initiative (CCI): NextG

**Internal and Other Service.**

- '22 VT Hacks IX Judge
- '21 Career Panel: BranchOut, A Youth Community Outreach Program for Local High School Students
- '21 VT Hacks IX Judge

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## References

**Alan Mislove (amislove@ccs.neu.edu)**

Associate Professor of Computer Science, Northeastern University, USA

**David Choffnes (choffnes@ccs.neu.edu)**

Associate Professor of Computer Science, Northeastern University, USA

**Bruce M. Maggs (bmm@cs.cmu.edu)**

Professor of Computer Science, Duke University and Vice President of Research, Akamai Technologies, USA

**Christo Wilson (c.wilson@ccs.neu.edu)**

Associate Professor of Computer Science, Northeastern University, USA

**Dave Levin (dml@cs.umd.edu)**

Assistant Professor of Computer Science, University of Maryland, USA