

Taejoong (Tijay) Chung

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

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.

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.

Honors and Awards

- 2024 NSF CAREER Award
- 2024 Outstanding New Assistant Professor Award at the College of Engineering, Virginia Tech
- 2023 Mutually Agreed Norms for Routing Security (MANRS) Mentor
- 2023 College of Engineering Dean’s Memorandum for Outstanding Teaching Evaluations
- 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
- 2019 NSF CRII Award
- 2017 Distinguished Paper Award, USENIX Security’17
- 2015 Microsoft Azure Research “Award Program: Microsoft Azure for Research Supports \$20,000”

Grants

- 2024 CAREER: Securing and Evolving Internet Security Protocols for Naming and Routing
◦ National Science Foundation. CNS-2339378, 05/2024 – 04/2029. Sole Primary Investigator \$691,258 (VT), \$691,258 (total)
- 2023 RoVISTA: Understanding the Current Validation Status of RPKI
◦ Google, Unrestricted Gift. 08/2023. Sole 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. Sole 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, Sole Primary Investigator, \$75,000
- 2022 Rapidly Bootstrapping Implementation of DNS-Based Security Extensions with AI-driven Approach
 - 4-VA, 06/2022 – 05/2023, Sole Primary Investigator, \$25,000
- 2022 Improving Routing Security with a Complete View of Routing Origin Validation (ROV) in RPKI
 - Commonwealth Cyber Initiative, 05/2022 – 08/2022, Sole Primary Investigator, \$15,000
- 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 CRIL: SaTC: Measuring and Improving the Management of Resource Public Key Infrastructure (RPKI)
 - National Science Foundation. CNS-1850465, 10/2019 – 09/2021. Sole 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. Sole Primary Investigator. ₩50,000,000 (≈ \$44,000)

Refereed Conference Publications

- USENIX Security'24 **SPF Beyond the Standard: Management and Operational Challenges in Practice and Practical Recommendations**
 Mohammad Ishtiaq Ashiq Khan, Weitong Li, Tobias Fiebig, and [Taejoong Chung](#)
 USENIX Security, Philadelphia, United States, August 2024
- Oakland'24 **An Analysis of Recent Advances in Deepfake Image Detection in an Evolving Threat Landscape**
 Sifat Muhammad Abdullah, Aravind Cheruvu, Shravya Kanchi, [Taejoong Chung](#), Peng Gao, Murtuza Jadhwal, and Bimal Viswanath
 IEEE Symposium on Security and Privacy, San Francisco, United States, May 2024
- NDSS'24 **IRRedicator: Pruning IRR with RPKI-Valid BGP Insights**
 Minhyeok Kang, Weitong Li, Roland van Rijswijk-Deij, Ted "Taekyoung" Kwon, and [Taejoong Chung](#)
 NDSS, San Diego, USA, Feb. 2024
- HotNets'23 **No Root Store Left Behind**
 James Larisch, Waqar Aqeel, [Taejoong 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, [Taejoong 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, Zhixiao Lin, Mohammad Ishtiaq Ashiq Khan, Emile Aben, Romain Fontugne, Amresh Phokeer, and [Taejoong 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 [Taejoong Chung](#)
 USENIX Security, Anaheim, United States, August 2023

- PAM'23 **Exploring the Evolution of the TLS Certificate Ecosystem**
Syed Muhammad Farhan and [Taejoong Chung](#)
Virtual, March 2023
- PAM'23 **Measuring TTL Violation of DNS Resolvers in the Wild**
Protick Bhowmick, Mohammad Ishtiaq Ashiq Khan, Casey Deccio, and [Taejoong 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, [Taejoong 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, [Taejoong 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**
Hyeonmin Lee, Md. Ishtiaq Ashiq, Moritz Muller, Roland van Rijswijk-Deij, Taekyoung Kwon, [Taejoong Chung](#)
USENIX Security, Boston, United States, August 2022
- SIGCOMM'21 **IP Unbound: Robust, Responsive CDN-scale service without CDN-Scale Addresses**
Marwan Fayed, Vasileios Giotas, Lorenz Bauer, Sami Kerola, Marek Majkowski, Pavel Odintsov, Jakub Sitnicki, [Taejoong Chung](#), Dave Levin, Alan Mislove, Nick Sullivan, Chris Wood
ACM SIGCOMM, Virtual Conference, Aug. 2021
- PAM'21 **Measurement and Analysis of Automated Certificate Reissuance**
O. Omolola, R. Roberts, I. Ashiq, [Taejoong 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, [Taejoong 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, [Taejoong 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, [Taejoong 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, [Taejoong 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**
[Taejoong 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, [Taejoong 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, [Taejoong Chung](#), and T. Kwon
NDSS, San Diego, USA, Feb. 2019
- IMC'18 **Is the Web Ready for OCSP Must Staple?**
[Taejoong 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**
[Taejoong 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**
Taejoong 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**
Taejoong 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**
Taejoong 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**
Taejoong 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, Taejoong 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, Taejoong 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, Taejoong 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, Taejoong 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**
Taejoong 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**
Taejoong 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, Taejoong 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, Taejoong 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, Taejoong Chung, E. Cho, T. Kwon, and Y. Choi
IEEE GLOBECOM, Houston, Texas, United States, Dec. 2011

Journal Publications

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

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

Rolling with Confidence: Managing the Complexity of DNSSEC Operations

Moritz Muller, Taejoong 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, Taejoong 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, [Taejoong 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

[Taejoong 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, [Taejoong 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, [Taejoong 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, [Taejoong 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, [Taejoong Chung](#), S. Kim, T. Kwon, H. Kim, and Y. Choi

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

Posters

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

Spencer Roth, R. van Rijswijk-Deij, and [Taejoong 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, [Taejoong 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, [Taejoong 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**

[Taejoong Chung](#), J. Han, H. Lee, J. Kangasharju, T. Kwon, and Y. Choi

PAM, Hong Kong, March. 2013.

Non-Refereed Conference Publications

TPRC'17 **Investigating End-To-End Integrity Violations in Internet Traffic**

A. Mislove, D. Choffnes, and [Taejoong Chung](#)

TPRC, Arlington, VA, USA, Sept. 2017

Ph.D. Committees

Spring 2024 **Zhongdong Liu**, Virginia Tech.

Spring 2024 **Miles Frantz**, Virginia Tech.

Spring 2024 **Muhammad Talha Paracha**, Northeastern University.

Spring 2023 **Tung Dao**, Virginia Tech.

Fall 2022 **Jiameng Pu**, Virginia Tech.

Service

Award Committee Member.

'24 IETF/IRTF Applied Networking Research Prize (ANRP)

'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 The ACM/IRTF Applied Networking Research Workshop (ANRW)
- '24 The DNS Operations, Analysis, and Research Center (DNS-OARC)
- '24 ACM Internet Measurement Conference (IMC)
- '24 ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)
- '24 The Passive and Active Measurement (PAM)
- '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.
- '24 Journal of Cybersecurity
- '23 Journal of Law and Legislation (KJLL)
- '23 ACM Transactions on Privacy and Security
- '23 ACM Computing Surveys
- '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

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