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 Enginnering, 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.

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.

03/2015–02/2016 **Postdoctoral Researcher**, Seoul National University, Seoul, Korea.

06/2013–03/2014 **Research Intern**, Cisco Systems, Cambridge, MA, United States.

08/2011–02/2015 **Research Assistant**, Seoul National University, Seoul, Korea.

Honors and Awards

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"

2010 Best Paper Award, IEEE Communication Society Seoul Chapter

Grants

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 (RIT), $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 (≈ $44,000)

Publications Summary

Security   **5 papers in top-tier security conferences**
USENIX Security, ACM CCS, and ISOC NDSS

Network/Metric   **9 papers in top-tier networking/web conferences**
ACM IMC, ACM SIGMETRICS, and ISOC WWW

Refereed Conference Publications

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
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
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
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
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 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 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 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 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 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 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 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 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 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 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 GLOBECOM, Houston, Texas, United States, Dec. 2011

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Journal Publications

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.

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.

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

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)**.

Service

Award Committee Member.

'21	Applied Networking Research Prize (ANRP)

Program Committee Member.

'21	The ACM/IRTF Applied Networking Research Workshop (ANRW)
'21	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	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.

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

Registration Chair.

'18	ACM Internet Measurement Conference (IMC)

Reviewer.

'19	IEEE Transactions on Dependable and Secure Computing

'19 IEEE/ACM Transactions on Networking

'19 ACM Transactions on Privacy and Security

'20 ACM Computer Communication Review

'19 ACM Computer Communication Review

'16 ACM Computer Communication Review

Session Chairs.

'20 Annual Computer Security Applications Conference (ACSAC)

'19 Internet Measurement Conference (IMC)

Talks

12/09/2019 Workshop on Internet Economics: Knowledge of Internet Structure: Measurement, Epistemology, and Technology (WIE-KISMET) at CAIDA

10/23/2019 ACM Internet Measurement Conference (IMC)

10/04/2019 RIT Industrial Advisory Board (IAB) Meeting

08/08/2019 Office of Naval Research (ONR)

07/23/2019 Internet Engineering Task Force (IETF) 105

01/07/2019 Korea Advanced Institute of Science and Technology (KAIST)

12/27/2018 Sungkyunkwan University (SKKU)

11/16/2018 GCCIS PhD Colloquium Series at Rochester Institute of Technology (RIT)

11/05/2018 ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)

11/01/2018 ACM Internet Measurement Conference (IMC)

09/14/2018 Great Lakes Security Day (GLSD)

06/29/2018 Sonos at Boston

05/30/2018 Graduate School of Information Security at Korea University

03/21/2018 Department of Computer Science and Engineering at Washington University in St. Louis (WUSTL)

02/28/2018 Department of Computer Science at Rochester Institute of Technology (RIT)

11/02/2017 ACM Internet Measurement Conference (IMC)

09/29/2017 New England Security Day (NESD)

09/08/2017 Research Conference on Communications, Information and Internet Policy (TPRC)

08/18/2017 USENIX Security

11/16/2016 ACM Internet Measurement Conference (IMC)

11/15/2016 ACM Internet Measurement Conference (IMC)

10/07/2016 New England Networking and Systems Day (NENS)

12/29/2014 Korea Advanced Institute of Science and Technology (KAIST)

04/10/2014 World Wide Web Conference (WWW)

05/22/2013 IFIP Networking

12/07/2011 IEEE GLOBECOM

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

Ted "Taekyoung" Kwon (tkkwon@snu.ac.kr)

Professor, School of Computer Science & Engineering, Seoul National University, South Korea