

Taejoong Chung

CONTACT INFORMATION	Networked Systems Research Group College of Computer and Information Northeastern University 440 Huntington Avenue, Boston, MA <i>E-mail:</i> t.chung@neu.edu <i>WWW:</i> http://taejoong.github.com
RESEARCH INTERESTS	Data Science; Internet Security and Measurement; Online Social Network; Crowd Phenomena; P2P network; Information-Centric or Content-Centric Network;
EDUCATION	Ph.D. , Feb. 2015, Computer Science and Engineering, Seoul National University Thesis: “Analytic Approach of Understanding Crowd Phenomena on the Internet: Case Studies of MMORPG and BitTorrent” Supervisors: <i>Prof. Yanghee Choi</i> (Current Minister of Science, ICT and Future Planning of Korea) and <i>Prof. Ted “Taekyoung” Kwon</i> B.S. , Aug. 2009, Computer Science and Engineering, POSTECH (Pohang University of Science and Technology)
PROFESSIONAL EXPERIENCES	Postdoctoral Researcher: Sep. 2015 - Current at Northeastern University . <ul style="list-style-type: none">Analyzing mismanaged SSL/PKI certificates and its usage and how private key in SSL/PKI certificates are shared in the HTTPS ecosystemAnalyzing end-to-end violation in the Internet Postdoctoral Researcher: Mar. 2015 - Feb. 2016 at Seoul National University . <ul style="list-style-type: none">Analyzing and identifying potential privacy leakage problem in the large-scale online social networks (OSNs) Intern: Jun. 2013 - Mar. 2014 at Cisco Systems in Cambridge, MA USA <ul style="list-style-type: none">Design and implement a scalable NDN (Named Data Networking) router with unique forwarding and caching mechanism featuring terabyte-scale caching with solid-state drives on ISM (ASR9K) platform Research Assistance: Aug. 2009 - Feb. 2015 at Seoul National University . <ul style="list-style-type: none">Analyzing and modeling social interactions and crowd phenomena in OSNs and Virtual World (e.g., MMORPG)Analyzing and improving BitTorrent performanceMeasuring and modeling content dissemination phenomena in BitTorrentDesigning NDN architecture to solve routing scalability issues Teaching Assistance: Spring 2010 / Fall 2010 / Fall 2011 at Seoul National University <ul style="list-style-type: none">Computer Networks (4190.411, Fall 2011)Engineering Math I (400.001A, Spring 2010)Engineering Math II (400.002A, Fall 2010) Research Intern: Dec. 2007 - Mar. 2008 at NomadConnection in Seoul, Korea (http://www.nomadconnection.com) <ul style="list-style-type: none">Developed a plugin on the <i>chameleo</i>, which is an extensible open-source media framework Intern: Dec. 2008 - Mar. 2009 at Company100 in Seoul, Korea (http://www.company100.com)

- Developed a proxy server based on *RabbIT*, which supports the content compression and caching for mobile devices

AWARDS

1. Microsoft Azure Research “Award Program: Microsoft Azure for Research Supports \$20,000”, Apr. 2015
 - Project Title: Group Dynamics in Group based Social Network
2. Best paper award from Korea Information and Communication Society (KICS), Jul. 2010.
 - Paper title: Analysis on Availability Metrics in BitTorrent Swarming System
3. Best paper award from IEEE Communication Society Seoul Chapter, Apr. 2010.
 - Paper title: Analysis on BitTorrent Performance Based on the Number of Unchoked Peers

GRANT

1. (PI) Research Grant of Basic Science Research Program by National Research Foundation of Korea (NRF) funded by the Ministry of Education (2015018668)
 - Project Title: Personal Recommendation System and Privacy Protection through Big Data Analysis on Online Social Networks

INTERNATIONAL CONFERENCE PUBLICATIONS

1. Roland van Rijswijk-Deij, **Taejoong Chung**, David Choffness, Alan Mislove, and Willem Toorop, “The Root Canary: Monitoring and Measuring the DNSSEC Root Key Rollover” in proceedings of ACM Special Interest Group on Data Communications (SIGCOMM), Los Angeles, USA, August 2017 (accepted as a poster)
2. **Taejoong Chung**, Roland van Rijswijk-Deij, Balakrishnan Chandrasekaran, David Choffness, Dave Levin, Bruce M. Maggs, Alan Mislove, and Christo Wilson, “A Longitudinal, End-to-End View of the DNSSEC Ecosystem” in proceedings of USENIX Security Symposium (Security), Vancouver, BC, Canada, August 2017 (acceptance rate: $85/522 = 16.3\%$)
3. **Taejoong Chung**, David Choffnes, and Alan Mislove, “Tunneling for Transparency: A Large-Scale Analysis of End-to-End Violations in the Internet” in proceedings of ACM Internet Measurement Conference (IMC), Santa Monica, California, USA, November 2016. (acceptance rate: $46/184 = 25\%$)
4. **Taejoong Chung**, Yabing Liu, David Choffnes, Dave Levin, Bruce Maggs, Alan Mislove, and Christo Wilson, “Measuring and Applying Invalid SSL Certificates: The Silent Majority” in proceedings of ACM Internet Measurement Conference (IMC), Santa Monica, California, USA, November 2016. (acceptance rate: $46/184 = 25\%$)
5. Frank Cangialosi, **Taejoong Chung**, David Choffnes, Dave Levin, Bruce Maggs, Alan Mislove, and Christo Wilson, “Measurement and Analysis of Private Key Sharing in the HTTPS Ecosystem” in proceedings of ACM Conference on Computer and Communications Security (CCS), Hofburg Palace, Vienna, Austria, October 2016. (acceptance rate: $137/831 = 16.5\%$)
6. Daejin Choi, Jinyoung Han, **Taejoong Chung**, Young-Yeol Ahn, Byung-Gon Chun, Ted “Taekyoung” Kwon, “Characterizing Conversation Patterns in Reddit: From the Perspectives of Content Properties and User Participation Behaviors” in proceedings of ACM Conference on Online Social Networks (COSN) 2015, Stanford, CA, USA, November 2015. (acceptance rate: $22/82 = 26.8\%$)

7. Jinyoung Han, Daejin Choi, A-Young Choi, **Taejoong Chung**, Ted “Taekyoung” Kwon, Jong-Youn Rha, Chen-Nee Chuah, “Sharing Topics in Pinterest: Understanding Content Creation and Diffusion Behaviors”, in proceedings of ACM Conference on Online Social Networks (COSN) 2015, Standford, CA, USA, November 2015. (acceptance rate: $22/82 = 26.8\%$)
8. Won So, **Taejoong Chung**, Haowei Yuan, David Oran, and Mark Stapp, “Toward Terabyte-scale Caching with SSD in a Named Data Networking Router” in proceedings of ACM/IEEE ANCS 2014 conference (accepted as a poster), Marina del Rey, CA, USA, October 2014.
9. Hoon-gyu Choi, Jungmin Yoo, **Taejoong Chung**, Nakjung Choi, Ted “Taekyoung” Kwon, and Yanghee Choi, “CoRC: Coordinated Routing and Caching for Named Data Networking” in proceedings of ACM/IEEE ANCS 2014 conference, Marina del Rey, CA, USA, October 2014.
10. **Taejoong Chung**, Jinyoung Han, Daejin Choi, Ted “Taekyoung” Kwon, Huy Kang Kim and Yanghee Choi, “Unveiling Group Characteristics in Online Social Games: A Socio-Economic Analysis” in proceedings of International World Wide Web Conference (WWW), Seoul, Korea, April 2014. (acceptance rate: $84/650 = 12.9\%$)
11. **Taejoong Chung**, Jinyoung Han, Hojin Lee, Jussi Kangasharju, Ted “Taekyoung” Kwon, and Yanghee Choi, “Spatial and Temporal Locality of Content in BitTorrent: A Measurement Study” in proceedings of IFIP NETWORKING 2013, Brooklyn, Newyork, USA, May. 2013. (acceptance rate = $50 / 191 = 26.1\%$)
12. **Taejoong Chung**, Jinyoung Han, Hojin Lee, Nakjung Choi, Ted “Taekyoung” Kwon, and Yanghee Choi, “Spatial and Temporal Locality of Swarm Dynamics in BitTorrent” in proceedings of PAM 2013 (Passive and Active Measurement Conference) (accepted as a poster), Hong Kong, March. 2013.
13. Jinyoung Han, Seungbae Kim, **Taejoong Chung**, Ted “Taekyoung” Kwon, Hyun-chul Kim, and Yanghee Choi, “Bundling Practice in Bittorrent: What, How, and Why,” in proceedings of ACM SIGMETRICS, Jun. 2012. (acceptance rate = $31/203 = 15.3\%$)
14. Seungbae Kim, Jinyoung Han, **Taejoong Chung**, Hyun-chul Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “Content Publishing and Downloading Practice in BitTorrent,” in proceedings of IFIP NETWORKING, May. 2012. (acceptance rate = $64/225 = 28.4\%$)
15. Jaeyoung Choi, Jinyoung Han, **Taejoong Chung**, Eunsang Cho, Ted “Taekyoung” Kwon, and Yanghee Choi, “Bandwidth Allocation for BitTorrent under Multi-Torrent Environments,” in proceedings of IEEE GLOBECOM, Dec. 2011. (acceptance rate = $1070/2923 = 36.6\%$)
16. Jinyoung Han, **Taejoong Chung**, Seungbae Kim, Ted “Taekyoung” Kwon, Hyun-chul Kim, and Yanghee Choi, “How Prevalent is Content Bundling in BitTorrent?,” in proceedings of ACM SIGMETRICS, Jun. 2011. (accepted as a poster) (acceptance rate = $(\text{regular } 26 + \text{poster } 20) / 177 = 26\%$)
17. Jinyoung Han, **Taejoong Chung**, Seungbae Kim, Hyun-chul Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “An Empirical Study on Content Bundling in BitTorrent Swarming System,” in proceedings of AsiaFI Summer School, Aug. 2010. arXiv:1008.2574v1

18. Jinyoung Han, **Taejoong Chung**, Hyun-chul Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “Systematic Support for Content Bundling in BitTorrent Swarming,” in proceedings of IEEE INFOCOM Student Workshop, Mar. 2010. (acceptance rate = $20/63 = 31.7\%$)

INTERNATIONAL
JOURNAL
PUBLICATIONS

1. Jinyoung Han, **Taejoong Chung**, Seungbae Kim, Hyun-chul Kim, Jussi Kangasharju, Ted “Taekyoung” Kwon, and Yanghee Choi, “Strategic Bundling for Content Availability and Fast Distribution in BitTorrent”, accepted in *Elsevier Computer Communications (COMCOM)*.
2. Jinyoung Han, Nakjung Choi, **Taejoong Chung**, Ted “Taekyoung” Kwon, and Yanghee Choi, “A Target-centric Surveillance System based on Localization and Social Networking,” In *Springer Multimedia Tools and Applications (MTAP)*. (SCIE, IF in 2010 = 0.885)
3. Jinyoung Han, Seungbae Kim, **Taejoong Chung**, Ted “Taekyoung” Kwon, Hyun-chul Kim, and Yanghee Choi, “Bundling Practice in Bittorrent: What, How, and Why,” In *ACM SIGMETRICS Performance Evaluation Review*, vol. 40, no. 1, Jun. 2012. (SCOPUS, SNIP in 2010 = 1.835, Fast-tracked from ACM SIGMETRICS 2012)
4. Jinyoung Han, **Taejoong Chung**, Seungbae Kim, Ted “Taekyoung” Kwon, Hyun-chul Kim, and Yanghee Choi, “How Prevalent is Content Bundling in BitTorrent?,” In *ACM SIGMETRICS Performance Evaluation Review*, vol. 39, no. 1, Jun. 2011. (SCOPUS, SNIP in 2010 = 1.835, Fast-tracked from ACM SIGMETRICS 2011)

DOMESTIC
CONFERENCE
PUBLICATIONS

1. **Taejoong Chung**, Ted “Taekyoung” Kwon, and Yanghee Choi, “Bloom filter-based Routing for CCN” In *Korea Information and Communication Society (KICS) Summer Conference*, July. 2012
2. Jimin Lee, **Taejoong Chung**, Ted “Taekyoung” Kwon, and Yanghee Choi, “A study on Flooding-based Routing Designs for CCNx Testbed” In *Korea Information and Communication Society (KICS) Fall Conference*, Nov. 2011
3. **Taejoong Chung**, Jinyoung Han, Seungbae Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “A Study on How to Measure the Topology of Swarm in BitTorrent,” In *Korea Information and Communication Society (KICS) Fall Conference*, Nov. 2011.
4. **Taejoong Chung**, Jinyoung Han, Ted “Taekyoung” Kwon, and Yanghee Choi, “Analysis on BitTorrent Performance Based on the Piece-Size,” In *Korea Information and Communication Society (KICS) Winter Conference*, Feb. 2011.
5. **Taejoong Chung**, Jinyoung Han, Hyun-chul Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “Analysis on Availability Metrics in BitTorrent Swarming System,” In *Korea Information and Communication Society (KICS) Summer Conference*, Jul. 2010. (Best Paper Award from Korea Information and Communication Society)
6. **Taejoong Chung**, Jinyoung Han, Hyun-chul Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “An Analysis on BitTorrent Performance Based on the Number of Unchoked Peer,” In *The 20th Joint Conference on Communication & Information (JCCI)*, Jul. 2010. (Best Paper Award from IEEE Communication Society Seoul Chapter)

DOMESTIC
JOURNAL
PUBLICATIONS

1. **Taejoong Chung**, Jinyoung Han, Hyunchul Kim, Ted “Taekyoung” Kwon, and Yanghee Choi, “An Analysis on BitTorrent Performance Based on the Number of Unchoked Peer,” In *Journal of Korea Information and Communication Society (KICS)*, vol. 35, no. 8, pp. 1197-1203, Aug. 2010. (Korea Citation Index (KCI), forward from JCCI 2010 Conference)

FELLOWSHIPS

1. Ph.D Industrial Scholarship From SAMSUNG, (2012 - 2016)
2. Hajung (HYUNDAI) Scholarship, (2010 - 2012)
3. Student exchange program to UCLA from POSTECH, (2007)
4. National Science & Technology Scholarship, KOSAF(Korea Student Aid Foundation), (2005 - 2008)

PATENTS

1. Hyungho Lee, Taekyoung Kwon, Jicheol Lee, Youngbin Im, Hanna Lim, **Taejoong Chung**, Dookyoon Han “Method and Apparatus for Assigning Video Bitrate in Mobile Communication System” (US 9398337 B2), 2013
2. Hyungho Lee, Taekyoung Kwon, Jicheol Lee, Youngbin Im, Hanna Lim, **Taejoong Chung**, Dookyoon Han “Method for Providing Video Streaming Service and Mobile Device for Same” (US 20160127754 A1), 2013
3. Ted “Taekyoung” Kwon, **Taejoong Chung**, Youngbin Im, Dookyoon Han, Hyungho Lee, Jicheol Lee, Hanna Lim, “Method and Apparatus for Preventing Duplicated Transmission Under Streaming Service” (KOR NO. 1020130075777), 2013
4. Ted “Taekyoung” Kwon, Youngbin Im, **Taejoong Chung**, Dookyoon Han, Hyungho Lee, Jicheol Lee, Hanna Lim, “Method and Apparatus for Assigning Video Bitrate in Mobile Communication System” (KOR NO. 1020130065634), 2013
5. Ted “Taekyoung” Kwon, Dookyoon Han, Youngbin Im, **Taejoong Chung**, Hyungho Lee, Jicheol Lee, Hanna Lim, “Method for Providing for a Video Streaming Service an Mobile Device Thereof” (KOR NO. 1020130066062), 2013

DEMO

1. Internet Video Diary, *Future Internet Service Demonstration*, 2010. (<http://mmlab.snu.ac.kr/projects/2010/2010demo/>)
2. Efficient Bandwidth Management Scheme under Multi-torrent Environment, *Future Internet Technology Demonstration/Exhibition*, 2009. (http://fif.kr/fidemo2009/summary/12_abstract.pdf)

PROJECT
EXPERIENCES

- Networking Content Delivery Optimization by *SAMSUNG, Korea* (2012. 09. - 2013.06)
- Fundamental Research on In-network Caching and Routing for Named-data Networking sponsored by *Korea Communications Agency (KCA), Korea* (2011. 3. - 2014.02)
- Future Internet Service Demonstration: Internet Video Diary sponsored by *Korea Internet & Security Agency (KISA), Korea* (2010. 7. - 2010. 12.)

PROFESSIONAL SKILLS	<ul style="list-style-type: none"> • Committee - Poster Selection Committee of ACM/IEEE Symposium on Architectures for Networking and Communications Systems 2014 • Reviewer - ANCS 2014, ICTC 2012, IMCOM 2013, COMSNETS 2011
TALKS & PRESENTATIONS	<ol style="list-style-type: none"> 1. NENS 2016, “Tunneling for Transparency: A Large-Scale Analysis of End-to-End Violations in the Internet” Boston University, Massachusetts, USA, October 2016. 2. WWW 2014, “Unveiling Group Characteristics in Online Social Games: A Socio-Economic Analysis”, Seoul, Korea, April 2014. 3. IFIP NETWORKING 2013, “Spatial and Temporal Locality of Content in BitTorrent: A Measurement Study”, Brooklyn, Newyork, USA, May. 2013. 4. PAM 2013, “Spatial and Temporal Locality of Swarm Dynamics in BitTorrent”, Hong Kong, March. 2013. 5. IEEE GLOBECOM 2011, “Bandwidth Allocation for BitTorrent under Multi-Torrent Environments”, Houston, US, Dec 2012.
TECHNICAL SKILLS	<ul style="list-style-type: none"> • Programming languages: C, C++, Objective C, Java, Python • OS: MS Windows, Linux, Unix, OSX • Tools: MATLAB, SQL, CCNx, R, iGraph.
REFERENCES	<p>Yanghee Choi (e-mail: yhchoi@snu.ac.kr; phone: +82-2-880-7303)</p> <ul style="list-style-type: none"> • Current Minister of Science, ICT and Future Planning, Korea • Professor, School of Computer Science & Engineering, Seoul National University, Korea (leave of absence) <p>Ted “Taekyoung” Kwon (e-mail: tkkwon@snu.ac.kr; phone: +82-2-880-9105)</p> <ul style="list-style-type: none"> • Professor, School of Computer Science & Engineering, Seoul National University, Korea <p>David Oran (e-mail: oran@cisco.com)</p> <ul style="list-style-type: none"> • Fellow at Cisco Systems, USA <p>Alan Mislove (e-mail: amislove@ccs.neu.edu)</p> <ul style="list-style-type: none"> • Associate Professor of Computer Science, Northeastern University, USA <p>Hyun-chul Kim (e-mail: hkim@smu.ac.kr; phone: +82-41-550-5403)</p> <ul style="list-style-type: none"> • Professor, Dept. of Computer Software Engineering, Sangmyung University, Korea