

(Jessie) Hui Wang

Name in Chinese: 王会 (WANG Hui)

Email: jessiewang@tsinghua.edu.cn

<https://jessiehuiwang.github.io/>

Research interests: understanding and improving the performance and security of networked systems, especially for the Internet and cloud networks.

keywords: network management, Internet measurement, cloud computing, Internet routing, network security, Internet governance

EDUCATION

Ph.D., The Chinese University of Hong Kong, Hong Kong

Department of Information Engineering

Thesis: ISPs' Traffic Engineering and Peering Strategy, 2007

Advisor: Prof. Dah Ming Chiu

Master, Tsinghua University, Beijing

Department of Computer Science and Technology

Bachelor, Tsinghua University, Beijing

Department of Computer Science and Technology

EMPLOYMENT

Tenure-track Associate Professor,

Jan 2018 - present

Institute for Network Sciences and Cyberspace, Tsinghua University, Beijing

Associate Professor,

Dec 2013 - Dec 2017

Institute for Network Sciences and Cyberspace, Tsinghua University, Beijing

Assistant Professor,

Nov 2007 - Dec 2013

Institute for Network Sciences and Cyberspace, Tsinghua University, Beijing

Remark: In 2018, the institute started a faculty system reform, in which associate professors in old system were required to transit into tenure-track associate professors or research fellows. About ten percent of associate professors in old system were qualified for entering tenure-track in the institute, and they were given a single 3-year term. The term was extended by one year for all tenure-track professors due to interruptions caused by covid-19.

TEACHING

- **Computer Network Management**, undergraduate, 48 class hours
Spring' 13, Spring' 14, Spring' 15, Spring' 16, Spring' 17, Spring' 18, Spring' 19,
Spring' 20, Fall' 21
 - **Cyberspace Mapping and Situation Awareness for Cybersecurity**, graduate, 48 class hours
Fall' 19, Fall' 20, Fall' 21
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FUNDINGS

- **PI, Overlay Routing Strategies Towards Cross-domain End-to-End Communication with Soft Guarantees**, Huawei Ltd., starting from Aug. 2021, 1,000K per year.
- **PI, A Study on the Risk of Inter-Nation Surveillance and the Evasion Game in the Internet Routing**, Natural Science Foundation of China, No. 62072269, Jan. 2021 - Dec. 2024, 580K.
- **PI, Cross-domain Collaborative Management Architecture for International Cyberspace Governance**, Task of National Key Research and Development Program of China, June. 2020 - May. 2023, 2,000K.
- **PI, A Multi-Dimensional Analysis on the Risk and Evolution of Internet Topology and Routing**, Electronic Technology Cyber Security Co., Ltd., Jul. 2020 - Mar. 2021, 450K.
- **Co-PI, Future Network Architecture for Time-Location-Based Services**, National Science and Technology Innovation Zone Program, 5,000K, June. 2020 - Oct. 2021. (rank 2nd in the project team and be responsible for the executive management of the whole project, and be the PI of a task (with 2,200K funding) of the project.)
- **PI, Evaluation, Design and Implementation of Layer 2 LISP through Open Source Framework**, Cisco, Jun. 2013 - Jun. 2014, 150K.
- **PI, Optimizing Peering and Routing Strategy based on Traffic Cost Model**, Natural Science Foundation of China, No. 61202356, Jan. 2013 - Dec. 2015, 240K.
- **PI, Optimizing Peering and Routing Strategy based on Traffic Cost Model**, Tsinghua University Initiative Scientific Research Program, Jul. 2012 - Jun. 2015, 530K.

I also worked as a key contributor for many large projects, with special focus on their network management challenges, such as Future Internet Technology Infrastructure Project (FITI, ongoing), China Next Generation Internet - CERNET2, Space-ground Integrated Communication Network, and China Telecom Next Generation Internet Technology Research Project.

I also participated in many routing-related projects as a key member, such as self-healing routing, locator/identifier separation routing, and multicast routing.

Services

- Grant Evaluation Committee Member, TEIN Asi@Connect CFP
- Journal Editor, Frontiers in Communications and Networks

Conferences

- ICC 2022, TPC
- ICC 2021, TPC
- APAN AINWG (AI-Driven Networks Working Group) 2020, Workshop Co-Chair
- AC3 IOTS 2021, TPC
- ICOIN 2016, Session Chair
- COMSNETS 2015, TPC & Session Chair

I reviewed papers for some journals such as

- IEEE/ACM Transactions on Networking
- Computer Networks (Elsevier)
- Computer Communications (Elsevier)

Students

Current Students

- Chao Xu, PhD Student, (2021 -), Master (2018 - 2021)
awarded first prize scholarship
- Tianhao Wu, PhD Student, (2020 -)
awarded Future Scholar Fellowship of Tsinghua University
- Rui Li, Master Student, (2020 -)
- Juncal Liu, PhD Student, (2019 -)
- Chenghao Rong, PhD Student, (2018 -)
- Shuying Zhuang, PhD Student, (2018 -)
co-supervise with Prof. Jilong Wang.

Graduated Student

- Jianping Weng, M.S. 2018, graduate with honor, joined Alibaba.

(Thesis: Anomaly Traceback and Elastic Resource Allocation based on Cloud Platform Monitoring)

I closely worked with the following students on some papers in 2018 and 2019

- Shengchao Liu, graduated in 2020 (Ph.D. of Prof. Jilong Wang)
- Haibo Wang, graduated in 2020 (Ph.D. of Prof. Jilong Wang)
- Congcong Miao, graduated in 2020 (Ph.D. of Prof. Jilong Wang)

Publications

Selected Papers (* indicates corresponding author of a journal paper)

- **(TON 2021)**. Chenghao Rong, **Jessie Hui Wang ***, Juncai Liu, Jilong Wang, Fenghua Li, and Xiaolei Huang, "Scheduling Massive Camera Streams to Optimize Large-scale Live Video Analytics," **IEEE/ACM Transactions on Networking**. (minor revision.)
- **(CoNEXT 2021)**. Shuying Zhuang, **Jessie Hui Wang ***, Jilong Wang, Zujiang Pan, Tianhao Wu, Fenghua Li, and Zhiyong Zhang, "Discovering Obscure Looking Glass Sites on the Web to Facilitate Internet Measurement Research," The 17th International Conference on emerging Networking EXperiments and Technologies (**CoNEXT 2021**), Munich, Germany (Virtual Conference), December 7-10, 2021. (to appear.)
- **(IoT-J 2021)**. Jialin Dong, Jun Zhang, Yuanming Shi, and **Jessie Hui Wang ***, "Faster Activity and Data Detection in Massive Random Access: A Multi-armed Bandit Approach," **IEEE Internet of Things Journal**, 2021. (minor revision.)
- **(CN 2021)**. Juncai Liu, **Jessie Hui Wang ***, Chenghao Rong, Yuedong Xu, Tao Yu, and Jilong Wang, "FedPA: an Adaptively Partial Model Aggregation Strategy in Federated Learning," **Computer Networks**, Elsevier, 2021, doi: 10.1016/j.comnet.2021.108468.
- **(IoT-J 2021)**. Wenzhuo Yang, Yipeng Zhou, Miao Hu, Di Wu, James Xi Zheng, **Jessie Hui Wang** and Song Guo, "Gain without Pain: Offsetting DP-injected Nosies Stealthily in Cross-device Federated Learning," **IEEE Internet of Things Journal**, vol. , no. , pp., , 2021. doi: 10.1109/JIOT.2021.3102030.
- **(TMC 2021)**. Yipeng Zhou, Jiawen Chen, Guoqiao Ye, Di Wu, **Jessie Hui Wang**, and Min Chen, "Collaboratively Replicating Encoded Content on RSUs to Enhance Video Services for Vehicles," **IEEE Transactions on Mobile Computing**, vol. 20, no. 3, pp. 877-892, March 2021. doi: 10.1109/TMC.2019.2960022.
- **(TON 2020)**. Haibo Wang, **Jessie Hui Wang ***, Jilong Wang, Weizhen Dang, Jing'an Xue, Fenghua Li and Jinzhe Shan, "Squeezing the Gap: An Empirical Study on DHCP Performance in a Large-Scale Wireless Network," **IEEE/ACM Transactions on Networking**, vol. 28, no. 2, pp. 832 - 845, April 2020. doi: 10.1109/TNET.2020.2971551.

- **(CN 2020).** Shuying Zhuang, **Jessie Hui Wang ***, Pei Zhang and Jilong Wang, "Understanding the Latency to Visit Websites in China: an Infrastructure Perspective," **Computer Networks**, Volume 169, 14 March 2020. doi: 10.1016/j.comnet.2020.107102.
- **(MTA 2020).** Canrui Wu, Chen Wang, Yipeng Zhou, Di Wu, Min Chen, **Jessie Hui Wang *** and Jing Qin, "Exploiting User Reviews for Automatic Movie Tagging," **Multimedia Tools and Applications**, 79(17), pp. 11399-11419, May 2020. doi: 10.1007/s11042-019-08513-0.
- **(TON 2019).** Yuedong Xu, Zhujun Xiao, Tianyu Ni, **Jessie Hui Wang ***, Xin Wang and Eitan Altman, "On The Robustness of Price-Anticipating Kelly Mechanism," **IEEE/ACM Transactions on Networking**, vol. 27, no. 4, pp. 1558-1571, Aug. 2019. doi: 10.1109/TNET.2019.2926304.
- **(TON 2019).** Shengchao Liu, Jianping Weng, **Jessie Hui Wang ***, Changqing An, Yipeng Zhou, and Jilong Wang, "An Adaptive Online Scheme for Scheduling and Resource Enforcement in Storm," **IEEE/ACM Transactions on Networking**, vol. 27, no. 4, pp. 1373-1386, August 2019. doi: 10.1109/TNET.2019.2918341.
- **(CN 2019).** **Jessie Hui Wang ***, Jilong Wang, Changqing An and Qianli Zhang, "A Survey on Resource Scheduling for Data Transfers in Inter-Datacenter WANs," **Computer Networks**, vol. 161, pp. 115-137, 2019, doi: 10.1016/j.comnet.2019.06.011.
- **(JPDC 2019).** Hui Yu, Jiahai Yang, **Jessie Hui Wang**, and Hui Zhang, "Towards predictable performance via two-layer bandwidth allocation in cloud datacenter," **Journal of Parallel and Distributed Computing**, vol. 126, pp. 34-47, 2019, doi: 10.1016/j.jpdc.2018.11.013.
- **(TON 2018).** Jianping Weng, **Jessie Hui Wang ***, Jiahai Yang, and Yang Yang, "Root Cause Analysis of Anomalies of Multitier Services in Public Clouds," **IEEE/ACM Transactions on Networking**, vol. 26, no. 4, pp. 1646-1659, 2018, doi: 10.1109/TNET.2018.2843805.
- **(CN 2018).** **Jessie Hui Wang *** and Changqing An, "A Study on Geographic Properties of Internet Routing," **Computer Networks**, vol. 133, pp. 183-194, 2018, doi: 10.1016/j.comnet.2018.01.032.
- **(ComCom 2015).** **Jessie Hui Wang ***, Jeffrey Cai, Jerry Lu, Kevin Yin, and Jiahai Yang, "Solving Multicast Problem in Cloud Networks Using Overlay Routing," **Computer Communications**, vol. 70, pp. 1-14, 2015, doi: 10.1016/j.comcom.2015.05.016.
- **(ComCom 2011).** **Jessie Hui Wang ***, Changqing An and Jiahai Yang, A Study of Traffic, User Behavior and Pricing Policies in a Large Campus Network, *Computer Communications*, Elsevier, Vol.34, No.16, pp. 1922-1931, Oct. 2011, DOI: 10.1016/j.comcom.2011.05.009.
- **(PPNA 2011).** **Jessie Hui Wang ***, Chungang Wang, Jiahai Yang and Changqing An, A Study on Key Strategies in P2P File Sharing Systems and ISPs' P2P Traffic Management, *Peer-to-Peer Networking and Applications*, Springer, Vol.4, No.4, pp. 410-419,

Dec. 2011, DOI: 10.1007/s12083-010-0098-7.

- **(CCR 2011)**. Jianping Wu, **Jessie Hui Wang** * and Jiahai Yang, CNGI-CERNET2: an IPv6 Deployment in China, Computer Communication Review, ACM SIGCOMM, Vol.41, No.2, pp. 48-52, Apr. 2011, DOI: 10.1145/1971162.1971170.
- **(CN 2008)**. **Jessie Hui Wang**, Dah Ming Chiu, and John C.S. Lui, A Game-theoretic Analysis of the Implications of Overlay Network Traffic on ISP Peering, Computer Networks, Elsevier, Vol.52, No.15, pp. 2961-2974, Oct. 2008, DOI: 10.1016/j.comnet.2008.06.014.
- **(TNSM 2007)**. **Jessie Hui Wang**, Dah Ming Chiu, John C.S. Lui, and Rocky K.C. Chang, Inter-AS Inbound Traffic Engineering via ASPP, IEEE Transactions on Network and Service Management, Vol.4, No.1, Jun. 2007.

Other Papers

- **(ICNP 2019)**. Congcong Miao, Jilong Wang, Tianying Ji, **Hui Wang**, Chao Xu, Fenghua Li, and Fengyuan Ren, "BDAC: A Behavior-aware Dynamic Adaptive Configuration on DHCP in Wireless LANs," The 27th IEEE International Conference on Network Protocols (ICNP 2019), Chicago, Illinois, USA, October 7-10, 2019. (doi: 10.1109/ICNP.2019.8888048)
- **(IWQoS 2019)**. JingAn Xue, Weizhen Dang, Haibo Wang, Jilong Wang, and **Jessie Hui Wang**, "Evaluating Performance and Inefficient Routing of an Anycast CDN," IEEE/ACM International Symposium on Quality of Service (IWQoS 2019), Phoenix, Arizona, USA, June 24-25, 2019. (doi: 10.1145/3326285.3329049)
- **(ICC 2019)**. Shengchao Liu, Jilong Wang, **Jessie Hui Wang**, Haibo Wang, and Ya Liu, "WRT: Constructing Users' Web Request Trees from HTTP Header Logs," 53rd IEEE International Conference on Communications (ICC 2019), Shanghai, China, May 20-24, 2019.
- **(LCN 2018)**. Congcong Miao, Jilong Wang, **Hui Wang**, Jun Zhang, Weiwei Zhou and Shengchao Liu, "A Multi-dimension Measurement Study of a Large Scale Campus WiFi Network," 43nd IEEE Conference on Local Computer Networks (LCN 2018), Chicago, USA, October 1-4, 2018, doi: 10.1109/LCN.2018.8638246.
- **(IWQoS 2017)**. Jianping Weng, **Jessie Hui Wang**, Jiahai Yang, and Yang Yang, "Root Cause Analysis of Anomalies of Multitier Services in Public Clouds," 2017 IEEE/ACM 25th International Symposium on Quality of Service (IWQoS 2017), Vilanova i la Geltru, Spain, June 14-16, 2017, doi: 10.1109/IWQoS.2017.7969155.
- **(NOMS 2016)**. Hui Yu, Jiahai Yang, Cong Xu, **Hui Wang**, and Zi Liang, "SpongeNet: Towards Bandwidth Guarantees of Cloud Datacenter with Two-phase VM Placement," IEEE/IFIP Network Operations and Management Symposium (NOMS 2016), April 25-29, 2016.
- **(NOMS 2016)**. Ziyu Wang, Jiahai Yang, Hui Zhang, Chenxi Li, Shize Zhang, and **Jessie**

- Hui Wang**, "Towards online anomaly detection by combining multiple detection methods and Storm," IEEE/IFIP Network Operations and Management Symposium 2016 (NOMS 2016), April 25-29, 2016.
- **(ICOIN 2016)**. Pengcheng Du, Hui Wang, Jiahai Yang, Jianfeng Wang, and Youjian Zhao, Analyzing Intercontinental Circuitousness to Improve the Interconnection and Routing for ISPs, The 30th International Conference on Information Networking (ICOIN 2016), Jan 13-15, 2016.
 - **(ISCC 2015)**. Zejia Chen, Hui Wang, and Jiahai Yang, MuLTI: Multiple Location Tags Inference for Users in Social Networks, The 20th IEEE Symposium on Computers and Communications (ISCC 2015), July 6-9, 2015.
 - **(NOMS 2014)**. Miao Li, Jessie Hui Wang, Jiahai Yang, and Chenxi Li, A Value Based Framework for Provider Selection of Regional ISPs, IEEE/IFIP Network Operations and Management Symposium, (NOMS 2014), May 5-9 2014, Krakow, Poland.
 - **(Networking 2014)**. Zejia Chen, Jiahai Yang, and Hui Wang, A Cascading Framework for Uncovering Spammers in Social Networks, 2014 IFIP Networking Conference (Networking 2014), June 2-4, 2014, Trondheim, Norway.
 - **(PIC 2014)**. Lujing Sun, Jiahai Yang, Hui Wang, and Fuliang Li, A Feeds-based Analysis of OSN Activities, 2014 International Conference on Progress in Informatics and Computing (PIC 2014), May 16-18, 2014.
 - **(JEC 2014)**. Jiahai Yang, Mingwei Xu, Hui Wang, Wenlong Chen, Yuan Yang, Qingzhou Dong, and Yang Wang, IER: ID-ELoc-RLoc Based Architecture for Next Generation Internet, Journal of Electronics China (published by Springer), December 2014, Volume 31, Issue 6, pp 519-536.
 - **(CJE 2013)**. Donghong Qin, Jiahai Yang, and Hui Wang, Experimental Study on Diversity and Novelty of Inter-domain Paths, Chinese Journal of Electronics (English), Vol.22, No.1, pp. 160-166, Jan. 2013.
 - **(JCIT 2012)**. Donghong Qin, Jiahai Yang, Hui Wang, and Zhuolin Liu, A Simple Yet Efficient Aggregated Path Computing Method, Journal of Convergence Information Technology, Vol.7, No.17, pp. 333-341, Sep. 2012, DOI: 10.4156/jcit.vol7.issue17.39.
 - **(ICC 2012)**. Jessie Hui Wang, Yang Wang, Mingwei Xu and Jiahai Yang, Separating Identifier from Locator with Extended DNS, IEEE International Conference on Communications (ICC 2012), June 10-15, 2012, Ottawa Canada.
 - **(APNOMS 2012)**. Miao Li, Hui Wang and Jiahai Yang, Flattening and Preferential Attachment in the Internet Evolution, Proceedings of the 14th Asia-Pacific Symposium on Network Operations and Management (APNOMS 2012), September 25-27, 2012, Seoul, South Korea.
 - **(AINA 2012)**. Donghong Qin, Jiahai Yang, Zhuolin Liu, Hui Wang, Bin Zhang, and Wei

- Zhang, AMIR: Another Multipath Interdomain Routing, IEEE 26th International Conference on Advanced Information Networking and Applications (AINA 2012), March 26-29, 2012, Fukuoka-shi, Japan.
- **(ICOIN 2012).** Donghong Qin, Jiahai Yang, Hui Wang, Bin Zhang, Lei Gao and Zhuolin Liu, Multipath Interdomain Routing via Deviation from Primary Path, 26th International Conference on Information Networking (ICOIN 2012), February 1-3, 2012, Bali, Indonesia.
 - **(ICNS 2012).** Yang Wang, Hui Wang, Donghong Qin and Jiahai Yang, Merging Parallel Swarms for BitTorrent Performance Improving and Localization, The Eighth International Conference on Networking and Services (ICNS 2012), March 25-30, 2012, Netherlands Antilles.
 - **(ISCC 2011).** Changqing An, Hui Wang and Jiahai Yang, MIB Design and Application for Source Address Validation Improvement Protocol, 16th IEEE Symposium on Computers and Communications (ISCC 2011), June 28-1, 2011, Kerkyra, Greece.
 - Lei Gao, Jiahai Yang, Hui Wang, and Hui Zhang, A Measure of Growth of User Community in OSNs, 18th IEEE International Workshop on Quality of Service (IWQoS 2010), Poster, June 16-18, 2010, Beijing, China.
 - **(APNOMS 2009).** Guanqun Zhang, Hui Wang and Jiahai Yang, Understanding Web Hosting Utility of Chinese ISPs, Proceedings of the 12th Asia-Pacific Symposium on Network Operations and Management (APNOMS 2009), Jeju, South Korea.
 - **(APNOMS 2008).** Shaojun Huang, Changqing An, Hui Wang and Jiahai Yang, Understanding IPv6 Usage: Communities and Behaviors, Proceedings of the 11th Asia-Pacific Symposium on Network Operations and Management (APNOMS 2008), Beijing, China.
 - **(IWQoS 2006).** Jessie Hui Wang, Dah Ming Chiu, and John C.S. Lui, Modeling the Peering and Routing Tussle between ISPs and P2P Applications, Fourteenth IEEE IWQoS, Jun. 19 2006, Yale University, New Haven, CT, USA.
 - Jessie Hui Wang, Dah Ming Chiu, and John C.S. Lui, The Economic Implications of P2P Traffic on Internet Peering, Beijing-Hong Kong Doctoral Forum, Jul. 2006, Tsinghua University, Beijing, China.
 - **(Sigcomm Asia 2005).** Jessie Hui Wang, Rocky K.C. Chang, Dah Ming Chiu, and John C.S. Lui, Characterizing the Performance and Stability Issues of the AS Path Prepending Method: Taxonomy, Measurement Study and Analysis, ACM SIGCOMM ASIA Workshop 2005, Apr. 11 2005, Tsinghua University, Beijing, China. (22.6%)
 - **(ISSRE 2005).** Yangfan Zhou, Michael R. Lyu, Jiangchuan Liu, and Jessie Hui Wang, PORT: A Price-Oriented Reliable Transport Protocol for Wireless Sensor Networks, 16th IEEE International Symposium on Software Reliability Engineering, Nov. 2005, Chicago, IL, USA.

Papers under Revision

- Chao Xu, Jessie Hui Wang, Jilong Wang, *et al.*, Offloading Elastic Transfers to Opportunistic Vehicular Networks Based on Imperfect Trajectory Prediction, under revision, IEEE/ACM Transactions on Networking.
 - Yipeng Zhou, Juncai Liu, Jessie Hui Wang, *et al.*, USST: A Two-Phase Privacy-Preserving Framework for Personalized Recommendation with Semi-distributed Training, under revision, Information Sciences, Elsevier.
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Patents

- **A hierarchical replication method for multicast among virtual machines in cloud networks**, Patent no. ZL201811261316.0, July 2020.
- **A two-layer bandwidth allocation method and system for cloud data center with predictable performance**, Patent no. ZL201610083948.7, Oct. 2018.
- **A microblog aggregation method and system to support cross-platform interaction**, Patent no. ZL201310104677.5, June 2017.