

**Hao YIN**

Professor

Research Institute of Information Technology, Tsinghua University, Beijing, P.R.China

Email h-yin@mail.tsinghua.edu.cn**Phone** +86-10-62782606**Fax** +86-10-62796760**Education**

Ph.D. of Information and Communication Engineering, Huazhong University of Science and Technology, Wuhan, China, 2002;

Master of Vehicle Engineering, Huazhong University of Science and Technology, Wuhan, China, 1998;

Bachelor of Electrical Engineering, Huazhong University of Science and Technology, Wuhan, China, 1996.

Research Areas

Computer network; Block chain; Big data; Smart Medical Service

Working Experience

Research Institute of Information Technology, Tsinghua University, Professor (2011-)

Tsinghua University Institute of Content Distribution Networks, Director (2008)

Computer Science Department, Tsinghua University, Associate Professor (2005-2010)

Computer Science Department, Tsinghua University, Assistant Professor (2003-2005)

Computer Science Department, Yale University, Visiting Scholar (Jan.-Dec., 2013)

CS Dept., Hong Kong University of Sci. and Tech., Visiting Scholar (June-Nov., 2008)

CS Dept., Hong Kong University of Sci. and Tech., Visiting Scholar (May-Aug., 2006)

CS Dept., Hong Kong Baptist University, Visiting Scholar (Feb.-April, 2005)

Academic/Social Services

Member of Standardization Committee of the Tenth Council of Chinese Institute of Electronics (2019-);

Vice-Chair of the First Committee of Block Chain Branch of Chinese Institute of Electronics (2018-);

Chair of Network Technology and Intelligent Media Design Committee of Association of Fundamental Computing Education in Chinese Universities (2018-);

Chair of the Internet Technology and Intelligent Media Design Specialized Committee (2018-)

Member of the Tenth Council of Chinese Institute of Electronics (2018-)
Member of the Expert Group of the National Defense Science and Technology Innovation Special Group of the Central Military Commission Scientific and Technological Branch (2016-)
Jiangsu Future Networks Innovation Institute, Vice Dean (2013-);
Editorial Board of Peer-to-Peer Networking and Applications (2013-)
Secretary-General of Industry Innovation Alliance for Future Network, China (2012-)
Adjunct professor of Beijing University of Posts and Telecommunications (2011.04-2014.03)

Major Honors and Awards

Selected into National High-level Talents Special Support Plan (2016);
State Technological Innovation Award, Second Class-A Novel Video Delivery Network for Massive Internet Users (2012);
National Natural Science Funds for Excellent Young Scholar (2012);
Best Paper Award for IEEE 11th International Ubiquitous Computing and Communication Conference (2012);
Tsinghua Academic New Star (2011);
National Natural Science Award, Second Class- Stochastic Models and Performance Optimization of Computer Network Resource (2011);
Beijing Science and Technology Award, First Class—Large-Scale Distributed Video Delivery Network (2010);
Ministry of Education: New-Century Talents Award (2009);
ACM Multimedia(SIGMM): Nomination for Best Paper Award(2009);
Beijing Science and Technology Award, Second Class—Fundamental Research on QoS Evaluation and Control of Computer Networks (2008);
Natural Sciences Award by Ministry of Education, First Class—Stochastic Models and Performance Evaluation of Computer Systems (2006);
China Computer Federation: Innovation Award—Petri Network and Computer Network QoS (2005).

Research Projects

1. Trusted Data Sharing Computing Platform Based on Block Chain Technology, 20192000003, 2018/10-2021/10, under study.
2. Tsinghua - Qualcomm Joint Research Program (No. 20173000057), March--Dec. 2017, under study, participant.
3. National Natural Science Foundation of China (No.61672318): Research on Data-driven Network Information Plane, January 2017 -Dec. 2020, under study, PI.

4. National Natural Science Foundation of China (No.61631013): Channel Modeling Method Based on Big Data, January 2017-Dec. 2021, under study, participant.
5. Intercloud Network Interconnection Model and Collaborative Service Mechanism , 2016YFB1000102, 2016/7-2021/6, under study.
6. The EU 7th Framework Programme international project (No.20143000166) , PIRSES-GA-2012-318939, Cross-Layer Investigation and Integration of Computing and Networking Aspects of Mobile Social Networks, April 2013-March 2017, under study, PI.
7. Outstanding Youth Fund Project of National Natural Science Foundation of China (No. 61222213): Computer Network Architecture, January 2013-Dec.2015, completed, PI.
8. General program of National Natural Science Foundation of China (No.61170290): Research on Deployment Theory of Large-scale Application Layer-covered Network Node, January 2012 -Dec.2015, completed, PI.
9. National Basic Research Sub-program of China (The 973 Programs, No. 2011CB302601): Architecture and Mechanism of Multi-scale Virtual Computing Environment System, January 2011-Dec. 2015, completed, participant.
10. International Cooperation and Exchange Program of the National Natural Science Foundation of China (No.61020106002): Green Network- Theory and Technology to Reduce Network Energy Consumption , January 2011 -Dec. 2014, completed, participant.
11. Joint research program with Ericsson (No.20103000489), Peer-Assisted CDN Evolution in Mobile Network, Dec. 2010-Dec. 2011, completed, PI.
12. General program of National Natural Science Foundation of China (No.60873254): Research on the Basic Theory of New Generation Content Delivery Network, January 2009-Sept. 2011, completed, PI.
13. Tsinghua University-ChinaCache Joint Project (No. 20082000432): Research on New Generation Content Delivery Platform architecture, Basic theory and Key Technology, June 2008-May 2011, completed, PI.
14. Preliminary Research for National Basic Research Program of China (The 973 Programs, No. 2008CB317101): Peer-to-Peer Assisted Content Delivery Network: Architecture Design and Theory Research, March 2008-Dec. 2009, completed, PI
15. National 863 High-Tech Program (No. 2007AA01Z419), Secure Streaming Media Live Broadcasting System Based on P2P Network, July 2007-Dec. 2009, completed, PI.
16. Beijing Municipal Science & Technology Commission program (No. Z080103660801), Research and Development on Internet Video Copyright Protection and Content Tracking Technology, January, 2008-Dec. 2009, completed, PI.

17. General program of National Natural Science Foundation of China (No. 60473086): Theoretic Research on Application Layer-supported Secure Transmission in Video Multicast System, January 2005- Dec.2007, completed, PI.

Selected Publications

- [1] **Hao Yin**, Dongchao GUO, Yongqiang LYU, Peng YANG, Zhiwei ZHAO, Yaoxue ZHANG, Dual-structural network of active defense, *SCIENTIA SINICA Informationis*, 2018. 11.27, 48 (12), 1651-1669
- [2] **Hao Yin** ; Dongchao Guo; Kai Wang; Zexun Jiang; Yongqiang Lyu; Ju Xing, Hyperconnected Network: A Decentralized Trusted Computing and Networking Paradigm, *IEEE NETWORK*, 2018.1, 32(1): 112~117
- [3] Haojun Huang, **Hao Yin**, Geyong Min, Junbao Zhang, Yulei Wu, Xu Zhang, Energy-aware dual-path geographic routing to bypass routing holes in wireless sensor networks, *IEEE Transactions on Mobile Computing*, 2018, 17 (6), 1339-1352
- [4] Qilin Fan, **Hao Yin**, Libo Jiao, Yongqiang Lv, Haojun Huang, Xu Zhang, Towards optimal request mapping and response routing for content delivery networks, *IEEE Transactions on Services Computing*, 2018
- [5] Kai Wang, **Hao Yin**, Wei Quan, Geyong Min, Enabling collaborative edge computing for software defined vehicular networks, *IEEE Network*, 2018, 1-6
- [6] Xu Zhang, Haojun Huang, **Hao Yin**, Dapeng Oliver Wu, Geyong Min, Zhan Ma, Resource Provisioning in the Edge for IoT Applications with Multi-Level Services, *IEEE Internet of Things Journal*, 2018,10,12
- [7] **Hao Yin**; Xu Zhang ; Shuoyao Zhao; Yan Luo; Chen Tian; Vyas Sekar, Tradeoffs Between Cost and Performance for CDN Provisioning Based on Coordinate Transformation, *IEEE Transactions on Multimedia*, 2017.11, 19(11): 2583~2596
- [8] **Hao Yin** ; Wei Wang; Xu Zhang; Yongqiang Lyu; Geyong Min; Dongchao Guo, UMCR: User Interaction-Driven Mobile Content Retrieval, *ACM Transactions on Intelligent Systems and Technology*, 2017.10.1, 9(1)
- [9] **Hao Yin** ; Xu Zhang; Hongqiang Liu; Yan Luo; Chen Tian; Shuoyao Zhao; Feng Li, Edge provisioning with flexible server placement , *IEEE Transactions on Parallel and Distributed Systems*, 2017.4.1, 24(4): 1031~1045
- [10] Haojun Huang, **Hao Yin**, Geyong Min, Hongbo Jiang, Junbao Zhang, Yulei Wu, Data-driven information plane in software-defined networking, *IEEE Communications Magazine*, 2017, 55 (6), 218-224

- [11] Haojun Huang, **Hao Yin**, Geyong Min, Xu Zhang, Weixing Zhu, Yulei Wu, Coordinate-assisted routing approach to bypass routing holes in wireless sensor networks, **IEEE Communications Magazine**, 2017, 55 (7), 180-185
- [12] Xu Zhang, **Hao Yin**, Dapeng Oliver Wu, Geyong Min, Haojun Huang, Ying Zhang, SSL: A Surrogate-based Method for Large-scale Statistical Latency Measurement, **IEEE Transactions on Services Computing**, 2017.8.3
- [13] Haojun Huang, **Hao Yin**, Yan Luo, Xu Zhang, Geyong Min, Qilin Fan Three-dimensional geographic routing in wireless mobile ad hoc and sensor networks, **IEEE Network**, 2016, 30 (2), 82-90
- [14] Haojun Huang, **Hao Yin**, Geyong Min, Dapeng Oliver Wu, Yulei Wu, Tao Zuo, Ke Li, Network distance prediction for enabling service-oriented applications over large-scale networks, **IEEE Communications Magazine**, 2015, 53 (8), 166-174
- [15] **Hao Yin** ; Yong Jiang; Chuang Lin; Yan Luo; Yunjie Liu, Big Data: Transforming the Design Philosophy of Future Internet, **IEEE Network**, 2014.7.24,28(4): 14~15
- [16] **Hao Yin**, Xu Zhang, Tongyu Zhan, Ying Zhang, Geyong Min, Dapeng Oliver Wu, NetClust: A framework for scalable and pareto-optimal media server placement,**IEEE Transactions on Multimedia**, 2013, 15 (8), 2114-2124
- [17] **Hao Yin**, W. Hui, H. Li, C. Lin, W. Zhu. A Novel Large-Scale Digital Forensics Service Platform for Internet Videos, **IEEE Transaction on Multimedia**, 2012,2, 14(1):178-186.
- [18] **Hao Yin**, H.Chang, F.Liu, T.Zhan, Y.Zhang , B.Li, Discovering a Large Scale Internet Topology: Complementary and Contrast View, **IEEE 11th International Ubiquitous Computing and Communication Conference** , 2012,06, Liverpool, UK. Best Paper Award.
- [19] F. Liu, S. Shen, B. Li, B. Li, **Hao Yin**, S. Li. Novasky: Cinematic-quality VoD in a P2P storage cloud, **IEEE INFOCOM**, 2011: 936-944.
- [20] **Hao Yin**, X. Liu, G. Min,C. Lin. Content Delivery Networks: Bridge between Emerging Applications and Future IP Networks, **IEEE Network Magazine**, 2010.7.
- [21] **Hao Yin**, X. Liu, T. Zhan, V. Sekar, F. Qiu, C. Lin, H. Zhang, B. Li. Livesky: Enhancing CDN with P2P, **ACM Transactions on Multimedia Computing, Communications and Applications**, 2010.
- [22] **Hao Yin**, X. Liu, F. Qiu, N. Xia, C. Lin, H. Zhang, V. Sekar, G. Min. Inside the Bird's Nest: Measurements of Large-Scale Live VoD from the 2008 Olympics, **Proceedings of the 2009 ACM SIGCOMM Internet Measurement Conference(IMC)**,2009,11, Chicago, Illinois, USA, pp.442-455.

- [23] **Hao Yin**, X. Liu, T. Zhan, V. Sekar, F. Qiu, C. Lin, H. Zhang, B. Li. Design and Deployment of a Hybrid CDN-P2P System for Live Video Streaming: Experiences with LiveSky, **Proceedings of the 17th ACM international conference on Multimedia(SIGMM)**, 2009,10, Beijing, China, pp.25-34. (Best Paper Award Candidate)
- [24] Y. Wu, G. Min, M. Ould-Khaoua, **Hao Yin**. Modelling and Performance Analysis of Torus Interconnection Networks in the Presence of Bursty Traffic with Hot-Spot Destinations, **Proceedings of 14th International Conference on Automation & Computing (ICAC)**, Brunel University, West London, UK, 2008,9, 1-5. (Best Paper Award)
- [25] **Hao Yin**, C. Lin, Q. Zhang, Z.J. Chen, D.P. Wu. TrustStream: A Secure and Scalable Architecture for Large-scale Internet Media Streaming, **IEEE Transactions on Circuits and Systems for Video Technology**, 2008, 18(12): 1692-1702.
- [26] B. Li, **Hao Yin**. Peer-to-Peer Live Video Streaming in the Internet: Issues, Existing Approaches and Challenges, **IEEE Communications Magazine**, 2007,6, 45(6): 94-99.
- [27] **Hao Yin**, C. Lin, F. Qiu, J. Liu, B. Li. CASM: A Content-Aware Protocol for Secure Video Multicast, **IEEE Transaction on Multimedia**, 2006,4, 8(2): 270-277.
- [28] **Hao Yin**, C. Lin, T. Cui, G. Min, X. Chu. Effective Congestion Control for QoS Enhancement of Self-Similar Multimedia Traffic, **IEE Proceedings-Communications**, 2006, 153(5): 675-682.
- [29] **Hao Yin**, C.Lin, F.Qiu, X.N.Liu, D.P.Wu. TrustStream: A Novel Secure and Scalable Media Streaming Architecture, in **Proceedings of 13th ACM International Conference on Multimedia (SIGMM)**, Nov., 2005, Hilton, Singapore, pp.295-298.
- [30] R.Liu, **Hao Yin**, X.Cai, G.Zhu, L.Yu, Q.Fan, J.Xue. A Cooperative Caching Scheme for Content Oriented Networking, to appear in **IEEE Communication Letters**.

Patents & Standards

- Uniform content label format specification, GB/T 35304-2017, 2018.04.01
- Security Protection Requirements for Content Delivery Network over Internet, YDB 114-2012, 2013-07-22
- Security Protection Test Requirements for Content Delivery Network over Internet, YD/T 2590-2013, 2013-07-22
- An end effector deployment and equipment, Patent NO: 201510295684.7
- A system and method of information interaction, Patent NO: 201610119111.3
- P2P Network Members Management in Large-Scale Live Streaming Media System, Patent NO.: 200610078852.8

P2P Data Dispatch Methods Based on Streaming Media Data Frames, Patent NO.: 200610078853.2

A System for Media Resources Acquisition with Related Implementation Methods and Equipment, Patent NO.: 200810224968.7

A Method and Relevant Devices for Management of Direct Connection Nodes, Patent NO.: 200810224895.1

A Server Transmission Pattern for Live Video Play, Patent NO.: 200810224651.3

A System for Media Contents Regulation Based on CDN with Relevant Implementation Methods and Equipment, Patent NO.: 200810224707.5

A Selective Encryption Algorithm for Online Video Contents, Patent NO.: 200610078855.1

A System for Media Contents Validation with Related Implementation Methods and Equipment, Patent NO.: 200810115700.X

A Video Copy Monitoring Method Based on Video Contents with Related Implementation Devices, Patent NO.: 200810223002.1

A Video Retrieval Method and System Based on Video Contents, Patent NO.: 200810226268.1

A Method of Video Fingerprint Generation and Related Devices, Patent NO.: 200810226269.6

A System for Video Copy Monitoring Based on Video Contents with Related Implementation Methods, Patent NO.: 200810227101.7

A System for Video Copy Monitoring Based on Video Contents with Related Implementation Methods, Patent NO.: 200810240431.X