

Haoyue TANG

PERSONAL DATA

HOME PAGE: <https://loveisbasa.github.io/thy.github.io/index.html>
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EDUCATION

NOV 2017-JAN 2022 **Tsinghua University**, Beijing, China
(expected) PhD in Information and Communication
Topic: Scheduling to Minimize Age of Information in Stochastic Networks
Advisor: Prof. Jintao Wang
AUG 2013-JUL 2017 **Tsinghua University**, Beijing, China
Bachelor of Engineering | Department of Electronic Engineering
FALL 2015/16 Technische Universität München, Bayern, Deutschland
Exchange Student in the Department of Electrical and Computer Engineering

EXPERIENCE

NOV 2020-NOW **Research Intern, Machine Learning Group, Microsoft Research Asia**
Working on Generation Models, Causal Inference, Reinforcement Learning
MAY 2020-AUG 2020 **Research Intern, Network Theory Lab, Huawei Technologies**
Working on Coding for Delay Minimization and Age of Information
JAN 2019-MARCH 2019 **Visiting Student, Telecom Paris**
Supervisor: Prof. Michele Wigger and Prof. Philippe Ciblat

RESEARCH INTERESTS

Age of Information, Stochastic Network Optimization, Causal Inference, Reinforcement Learning

PUBLICATIONS

* denote undergraduate students working on projects with me

- H. Tang**, J. Wang, L. Song and J. Song, "Minimizing Age of Information With Power Constraints: Multi-User Opportunistic Scheduling in Multi-State Time-Varying Channels," in *IEEE Journal on Selected Areas in Communications*, vol. 38, no. 5, pp. 854-868, May 2020.
- H. Tang**, J. Wang, Z. Tang and J. Song, "Scheduling to Minimize Age of Synchronization in Wireless Broadcast Networks With Random Updates," in *IEEE Transactions on Wireless Communications*, vol. 19, no. 6, pp. 4023-4037, June 2020.
- H. Tang**, J. Wang and L. He, "Off-Grid Sparse Bayesian Learning-Based Channel Estimation for MmWave Massive MIMO Uplink," in *IEEE Wireless Communications Letters*, vol. 8, no. 1, pp. 45-48, Feb. 2019.
- H. Tang**, X. Hou, J. Wang and J. Song, "Joint Link Rate Selection and Channel State Change Detection in Block-Fading Channels", accepted Globecom2021
- H. Tang**, Y. Chen, J. wang, J. Sun and J. Song, "Sending Timely Status Updates through Channel with Random Delay via Online Learning", submitted to Infocom2022
- H. Tang**, P. Ciblat, J. Wang, M. Wigger and R. Yates, "Cache Updating Strategy Minimizing the Age of Information with Time-Varying Files' Popularities. ," 2020 IEEE Information Theory Workshop (ITW), 2021, pp. 1-5.
- H. Tang**, P. Ciblat, J. Wang, M. Wigger and R. Yates, "Age of Information Aware Cache Updating with File- and Age-Dependent Update Durations," *2020 18th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOPT)*, Volos, Greece, 2020, pp. 1-6.
- H. Tang**, J. Wang, L. Song and J. Song, "Scheduling to Minimize Age of Information in Multi-State Time-Varying Networks with Power Constraints," *2019 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, USA, 2019.
- H. Tang**, J. Wang, Z. Tang and J. Song, "Scheduling to Minimize Age of Synchronization in Wireless Broadcast Networks with Random Updates," *2019 IEEE International Symposium on Information Theory (ISIT)*, Paris, France, 2019, pp. 1027-1031.
- H. Tang**, J. Wang and Y. R. Zheng, "Covert communications with extremely low power under finite

block length over slow fading,” IEEE INFOCOM 2018 - IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), Honolulu, HI, 2018, pp. 657-661.

H. Tang, J. Wang and L. He, “Mutual information maximization for optimal spatial modulation MIMO system,” 2017 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), Cagliari, 2017, pp. 1-4.

Y. Chen*, **H. Tang**, J. Wang, “Optimizing Age of Information in Multicast Unilateral Networks”, 2020 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), Virtual, 2020, pp. 1-4.

Y. Chen*, **H. Tang**, J. Wang, “Optimizing Age Penalty in Time-Varying Networks with Markovian and Error-Prone Channel State”, Entropy, vol. 23, no. 1, p. 91, Jan. 2021

W. Zhan*, **H. Tang**, J. Wang, “Delay Optimal Cross-Layer Scheduling Over Markov Channels with Power Constraint”, 2020 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), Virtual, 2020, pp. 1-4.

Q. Zhang*, **H. Tang** and J. Wang, “Minimizing the Age of Synchronization in Power-Constrained Wireless Networks with Unreliable Time-Varying Channels,” *IEEE INFOCOM 2020 - IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, Toronto, ON, Canada, 2020, pp. 936-941.

Y. Tan*, **H. Tang**, J. Wang and J. Song, “Early Drop: A Packet-Dropping Incentive Rate Control Mechanism to Keep Data Fresh under Heterogeneous QoS Requirements, ” 2021 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), Chengdu, China, 2021, accepted.

C. Liu, **H. Tang**, T. Qin, J. Wang, Tie-Yan Liu, “ On the Generative Utility of Cyclic Conditionals, ” submitted to NeurIPS 2021.

C. Liu, X. Sun, J. Wang, **H. Tang**, T. Li, T. Qin, W. Chen, and T. Liu, “Learning Causal Semantic Representation for Out-of-Distribution Prediction”, submitted to NeurIPS 2021

TEACHING AND MENTORING

Thesis and Student Research Training (SRT) Supervising:

| | |
|----------------------|---|
| Yuchao Chen | now PhD student@Tsinghua University (with Prof. Jintao Wang) |
| Chenghao Deng | now PhD student@the University of Maryland, College Park (with Prof. Sennur Ulukus) |
| Wenhao Zhan | previously UGVR participant (with Prof. Ayfer Ozgur, 1/14 mainland China) incoming PhD student@Princeton (with Prof. Yuxin Chen and Jason Lee) |
| Qining Zhang | incoming PhD student@University of Michigan (with Prof. Lei Ying) |
| Yiqin Tan | now Research Intern in Network Research Group, Microsoft Research Asia incoming master student@IIIS, Tsinghua University (with Prof. Longbo Huang) |
| Xinyu Hou | currently doing Master Thesis |
| Guest Lecture | Data Freshness Metrics in Communications @ Tsinghua Undergraduate Backbone Course “Communications and Networks” |
| TA | “Communication Signal Processing”, 2020.02-07 |
| Tutor | Department of Electrical Engineering, Tsinghua University, 2017.09-2019.07 |
| Tutor | Tsinghua University Sports Team, Tsinghua University, 2019.07-2020.07 |
| Captain | Tsinghua University Rhythmic Gymnastic Team, Tsinghua University, 2017.09-2019.01, leading the team won “Tsinghua Excellent Sports Team” and National Champion |

AWARDS

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|-----------|---|
| APR. 2021 | Tencent “Wizz Bird” Elite Research Student Programme (on Adaptive Network Scheduling) |
| DEC. 2020 | Stars of Haiying (awarded to PhD candidates in Haidian District, 1 in each department) |
| OCT. 2020 | National Scholarship |
| OCT. 2020 | Undergraduate Student Research Training First Prize (to my students Q. Zhang and W. Zhan) |
| NOV. 2019 | Best Paper Award, Department of Electronic Engineering PhD Forum, Tsinghua University |
| SEP. 2019 | First Class Scholarship for Comprehensive Excellence, Tsinghua University |
| JUL. 2019 | “Deng-Feng” Travel Award, Tsinghua University (for ISIT2019) |
| APR. 2019 | Stars of EE Department (Highest Honor for Graduate Student in EE Department for Research Excellence and Specialities), Tsinghua University |
| OCT. 2016 | Zhou Huiqi Scholarship, Tsinghua University |
| MAY. 2015 | China Scholarship Council Excellent Undergraduate Fellowship |
| Nov. 2012 | Silver Medal in 29th National Physics Olympics Contest(Ranking 61 out of 92000) |

SERVICES

Member: Tsinghua University Graduate Student Advisory Committee
Reviewer: IEEE JSAC, TComm, TWC, CL, ICC, ISIT
Co-Organizer: Tsinghua EE Department Seminars (with my advisor Prof. Jintao Wang) Spring 2020-Now

LANGUAGES

ENGLISH: TOEFL 105 (Reading 28 Listening 25 Speaking 23 Writing 29)
DEUTSCH: Intermediate Knowledge(B1 Standard), CET-4 passed

REFERRERS

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| Dr. Jintao Wang | PhD supervisor Professor, Department of Electronic Engineering Leader of the Communication Research Institute, Tsinghua University |
| Dr. Jian Song | Professor, Department of Electronic Engineering, Tsinghua University, IEEE Fellow |
| Dr. Michele Wigger | Professor, Telecom Paris |
| Dr. Yuan Shen | Associate Professor, Department of Electronic Engineering, Tsinghua University |
| Dr. Linqi Song | Assistant Professor, City University of Hong Kong |