Aimin Li ⓘD *Birthday: Jul. 20, 1998*

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• Guangdong, China, 518055

Education

Harbin Institute of Technology, Shenzhen (HITSZ) (*985 Project, C9 League*) Aug. 2016 – Jun. 2020
Bachelor degree in EE (Highest Honor) SUPERVISOR: PROF. SHAOHUA WU
  Best Thesis Award (**Top 2** in EE Department)
  Provincial Merit Student (Rate **top 1%** in Heilongjiang Province, China)
  First Prize of Chinese College Student **Mathematics Competitions** (**Twice**)

Harbin Institute of Technology, Shenzhen (*985 Project, C9 League*) Sept. 2020 – Today
Phd Candidate in EE SUPERVISOR: PROF. SHAOHUA WU
  Special Merit Doctoral Scholarship (**Only 1** student in HITSZ)
  National Scholarship of China (**Twice**) (Rate **top 0.2%** in China.)

Agency for Science, Technology, and Research (A*STAR), Singapore Oct. 2023 – Oct. 2024
Visiting Student in Institute for Infocomm Research (I^{2}R) SUPERVISOR: PROF. SUMEI SUN

Research Interest

1. Performance analysis of channel coding in the Finite Block-Length (FBL) regime.
  My research work about FBL analysis of Spinal codes has been published in *IEEE Proc. ISIT, IEEE Trans. Commun., IEEE Trans. Wirel. Commun.,* and *IEEE Trans. Veh. Technol.*

2. Performance modeling and optimization of URLLC-oriented physical-layer communications, with a specific interest in Age of Information (AoI) analysis and optimizations.
  My research work about AoI has been published in *IEEE Globecom, IEEE Trans. Commun., IEEE Trans. Wirel. Commun.* and *IEEE J. Sel. Areas Inf. Theory*.

3. Goal-oriented and semantic communications, with a focus on evaluating the significance and value of sampled data packets to enhance goal completion.
  My research work about goal-oriented and semantic communications has been published in *IEEE Proc. ITW, IEEE Trans. Commun., IEEE Wirel. Commun.,* and *IEEE WCNC*.

Refereed Journal Articles[1]

1. [TCOM] **Aimin Li**, Shaohua Wu, Xiaomeng Chen, and Sumei Sun. "Tight Upper Bounds on the BLER of Spinal codes over the AWGN Channel",
in *IEEE Trans. Commun., vol. 73, no. 1, pp. 332 - 347.* (**IF: 7.2, JCR Q1**) Jul., 2024

2. [MWC] **Aimin Li**, Shaohua Wu, Siqi Meng, Rongxing Lu, Sumei Sun, and Qinyu Zhang. "Toward Goal-Oriented Semantic Communications: New Metrics, Framework, and Open Challenges",
in IEEE Wirel. Commun., vol. 31, no. 5, pp. 238 - 245. (**IF: 10.9, JCR Q1**) Jul., 2024

3. [TCOM] **Aimin Li**, Shaohua Wu, Sumei Sun, and Jie Cao. "Goal-Oriented Tensor: Beyond Age of Information Towards Semantics-Empowered Goal-Oriented Communications",
in *IEEE Trans. Commun. vol. 72. no. 12. pp. 7689 - 7704.* (**IF: 7.2, JCR Q1**) Jun., 2024

4. [TCOM] **Aimin Li**, Shaohua Wu, Jian Jiao, Ning Zhang, and Qinyu Zhang. "Age of Information with Hybrid-ARQ: A Unified Explicit Result",
in *IEEE Trans. Commun. vol. 70, no. 12, pp. 7899-7914.* (**IF: 7.2, JCR Q1**) October, 2022

5. [TWC] **Aimin Li**, Shaohua Wu, Jian Jiao, Ning Zhang, and Qinyu Zhang. "Spinal Codes over Fading Channel: Error Probability Analysis and Encoding Structure Improvement",
in *IEEE Trans. Wirel. Commun., vol. 20, no. 12, pp. 8288-8300.* (**IF: 8.9, JCR Q1**) Jun., 2021

6. [NET] Siqi Meng*, Shaohua Wu, Hanyu Wu, **Aimin Li**, Qinyu Zhang. "Effectiveness-Oriented SAGSIN: Unveiling a Unified Metric and a Comprehensive Framework",
in *IEEE Netw.* (*Early Access*) Jun., 2024

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[1](* indicates junior students working on projects with me)

7. [JSAIT] Siqi Meng*, Shaohua Wu, **Aimin Li**, Qinyu Zhang. "Towards Goal-Oriented Semantic Communications: AoII Analysis of Coded Status Update System Under FBL Regime",
IEEE J. Sel. Areas Inf. Theory, vol. 4, pp. 2641-8770.   Dec., 2023

8. [TWC] Shaohua Wu, Zhihong Deng, **Aimin Li**, Jian Jiao, Ning Zhang, and Qinyu Zhang. "Minimizing Age-of-Information in HARQ-CC Aided NOMA Systems",
in *IEEE Trans. Wirel. Commun., vol. 22, no. 2, pp. 1072-1086.*   Sept., 2022

9. [TCOM] Siqi Meng*, Shaohua Wu, **Aimin Li**, Jian Jiao, Ning zhang, and Qinyu Zhang. "Analysis and Optimization of HARQ Based Spinal Coded Timely Status Update System",
in *IEEE Trans. Commun., vol. 70, no. 10, pp. 6425-6440.*   Aug., 2022

10. [LNET] Xiyu Lv, Shaohua Wu, **Aimin Li**, Jian Jiao, Ning Zhang and Qinyu Zhang. "A Weighted Graph-based Handover Strategy for Aeronautical Traffic in LEO SatCom Networks",
IEEE Netw. Lett., vol. 4, no. 3, pp. 132-136.   Jun., 2022

11. [TVT] Siqi Meng*, Shaohua Wu, **Aimin Li**, Jian Jiao, Ning Zhang, and Qinyu Zhang. "Partial Self-Concatenation Structure and Performance Analysis of Spinal Codes over Rayleigh Fading Channel",
IEEE Trans. Veh. Technol., vol. 71, no. 6, pp. 6767-6771.   Mar., 2022

Refereed Conference Proceedings

12. [ITW] **Aimin Li**, Shaohua Wu, Gary C.F. Lee, Xiaomeng Chen, and Sumei Sun. "Sampling to Achieve the Goal: An Age-aware Remote Markov Decision Process".
IEEE Information Theory Workshop (IEEE ITW, Session Chair of AoI Session)   Nov., 2024

13. [ISIT] **Xiaomeng Chen*, Aimin Li (Co-first)**, and Shaohua Wu. "Tight Upper Bounds on the Error Probability of Spinal Codes over Fading Channels".
IEEE International Symposium on Information Theory (IEEE ISIT)   Aug., 2023

14. [WCNC] **Aimin Li**, Shaohua Wu, and Sumei Sun. "Goal-oriented tensor: Beyond AoI towards semantics-empowered goal-oriented communications".
IEEE Wireless Communications and Networking Conference (IEEE WCNC)   Apr., 2024

15. [GLOBECOM] **Aimin Li**, Shaohua Wu, Yajing Deng, Jian Jiao, Ning Zhang, Qinyu Zhang. "Analyzing Age Performance of Hybrid-ARQ: A Unified Explicit Result".
IEEE Global Communications Conference (IEEE Globecom)   Dec., 2022

16. [VTC] **Aimin Li**, Shaohua Wu, Ying Wang, Jian Jiao, and Qinyu Zhang. "Spinal Codes over BSC: Error Probability Analysis and the Puncturing Design".
IEEE Vehicular Technology Conference (VTC2020-Spring)   May, 2020

17. [ICC] Kunpeng Liu*, Shaohua Wu, **Aimin Li**, and Qinyu Zhang. "Joint Transmission and Control in a Goal-oriented NOMA Network", (*IEEE ICC*)   2024

18. [ITW] Xiaomeng Chen*, **Aimin Li**, and Shaohua Wu. "Optimal Sampling for Uncertainty-of-Information Minimization in a Remote Monitoring System".
IEEE Information Theory Workshop (IEEE ITW)   Nov., 2024

19. [ICCT] Mingxiao Sun, Di Zhang, Shaobo Jia, **Aimin Li**. "Packet Management of AoI in The Finite Block-length Regime".
IEEE International Conference on Communication Technology (IEEE ICCT)   Oct., 2024

20. [INFOCOM] Kunpeng Liu*, **Aimin Li**, and Shaohua Wu. "Deep Reinforcement Learning-Assisted Age-optimal Transmission Policy for HARQ-aided NOMA Networks".
IEEE Conference on Computer Communications Workshops (IEEE Infocom Workshops)   Apr., 2023

21. [VTC] Jiaming Zhang*, Shaohua Wu, **Aimin Li**, Jian Jiao, Qinyu Zhang. "Analysis of GEO Satellite Relay Coded Systems".
IEEE Vehicular Technology Conference (VTC2022-Fall) Sept., 2022

22. [ICC] Siqi Meng*, Shaohua Wu, **Aimin Li**, Jian Jiao, Ning Zhang, Qinyu Zhang. "Analysis and Optimization of Spinal Codes over the BSC: from the AoI Perspective".
IEEE International Conference on Communications Workshops (ICC Workshops) Jun., 2021

Preprints

23. [TWC] **Aimin Li**, Xiaomeng Chen, Shaohua Wu, Gary C.F. Lee, and Sumei Sun. "A Unified Expression for Upper Bounds on the BLER of Spinal Codes over Fading Channels",
submitted to IEEE Trans. Wirel. Commun. 2024

24. [TVT] **Aimin Li**, Shaohua Wu, and Sumei Sun. "Error Floor of Spinal Codes under ML Decoding",
submitted to IEEE Trans. Veh. Technol. 2024

25. [TON] Xiaomeng Chen*, Shaohua Wu, **Aimin Li**, Dawei Chen, Pengfei Duan, and Qinyu Zhang. "Minimizing the Uncertainty-of-Information in a Remote Networked Monitoring System",
submitted to IEEE/ACM Trans. Netw. 2024

26. [TCOM] Mingxiao Sun, Lulu Song, Di Zhang, Shaobo Jia, **Aimin Li**, Al-Dulaimi, and Shahid Mumtaz. "Information Freshness and Timeliness Analysis in The Finite Blocklength Regime for Mission-Critical Applications",
submitted to IEEE Trans. Commun. 2024

Awards

3rd Prize of IEEE Globecom 4MT Thesis Competition Nov., 2024
    (Rank **5 of 15** Final Round Competitors.)
IEEE Globecom 4MT Thesis Competition Travel Grant Nov., 2024
    (**Top 15 PhD** Students Worldwide.)
National Scholarship of China Nov., 2024
    (**The Highest-Level Scholarship Funded by Government.**) (**Rate top 0.2% in China.**)
Candidate for the National Natural Science Foundation Youth Project of China Jan., 2024
    (**Only 1 Phd Student in EE Department.**)
    (**One of Fewer than 600 PhD Students Across All Disciplines in China.**)
HITSZ "Dianzi" Research Student Program Nov., 2023
    (**Only 1 Phd Student in EE Department.**)
Chinese Government Scholarship by China Scholarship Council Jul., 2023
Award for Excellent Students in Academic and Applied Endeavors Dec., 2021
Special Merit Doctoral Scholarship Nov., 2020
    (**Awarded by the University President. Only 1 Student in HITSZ.**)
National Scholarship of China Nov., 2020
    (**The Highest-Level Scholarship Funded by Government.**) (**Rate top 0.2% in China**)
Best Thesis Award of HIT Jul., 2020
    (**Top 2 Students in EE Department.**)
Gongjin Scholarship for Overall Excellence Dec., 2018
    (**Awarded by the University President, top 3 students in EE Department.**)
Award for Heilongjiang Provincial Merit Student Nov., 2018
    (**Rate top 1% in Heilongjiang Province, China.**)
First Prize of Chinese College Student Mathematics Competitions Dec., 2017
    (**National-level Mathematics Competitions in China.**)
First Class Scholarship for Comprehensive Excellence, HITSZ Dec., 2017

(**Rate top 5% in HITSZ.**)

First Prize of Chinese College Student Mathematics Competitions   Dec., 2016
  (**First Prize of National-level Mathematics Competitions in China.**)

Teaching Experience

Communication Theory (Undergraduate Course)   Fall 2020
  Teaching Assistant, with Prof. Shaohua Wu, at Harbin Institute of Technology (Shenzhen)

Foundations of Information Theory (Graduate Course)   Fall 2022
  Teaching Assistant, with Prof. Shaohua Wu, at Harbin Institute of Technology (Shenzhen)

Academic Service

Reviewer
IEEE Transactions on Information Theory (IEEE TIT)
IEEE Journal on Selected Areas in Communications (IEEE JSAC)
IEEE Transactions on Wireless Communications (IEEE TWC)
IEEE Transactions on Vehicular Technology (IEEE TVT)
IEEE Transactions on Neural Networking and Learning System (IEEE TNNLS)
IEEE Transactions on Cognitive Communications and Networking (IEEE TCCN)
IEEE Communications Letters (IEEE CL)
IEEE Wireless Communications Letters (IEEE WCL)
Elsevier Computer Networks
IEEE International Symposium on Information Theory (IEEE ISIT)
IEEE Conference on Computer Communications (IEEE Infocom)
IEEE International Conference on Communications (IEEE ICC)
IEEE Global Communications Conference (IEEE Globecom)
IEEE Wireless Communications and Networking Conference (IEEE WCNC)
IEEE Vehicular Technology Conference (IEEE VTC)
IEEE International Wireless Communications and Mobile Computing Conference (IEEE IWCMC)

Volunteer
IEEE 6G Summit 2023, Singapore
IEEE Vehicular Technology Conference (IEEE VTC-Spring 2024), Singapore
IEEE 6G Summit 2024, Singapore

Conference Session Chair
IEEE Information Theory Workshop 2024, Session Chair of Age of Information Session
IEEE GLOBOCOM 2024, Session Chair of Distributed Learning Session

Reference

Dr. Shaohua Wu   PhD Supervisor, HITSZ
  Full Professor, Electrical Engineering, Harbin Institute of Technology (Shenzhen)
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Dr. Sumei Sun, IEEE Fellow   PhD Co-Supervisor, A*STAR
  Fellow of the Academy of Engineering Singapore
  Executive Director, Institute for Infocomm Research (I2R), A*STAR
  Full Professor, Electrical Engineering, National University of Singapore
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  Vice President, Harbin Institute of Technology (Shenzhen)
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