Shiqiang Wang

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Profile

- Fundamental and applied research in artificial intelligence (AI), large language models (LLMs), distributed computing, and optimization algorithms, with major impact in both academia and industry.
- Development of innovative AI technologies, including LLM workflows (training, alignment, generation), distributed MLOps, etc., for a wide range of practical use cases and products.
- Experience with large-scale computing systems spanning multiple countries and having thousands of GPUs.
- Technical lead of multiple research projects with strong impact, PI of externally funded projects (over £2M), mentor of 15+ students, invited speaker at 15+ universities worldwide.
- Publications in top machine learning conferences, e.g., ICML, NeurIPS, ICLR, AAAI, and relevant top-quality journals; served as area chair of such conferences and associate editor of journals.
- IEEE Fellow, for contributions to machine learning and service placement in edge computing systems.

Research Interests

Theory and practice at the intersection of *AI*, *distributed computing*, and *optimization*, with a broad range of applications including LLMs, agentic AI, efficient model training and inference, and AI in distributed systems.

Professional Experience

Department of Computer Science, University of Exeter — *Exeter, UK*
Professor of Artificial Intelligence — Oct. 2025 – Present

IBM T. J. Watson Research Center — *Yorktown Heights, NY, USA*
Staff Research Scientist — Jul. 2022 – Oct. 2025
Research Staff Member* — Apr. 2016 – Jul. 2022

*Note: In July 2022, IBM Research renamed the Research Staff Member position to Research Scientist with different levels.

Education

Imperial College London — *London, UK*
Ph.D. in Electrical Engineering — Oct. 2011 – Nov. 2015
- Thesis: Dynamic Service Placement in Mobile Micro-Clouds
  Advisor: Prof. Kin K. Leung

Northeastern University, China — *Shenyang, China*
Master's Degree in Communication and Information Systems — Sept. 2009 – July 2011
- Received Outstanding Master's Thesis Award (top 2%)

Bachelor's Degree in Communication Engineering — Sept. 2005 – July 2009
- Ranked 1st out of 122 students, received Outstanding Bachelor's Thesis Award (top 1%)

Main Research Accomplishments

Agentic AI

- Algorithms and systems for LLM-based agents and multi-agent workflows, including orchestration of agentic workflows, device-cloud collaborative inference, and efficient deployment at the edge.

- *Representative contributions:* progress-guided orchestration of multi-agent LLM workflows [EMNLP'26], device-cloud collaborative LLM inference with multi-modal, multi-task, and multi-turn conversations [MobiHoc'25, ToN'26], benchmarking agentic performance at the edge [AutoEdge@MobiSys'26], federated AI agents [Preprint].

Optimizing AI Workloads

- Optimizing controllable parameters of AI algorithms and systems, subject to constraints related to system characteristics and practical requirements.
- *Representative contributions:* resource and quality-aware LLM routing [NeurIPS'25], resource-aware control of federated learning [JSAC'19, INFOCOM'23], adaptive model pruning in edge computing systems [TNNLS'23], robust coreset construction for efficient data sharing [JSAC'20, MobiHoc'24], benchmarking federated learning on edge devices [MIDDLEWARE'24].

Machine Learning Algorithms in Distributed Systems

- Effective and efficient training involving diverse data and models located at distributed computed nodes (e.g., edge devices/servers), including federated learning and beyond.
- *Representative contributions:* sample reweighting for LLM training [ICLR'25], parameter-efficient LLM fine-tuning [ICLR'26], learning from arbitrarily participating clients [NeurIPS'22, ICLR'24], adaptive federated optimization algorithms [ICLR'23, ICML'24], vertical federated learning from features partitioned across parties [ICML'22, ICML'23, ICLR'25], one-shot model fusion [AISTATS'24], multi-level parameter updates in hierarchical systems [AAAI'22, NeurIPS'24].

Placement and Scheduling in Edge Computing

- Online decision making in edge computing and related systems/applications, for problems including service placement and workload scheduling.
- *Representative contributions:* dynamic service migration based on Markov decision process [ToN'19], online decision making with inaccurate predictions [TPDS'17, NeurIPS'20], placement and scheduling with heterogeneous resource types [ICDCS'18, INFOCOM'19], live migration implementation [Wireless'18].

Industrial Applications of AI

- AI algorithms and systems for a wide range of practical applications, using various techniques including foundation models / LLMs [ICLR'26], distributed MLOps [FLSys@MLSys'23 Talk], out-of-distribution detection [CVPR'23], classification of environmental sounds [DCASE'18 Challenge (winner of Task 5)], graph neural networks [AAAI'22], etc.

Research Impact

- *Pioneering* and *foundational* research contributions to federated learning and edge computing, with *highly influential* publications that created new research directions and inspired a lot of follow up work worldwide (partly reflected by 2,500+ citations of the adaptive federated learning paper, 10,000+ citations overall, according to Google Scholar). Received major awards such as the IEEE ComSoc Leonard G. Abraham Prize in 2021.
- Open-source research code on federated learning and edge computing, available on GitHub. A single code repository received 250+ stars and has been widely used by research teams internationally.
- Influenced and integrated research outcomes into IBM products (e.g., watsonx, Maximo, Cloud Pak for Data) and community-scale open LLMs (Granite) & open-source AI-related projects (data-prep-kit) driven by IBM. Received multiple highly selective awards from IBM.

Publication Highlights

Google Scholar: https://scholar.google.com/citations?user=kA_vmOcAAAAJ

Four Most Representative Publications as *First Author*

- **S. Wang**, M. Ji, "A lightweight method for tackling unknown participation statistics in federated averaging," in *International Conference on Learning Representations (ICLR)*, May 2024 (spotlight, 5% of submitted papers). [Proceedings Link] [Code]
- **S. Wang**, J. Perazzone, M. Ji, K. Chan, "Federated learning with flexible control," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2023 (acceptance rate: 19.2%). [DOI] [Code]
- **S. Wang**, M. Ji, "A unified analysis of federated learning with arbitrary client participation," in *the 36th Conference on Neural Information Processing Systems (NeurIPS)*, Nov.–Dec. 2022. [Proceedings Link] [Code]
- **S. Wang**, T. Tuor, T. Salonidis, K. K. Leung, C. Makaya, T. He, K. Chan, "Adaptive federated learning in resource constrained edge computing systems," *IEEE Journal on Selected Areas in Communications*, vol. 37, no. 6, pp. 1205 – 1221, Jun. 2019 (2,500+ citations, received the IEEE Communications Society Leonard G. Abraham Prize in 2021). [DOI] [Code (**250+ stars**)]

Four Most Representative Publications as *Lead Mentor*

(Student authors are underlined)

- Y. Jiang, **S. Wang**, V. Valls, B. J. Ko, W.-H. Lee, K. K. Leung, L. Tassiulas, "Model pruning enables efficient federated learning on edge devices," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 34, no. 12, pp. 10374 – 10386, Dec. 2023 (500+ citations). [DOI] [Code]
- D. Jhunjhunwala, **S. Wang**, G. Joshi, "FedExP: speeding up federated averaging via extrapolation," in *International Conference on Learning Representations (ICLR)*, May 2023 (spotlight – notable-top-25%, top 25% of accepted papers, approximately top 8% of submitted papers). [Proceedings Link] [Code]
- T. Castiglia, A. Das, **S. Wang**, S. Patterson, "Compressed-VFL: communication-efficient learning with vertically partitioned data," in *International Conference on Machine Learning (ICML)*, Jul. 2022 (acceptance rate: 21.9%). [Proceedings Link] [Code]
- A. Feng, C. You, **S. Wang**, L. Tassiulas, "KerGNNs: interpretable graph neural networks with graph kernels," in *AAAI Conference on Artificial Intelligence*, Feb.-Mar. 2022 (oral presentation, oral acceptance rate: 4.6%, overall acceptance rate: 15.0%). [DOI] [Code]

The full list of publications is provided in a later section.

Research Funding

IBM Business Income

- S. Wang's research outcomes have been widely applied to practical use cases and products of IBM, which have generated a substantial amount of business income that funds the research at IBM.

External Research Funding (externally funded projects that were *selected based on submitted research proposals*; the total funding of these projects is over $2.8 million)

- Distributed Analytics and Information Science International Technology Alliance (DAIS ITA) Technology Transition Task on "Adaptive Analytics in Tactical Networks," 2023 – 2024 *(Role: PI)*.
- DAIS ITA BPP'20 Task on "Agile analytics enabled by decentralized continuous learning in coalitions," 2020 – 2021 *(Role: PI & task leader)*.
- DAIS ITA BPP'18 Task on "Distributed analytics in dynamic coalition environment: placement, scheduling, and validation," 2018 – 2020 *(Role: PI & task leader)*.

Collaborative Research Programs (research projects based on established collaboration programs between IBM and universities, which were *selected based on submitted research proposals*; the total funding allocated to these projects is $400,000)

- Rensselaer-IBM Artificial Intelligence Research Collaboration (AIRC) Project "Secure and robust cross-silo vertical federated learning," 2022 *(Role: IBM PI)*.
- Rensselaer-IBM AIRC Project "Towards a general framework for robust vertical federated learning," 2020 – 2021 *(Role: IBM PI)*.

Leadership & Management

Technical Lead (2020 – 2025) of several internal projects at IBM Research: led teams across international IBM labs working towards both scientific and business goals; cultivated a positive work culture in these teams and received IBM Culture Catalyst Award in 2023.

Hiring Representative (2024 – 2025) for 2025 summer intern recruitment for a group of around 40 staff members at IBM Research.

Project Champion (2020 – 2021) of one of the four projects in the DAIS ITA Program: coordinated research activities of three tasks involving students, faculty members, and researchers from 7 universities, 2 industrial research labs, and 2 government research labs in both the United States and United Kingdom.

Task Leader (2018 – 2020) in the DAIS ITA, which includes students, faculty members, and researchers from 2 universities, 2 industrial research labs, and a government research lab.

Chair (2018 – 2024) of the Internet of Things Professional Interest Community at IBM Research: organized various seminars at IBM Research that promoted new technologies.

Awards & Honors

Research and Innovation

- IEEE Communications Society Leonard G. Abraham Prize in 2021, for the best paper published in the IEEE Journal on Selected Areas in Communications in the previous three years
- DAIS ITA Awards in 2021 for scientific discovery/quality, commercial prosperity, and cross-national collaboration
- IBM Outstanding Technical Achievement Awards (OTAA) in 2019, 2021, 2022, and 2023
- IBM First to Seventh Plateau Invention Achievement Awards in 2017–2023
- Best Paper Runner-Up of the ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc) 2025
- Best Paper Finalist of the IEEE International Conference on Image Processing (ICIP) 2019
- IBM First Patent Application Invention Achievement Award in 2016
- Best Student Paper Award of Network and Information Sciences International Technology Alliance (NIS ITA) in 2015

Career

- IEEE Fellow in 2026, for contributions to machine learning and service placement in edge computing systems
- IEEE Communications Society Best Young Professional Award in Industry in 2021, for the pioneering and foundational contributions to workload scheduling and machine learning in edge computing

Services

- Editorial Excellence Award of the IEEE Transactions on Parallel and Distributed Systems in 2026
- IBM Culture Catalyst Award in 2023, for promoting growth-oriented team culture

- Top Reviewer (top 11%) of Conference on Neural Information Processing Systems (NeurIPS) 2022
- Highlighted Reviewer (top 9%) of International Conference on Learning Representations (ICLR) 2022
- Outstanding Reviewer (top 10%) of International Conference on Machine Learning (ICML) 2021 and 2022
- Exemplary Reviewer of the IEEE Transactions on Communications in 2017 (top 2%) and 2022 (top 5%)

Competitions

- Top-performing team in Detection and Classification of Acoustic Scenes and Events (DCASE) Challenge 2018 (Task 5)
- National 2nd prize in 2007 "Sony Cup" National Undergraduate Electronic Design Contest, China
- Outstanding Award (top 25 in China) in 2007 ALTERA Nios II Embedded Processor Design Contest

Scholarships, Thesis Awards, and Other Awards Received as a Student

- Scholarship from the Department of Electrical and Electronic Engineering, Imperial College London, and additional funding support from NIS ITA for Ph.D. study from 2011 to 2015
- Student Travel Grants for IFIP Networking 2015, IEEE MILCOM 2014, IEEE GLOBECOM 2013
- Many scholarships for bachelor's and master's study from 2005 to 2011
- Outstanding Master's Thesis Award from Northeastern University (award rate: approx. 2%) and Liaoning Province, China (award rate: $<$1%), in 2011
- Outstanding Graduate of Liaoning Province, China, in 2009
- Outstanding Bachelor's Thesis Award from Northeastern University in 2009 (award rate: approx. 1%)

Teaching

Guest Lectures and Seminars on AI and Machine Learning at over 15 universities worldwide with strong student participation, in 2018 – present, see the invited talks section for details

Teaching Assistant for Technical Communication (including technical presentation and writing) at the Department of Electrical and Electronic Engineering, Imperial College London, in Fall 2011, Spring 2012, Spring 2013, Fall 2013, and Spring 2014

Teaching Assistant for C/C++ Labs at the Department of Electrical and Electronic Engineering, Imperial College London, in Spring 2012

Invited Talks

Guest Lectures and Seminars at Universities and Research Organizations

1. Federated Learning, LLMs, and Agentic AI. Lectures at the *EdgeGen PhD Intensive Course on Generative Edge Intelligence, University of Helsinki*, Finland, Aug. 2026.
2. Towards Agentic AI at the Edge: Challenges and Opportunities. Seminar at the *Centre for Intelligent and Sustainable Computing, Queens University Belfast*, UK, May 2026.
3. Navigating Through the LLM Zoo: How to Find the Best Model? Seminar at the *Department of Electrical and Electronic Engineering, Imperial College London*, UK, Feb. 2026.
4. How to Choose the Best Model from a Large Language Model Zoo? Seminar at the *School of Electronic Engineering and Computer Science, Queen Mary University of London*, UK, Nov. 2025.
5. Balancing Quality and Efficiency in Future AI Systems. Experts in AI and Networking Distinguished Speaker Seminar at the *AI EDGE Institute led by the Ohio State University*, USA, May 2025.
6. Balancing Quality and Efficiency in Future AI Systems. Seminar at the *Department of Computer Science, University of Exeter*, UK, Dec. 2024.
7. Balancing Quality and Efficiency in Future AI Systems. Seminar at the *School of Computer Science and Statistics, Trinity College Dublin*, Ireland, Dec. 2024.

8. Balancing Quality and Efficiency in Future AI Systems. Guest Lecture at the *Department of Computer Science and Technology, University of Cambridge*, UK, Nov. 2024.
9. Machine Learning from Imbalanced Data Sources. Seminar at the *Department of Computer Science, Colorado School of Mines*, USA, Oct. 2024.
10. Machine Learning from Imbalanced Data Sources. Seminar at the *Department of Electrical and Computer Engineering, Yale University*, USA, Oct. 2024.
11. Machine Learning from Imbalanced Data Sources. Seminar at the *School of Electrical and Computer Engineering, Purdue University*, USA, Sept. 2024.
12. Towards Distributed MLOps: Theory and Practice. Seminar at the *Department of Software Technology, Delft University of Technology (TU Delft)*, the Netherlands, May 2024.
13. Towards Distributed MLOps: Theory and Practice. Seminar at the *Chair for Decentralized Information Systems and Data Management, Technical University of Munich*, Germany, May 2024.
14. Towards Distributed MLOps: Theory and Practice. Seminar at the *Department of Computer Science, Stony Brook University*, USA, Apr. 2024.
15. Towards Distributed MLOps: Theory and Practice. Seminar at *Brookhaven National Laboratory*, USA, Feb. 2024.
16. Towards Distributed MLOps: Theory and Practice. Guest Lecture at the *Department of Computer Science, Colorado School of Mines*, USA, Nov. 2023.
17. Towards Distributed MLOps: Theory and Practice. Seminar at the *Department of Electrical and Computer Engineering, University of Miami*, USA, Jun. 2023.
18. Towards Distributed MLOps: Theory and Practice. Colloquium at the *Department of Computer Science, Rensselaer Polytechnic Institute*, USA, Apr. 2023.
19. Federated Learning in "Day 2" Operations with Dynamic Resources. Guest Lecture at the *Department of Computer Science and Technology, University of Cambridge*, UK, Feb. 2023.
20. Understanding the Effect of Arbitrary Participation in Federated Learning. Seminar at the *School of Electrical Engineering and Computer Science, Louisiana State University*, USA, Nov. 2022.
21. Understanding the Effect of Arbitrary Participation in Federated Learning. YINS/EE Seminar at *Yale University*, USA, Jun. 2022.
22. My Journey in the Past 10 Years. Talk at the *Communications and Signal Processing (CSP) Alumni Day, Imperial College London*, UK, Sept. 2021.
23. How to Make Federated Learning Self-Adaptive? Colloquium at the *Department of Computer and Information Science, University of Oregon*, USA, Apr. 2021.
24. Federated Machine Learning in Resource-Constrained Edge Computing Systems. Invited Lecture at the *School of Computing and Information Sciences, Florida International University*, USA, Oct. 2019.
25. Federated Machine Learning in Resource-Constrained Edge Computing Systems. Seminar at the *Institute of Computer Science, University of Goettingen*, Germany, Sept. 2019.
26. Federated Machine Learning in Resource-Constrained Edge Computing Systems. Seminar at the *Department of Computer Science, Vrije Universteit Amsterdam*, the Netherlands, Sept. 2019.
27. Federated Machine Learning in Resource-Constrained Edge Computing Systems. YINS/EE Seminar at Yale University, USA, Oct. 2018.
28. Dynamic Service Placement in Mobile Micro-Clouds. Seminar at the *Internet and Mobile Computing Laboratory, Department of Computing, Hong Kong Polytechnic University*, Hong Kong, Jan. 2016.
29. Dynamic Service Placement in Mobile Micro-Clouds. Seminar at the *Networks and Services Research Laboratory (NSRL), Department of Electronic & Electrical Engineering, University College London*, UK, Nov. 2015.

Keynote and Invited Talks at International Conferences and Workshops

1. From Pilot to Practice: Deploying Federated AI Inside Real Clinical Systems. Panel Speaker at the *From Zero to Hero: Federated AI in Healthcare Systems Workshop*, Aug. 2026.
2. Towards Agentic AI at the Edge: Challenges and Opportunities. Keynote talk at the *Mediterranean Artificial Intelligence and Networking Conference (MAIN)*, Jul. 2026.
3. Accelerating the Adoption of FedAI. Panel Speaker at *Flower AI Summit*, Apr. 2026.
4. A Data and Computation Perspective of Federated Learning. Keynote Talk at the *Workshop on Federated Learning for Computer Vision (FedVision) in Conjunction with CVPR*, June 2025.
5. Federated Learning with Imbalanced Client Participation. Tutorial Talk at the *IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN)* Tutorial on "Advancing Federated Learning in Practice: From Theory to Real-World Edge Applications," May 2025.
6. Why Is Edge Computing (Still) Important in the Generative AI Era? Panel Talk at the *IEEE INFOCOM* Panel on "Learning at the Edge," May 2025.
7. A Data and Computation Perspective of Federated Learning. Featured Talk at *Flower AI Summit*, Mar. 2025.
8. Machine Learning from Imbalanced Data Sources. Keynote Talk at the *International Workshop on Federated Foundation Models in Conjunction with NeurIPS*, Dec. 2024.
9. How Do System Dynamics Affect the Convergence of Federated Learning? Invited Talk at the *60th Annual Allerton Conference on Communication, Control, and Computing*, Sept. 2024.
10. How to Make Federated Learning Work with Challenging Client Participation Patterns? Invited Talk at *Federated Learning One World (FLOW)*, Feb. 2024.
11. Towards Distributed MLOps: Theory and Practice. Keynote Talk at the *22nd IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom)*, Nov. 2023.
12. Towards Distributed MLOps: Theory and Practice. Invited Talk at the *5th Buffalo Day for 5G and Wireless Internet of Things*, Oct. 2023.
13. The Role of Learning in Distributed MLOps. Invited Talk at the *Federated Learning Systems (FLSys) Workshop in Conjunction with MLSys*, Jun. 2023.
14. Adaptive Control for Federated Learning at the Edge. Keynote Talk at the *Caching, Computing and Delivery in Wireless Networks (CCDWN) Workshop in Conjunction with WiOpt*, Sept. 2022.
15. Edge AI for Future Autonomous Systems. Invited Talk at the *EPSRC Trustworthy Autonomous Systems-Security Node Workshop*, Mar. 2022.
16. From Federated Learning to Edge AI. Panel Talk at the *IEEE Consumer Communications & Networking Conference (CCNC)* Panel on "Distributed and Federated Learning for Consumer and Industrial IoT," Jan. 2022.
17. Efficient Federated Learning: Current Solutions and Open Challenges. Keynote Talk at *IUCC/CIT/DSCI/SmartCNS*, Dec. 2021.
18. Sustainable Edge AI. Panel Talk at the Applied AI Panel of the *Center of Excellence in Wireless & Information Technology (CEWIT) Conference*, Nov. 2021.
19. Towards Robust and Efficient Federated Learning. Invited Talk at the *International Workshop on Federated and Transfer Learning for Data Sparsity and Confidentiality in Conjunction with IJCAI*, Aug. 2021.
20. Edge AI: A Practical View. Panel Talk at the *Workshop on Wireless Networking Innovations for Mobile Edge Learning in Conjunction with IEEE ICC*, Jun. 2021.
21. Sustainable Edge Intelligence. Panel Talk at the *IEEE ISPA/BDCloud/SocialCom/SustainCom/IUCC* Joint Plenary Panel on "Artificial Intelligence of Things (AIoT) and Smart Edge Computing," Dec. 2020.

MENTORING

Selected list of students whom S. Wang supervised/advised or closely mentored in their research (during the indicated period, which may not cover their entire duration of study)

Ph.D. Students

- *Arastun Mammadli* (2026 – present), Ph.D. Student at the University of Exeter. *Topic:* Agentic AI. (*S. Wang is the lead supervisor.*)
- *Evan Chen* (2023 – present), Ph.D. Student at Purdue University. *Topic:* Gradient tracking algorithms in hierarchically networked systems. *Published at* INFOCOM, NeurIPS. (*S. Wang served as External Member of Ph.D. Supervisory Committee.*)
- *Herbert Woisetschläger* (2023 – 2025), Research Intern at IBM in 2024 and 2025, Visiting Research Student at IBM in 2023, Ph.D. Student at Technical University Munich. *Topic:* Distributed machine learning systems with large language models. *Published at* ICLR, MIDDLEWARE, IJCAI, ICML workshop.
- *Daouda Sow* (2024 – 2025), Research Intern at IBM in 2024, Ph.D. Student at the Ohio State University. *Topic:* Loss reweighting in large language model training. *Published at* ICLR.
- *Pedro Valdeira* (2024 – 2025), Ph.D. Student at Carnegie Mellon University. *Topic:* Vertical federated learning with missing features. *Published at* ICLR. (*S. Wang served as External Member of Ph.D. Supervisory Committee.*)
- *Divyansh Jhunjhunwala* (2022 – 2024), Research Intern at IBM in 2022 and 2023, Ph.D. Student at Carnegie Mellon University. *Topic:* Deep neural networks in the overparameterized regime with applications to large-scale machine learning. *Published at* ICLR, AISTATS. (*S. Wang served as External Member of Ph.D. Supervisory Committee.*)
- *Hanjing Wang* (2022 – 2023), Rensselaer-IBM AIRC Student Researcher, Ph.D. Student at Rensselaer Polytechnic Institute. *Topic:* Uncertainty quantification, attribution, and mitigation for predictions made by machine learning models. *Published at* CVPR.
- *Timothy Castiglia* (2020 – 2023), Rensselaer-IBM AIRC Student Researcher, Ph.D. Student at Rensselaer Polytechnic Institute. *Topic:* Efficient federated learning with vertically partitioned data. *Published at* TNNLS, ICML ($\times 2$), NeurIPS workshop; granted patent. (*S. Wang served as External Member of Ph.D. Supervisory Committee.*)
- *Jiayi Wang* (2020 – 2023), Ph.D. Student at the University of Utah; *Topic:* Federated learning algorithms under system and data heterogeneity. *Published at* ICML, AAAI. (*S. Wang served as External Member of Ph.D. Supervisory Committee.*)
- *Aosong Feng* (2021 – 2022), Research Intern at IBM in 2021, Ph.D. Student at Yale University. *Topic:* Graph neural networks and out-of-distribution detection/generalization. *Published at* AAAI.
- *Yuang Jiang* (2019 – 2021), Research Intern at IBM in 2019, DAIS ITA Student Researcher, Ph.D. Student at Yale University. *Topic:* Model pruning for efficient federated learning on edge devices. *Published at* TNNLS, NeurIPS workshop.
- *Bing Luo* (2019 – 2022), visited IBM in 2019, Visiting Ph.D. Student at Yale University, Ph.D. Student at the University of Melbourne (until 2020, then postdoctoral researcher at the Chinese University of Hong Kong). *Topic:* Optimization of federated learning algorithms. *Published at* JSAC, TMC, ICDCS, INFOCOM.
- *Anirban Das* (2019 – 2021), Rensselaer-IBM AIRC Student Researcher, Research Intern at IBM in 2019, Ph.D. Student at Rensselaer Polytechnic Institute. *Topic:* Jointly horizontal and vertical federated learning. *Published at* TIST, ICML; granted patent.
- *Hanlin Lu* (2018 – 2021), Research Intern at IBM in 2019 and 2020, DAIS ITA Student Researcher, Ph.D. Student at Pennsylvania State University. *Topic:* Coreset and data compression techniques for machine learning at the edge. *Published at* JSAC, TPDS, ICDCS, ICML workshop.

- *Tiffany Tuor* (2017 – 2021), Research Intern at IBM in 2017, 2019, and 2020, DAIS ITA Student Researcher, Ph.D. Student at Imperial College London. *Topic:* Federated learning in resource-constrained systems with diverse and dynamic data. *Published at* ICDCS, ICPR, INFOCOM (demo); granted patent.

Undergraduate and Master's Students

- Six MSc students (from September cohort & January cohort) at the University of Exeter in 2026, working on LLM hallucination detection, failure modes, and social interactions.
- Five foundation-year students at the University of Exeter in 2026, working on data analysis, machine learning foundations, and UI design.
- *Savitha Srinivasan* (2023), Intern at IBM in 2023, Undergraduate Student at Stanford University. *Topic:* Out-of-distribution detection with large language models.
- *Eduardo Morales* (2018 – 2019), Intern at IBM in 2018 – 2019, Undergraduate Student at Florida International University. *Topic:* Detection and classification of sounds.
- *Andrew Machen* (2015 – 2016), MSc Student at Imperial College London, Intern at IBM in 2016. *Topic:* Live service migration in edge computing platforms. *Published at* MobiCom (poster), IEEE Wireless.

Professional Services & Activities

Panelist/Reviewer for Research Grant Proposals

- *U.S. National Science Foundation (NSF) Panelist* in 2020 and 2021, reviewed grant proposals for the NSF and participated in panel discussion
- *Reviewer* for Natural Sciences and Engineering Research Council of Canada (NSERC) in 2022, 2024, and 2026

Associate Editor

- IEEE Transactions on Parallel and Distributed Systems (2022 – present)
- IEEE Transactions on Computational Social Systems (2021 – present)
- IEEE Transactions on Mobile Computing (2021 – 2025)
- IEEE Access (2017 – 2020)

Guest Editor

- IEEE Network Special Issue on Interplay Between Machine Learning and Networking Systems (2023)
- IEEE Transactions on Network and Service Management Special Section on the Latest Developments in Federated Learning for the Management of Networked Systems and Resources (2023)

Program Chair

- IEEE International Conference on Edge Computing and Communications (IEEE EDGE) 2024

Track/Area Chair

- *Area Chair* of the International Conference on Learning Representations (ICLR) in 2026
- *Area Chair* of the International Conference on Machine Learning (ICML) in 2026, 2025
- *Area Chair* of the Annual Conference on Neural Information Processing Systems (NeurIPS) in 2026, 2025, 2024
- *Area Chair* of the AAAI Conference on Artificial Intelligence (AAAI) in 2026, 2025, 2024, 2022
- *Track Chair* of the IEEE International Conference on Distributed Computing Systems (ICDCS) in 2024 (federated learning, analytics, and deployment track) and 2023 (edge computing track)
- *Workshop Chair* of the IEEE International Conference on Computer Communications (INFOCOM) 2025

- *Work-in-Progress and Demo Chair* of the IEEE International Conference on Smart Computing (SMARTCOMP) in 2019

Technical Program Committee (TPC) Member/Reviewer

- International Conference on Learning Representations (ICLR) 2025, 2024, 2023, 2022
- International Conference on Machine Learning (ICML) 2024, 2023, 2022, 2021
- Annual Conference on Neural Information Processing Systems (NeurIPS) 2023, 2022, 2021
- Annual Conference on Machine Learning and Systems (MLSys) 2025
- IEEE International Conference on Computer Communications (INFOCOM) 2027
- IEEE International Conference on Distributed Computing Systems (ICDCS) 2026, 2022, 2021, 2019
- IFIP Networking 2022, 2021, 2020, 2019
- IEEE Global Communications Conference (Globecom) 2024, 2023, 2022, 2019, 2018, 2017, 2016
- IEEE International Conference on Communications (ICC) 2024, 2023, 2022, 2021, 2020, 2019
- IEEE Wireless Communications and Networking Conference (WCNC) 2024, 2023, 2022, 2021
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023
- International Conference on Artificial Intelligence and Statistics (AISTATS) 2021
- International Joint Conference on Artificial Intelligence (IJCAI) 2020

Workshop Organization

- *Co-Chair* of AI4NextG'25 – Workshop on AI and ML for Next-Generation Wireless Communications and Networking at NeurIPS 2025
- *Co-Chair* of CFAgentic'25 – Workshop on Collaborative and Federated Agentic Workflows at ICML 2025
- *Chair (Lead)* of Good-Data'25 – Workshop on Preparing Good Data for Generative AI: Challenges and Approaches at AAAI 2025
- *Chair (Lead)* of FL@FM-NeurIPS'23 – International Workshop on Federated Learning in the Age of Foundation Models at NeurIPS 2023
- *Co-Chair* of the Workshop on Federated Learning and Analytics in Practice: Algorithms, Systems, Applications, and Opportunities at ICML 2023
- *Chair (Lead)* of FL-NeurIPS'22 – International Workshop on Federated Learning: Recent Advances and New Challenges at NeurIPS 2022
- *Steering Committee Member* of AIChallengeIoT'22 – 4th International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things at ACM SenSys 2022
- *Steering Committee Member* of AIChallengeIoT'21 – 3rd International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things at ACM SenSys 2021
- *Chair (Lead)* of FL-ICML'21 – International Workshop on Federated Learning for User Privacy and Data Confidentiality at ICML 2021
- *Co-Chair* of EMDL'21 – 5th International Workshop on Embedded and Mobile Deep Learning at ACM MobiSys 2021
- *Co-Chair* of the 2nd Workshop on Edge Machine Learning for 5G Mobile Networks and Beyond at IEEE ICC 2021
- *Chair (Lead)* of AIChallengeIoT'20 – 2nd International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things at ACM SenSys 2020
- *Chair (Lead)* of FL-ICML'20 – International Workshop on Federated Learning for User Privacy and Data Confidentiality at ICML 2020
- *Founding Chair (Lead)* of AIChallengeIoT'19 – 1st International Workshop on Challenges in Artificial

Intelligence and Machine Learning for Internet of Things at ACM SenSys 2019

- *Founding General Co-Chair* of FL-IJCAI'19 – International Workshop on Federated Learning for User Privacy and Data Confidentiality at IJCAI 2019

Journal Reviewer for the IEEE Journal on Selected Areas in Communications, IEEE Transactions on Cloud Computing, IEEE Transactions on Communications, IEEE Transactions on Mobile Computing, IEEE Transactions on Network Science and Engineering, IEEE/ACM Transactions on Networking, IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Signal Processing, IEEE Transactions on Vehicular Technology, IEEE Transactions on Wireless Communications, Journal of Parallel and Distributed Computing, Nature Computational Science, Proceedings of the IEEE, etc.

Membership

- IEEE Fellow (Class of 2026)
- ACM Member and Distinguished Speaker
- European Laboratory for Learning and Intelligent Systems (ELLIS) Member

Internship Experience

IBM T. J. Watson Research Center — *Yorktown Heights, NY, USA*
Graduate Level Co-op (Research Intern) — June 2014 – Sept. 2014
Graduate Level Co-op (Research Intern) — July 2013 – Sept. 2013

NEC Laboratories Europe — *Heidelberg, Germany*
Research Intern — Sept. 2012 – Dec. 2012

Full List of Publications

Co-authors named before S. Wang who are students and early-stage postdoctoral researchers (less than 2 years after graduation), at the time of performing the work, are underlined with "_____" and "_____", respectively.

High-Quality AI & Machine Learning Conferences (full papers only, at least 9 pages including everything)

[L1] S. Li, A. M. Abdelmoniem, **S. Wang**, "ProgRouter: online progress-guided orchestration for multi-agent LLM workflows under quality-cost tradeoffs," in *Findings of the Conference on Empirical Methods in Natural Language Processing (EMNLP Findings)*, Oct. 2026.

[L2] **S. Wang**, H. Woisetschläger, H.-A. Jacobsen, Mingyue Ji, "Position: let's develop data probes to fundamentally understand how data affects LLM performance," in *International Conference on Machine Learning (ICML)*, Jul. 2026.

[L3] F. Wu, J. Hu, G. Min, **S. Wang**, "Efficient orthogonal fine-tuning with principal subspace adaptation," in *International Conference on Learning Representations (ICLR)*, Apr. 2026. [Proceedings Link] [Code]

[L4] H. E. Gohari, S. R. Kadhe, Y. Shah, C. M. Adam, A. Adebayo, P. Adusumilli, F. Ahmed, N. Baracaldo, S. S. Borse, Y.-C. Chang, X.-H. Dang, N. Desai, R. Eres, R. Iwamoto, A. Karve, Y. Koyfman, W.-H. Lee, C. Liu, B. Lublinsky, T. Ohko, P. Pesce, M. Touma, **S. Wang**, S. Witherspooon, H. Woisetschläger, D. Wood, K.-L. Wu, I. Yoshida, S. Zawad, P. Zerfos, Y. Zhou, B. Bhattacharjee, "GneissWeb: preparing high quality data for LLMs at scale," in *International Conference on Learning Representations (ICLR)*, Apr. 2026. [Proceedings Link]

[L5] H. Woisetschläger, R. Zhang, **S. Wang**, H.-A. Jacobsen, "MESS+: dynamically learned inference-time LLM routing in model zoos with service level guarantees," in *Annual Conference on Neural Information Processing Systems (NeurIPS)*, Dec. 2025 (acceptance rate: 24.5%). [Proceedings Link] [Code]

[L6] A. Piaseczny, M. K. C. Shisher, **S. Wang**, C. Brinton, "RCCDA: adaptive model updates in the presence of concept drift under a constrained resource budget," in *Annual Conference on Neural Information Processing Systems (NeurIPS)*, Dec. 2025 (acceptance rate: 24.5%). [Proceedings Link]

[L7] R. Zhu, M. Yang, **S. Wang**, J. Yang, Q. Wang, "Flick: empowering federated learning with commonsense knowledge," in *Annual Conference on Neural Information Processing Systems (NeurIPS)*, Dec. 2025 (acceptance rate: 24.5%). [Proceedings Link] [Code]

[L8] D. Sow, H. Woisetschläger, S. Bulusu, **S. Wang**, H.-A. Jacobsen, Y. Liang, "Dynamic loss-based sample reweighting for improved large language model pretraining," in *International Conference on Learning Representations (ICLR)*, May 2025. [Proceedings Link] [Code]

[L9] P. Valdeira, **S. Wang**, Y. Chi, "Vertical federated learning with missing features during training and inference," in *International Conference on Learning Representations (ICLR)*, May 2025. [Proceedings Link] [Code]

[L10] W. Fang, D.-J. Han, E. Chen, **S. Wang**, C. Brinton, "Hierarchical federated learning with multi-timescale gradient correction," in *the 38th Conference on Neural Information Processing Systems (NeurIPS)*, Dec. 2024 (acceptance rate: 25.8%).

[L11] H. Woisetschläger, A. Erben, **S. Wang**, R. Mayer, H.-A. Jacobsen, "A survey on efficient federated learning methods for foundation model training," in *International Joint Conference on Artificial Intelligence (IJCAI)*, Aug. 2024. [DOI]

[L12] Y. Wang, **S. Wang**, S. Lu, J. Chen, "FADAS: towards federated adaptive asynchronous optimization," in *International Conference on Machine Learning (ICML)*, Jul. 2024 (acceptance rate: 27.5%). [Proceedings Link] [Code]

[L13] J. Wang, **S. Wang**, R.-R Chen, M. Ji, "A new theoretical perspective on data heterogeneity in federated optimization," in *International Conference on Machine Learning (ICML)*, Jul. 2024 (acceptance rate: 27.5%). [Proceedings Link]

[L14] **S. Wang**, M. Ji, "A lightweight method for tackling unknown participation statistics in federated averaging," in *International Conference on Learning Representations (ICLR)*, May 2024 (spotlight, 5% of submitted papers). [Proceedings Link] [Code]

[L15] D. Jhunjhunwala, **S. Wang**, G. Joshi, "FedFisher: leveraging Fisher information for one-shot federated learning," in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, May 2024. [Proceedings Link] [Code]

[L16] G. Xiong, G. Yan, **S. Wang**, J. Li, "DePRL: achieving linear convergence speedup in personalized decentralized learning with shared representations," in *AAAI Conference on Artificial Intelligence*, Feb. 2024 (acceptance rate: 23.7%). [DOI]

[L17] J. Park, D.-J. Han, J. Kim, **S. Wang**, C. Brinton, J. Moon, "StableFDG: style and attention based learning for federated domain generalization," in *the 37th Conference on Neural Information Processing Systems (NeurIPS)*, Dec. 2023 (acceptance rate: 26.1%). [Proceedings Link]

[L18] T. Castiglia, Y. Zhou, **S. Wang**, S. Kadhe, N. Baracaldo, S. Patterson, "LESS-VFL: communication-efficient feature selection for vertical federated learning," in *International Conference on Machine Learning (ICML)*, Jul. 2023 (acceptance rate: 27.9%). [Proceedings Link]

[L19] H. Wang, D. Joshi, **S. Wang**, Q. Ji, "Gradient-based uncertainty attribution for explainable Bayesian deep learning," in *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun. 2023 (acceptance rate: 25.8%). [DOI]

[L20] D. Jhunjhunwala, **S. Wang**, G. Joshi, "FedExP: speeding up federated averaging via extrapolation," in *International Conference on Learning Representations (ICLR)*, May 2023 (spotlight – notable-top-25%, top 25% of accepted papers, approximately top 8% of submitted papers). [Proceedings Link] [Code]

[L21] **S. Wang**, M. Ji, "A unified analysis of federated learning with arbitrary client participation," in *the 36th*

Conference on Neural Information Processing Systems (NeurIPS), Nov.–Dec. 2022 (acceptance rate: 25.6%). [Proceedings Link] [Code]

[L22] T. Castiglia, A. Das, **S. Wang**, S. Patterson, "Compressed-VFL: communication-efficient learning with vertically partitioned data," in *International Conference on Machine Learning (ICML)*, Jul. 2022 (acceptance rate: 21.9%). [Proceedings Link] [Code]

[L23] J. Wang, **S. Wang**, R.-R. Chen, M. Ji, "Demystifying why local aggregation helps: convergence analysis of hierarchical SGD," in *AAAI Conference on Artificial Intelligence*, Feb.-Mar. 2022 (acceptance rate: 15.0%). [DOI]

[L24] A. Feng, C. You, **S. Wang**, L. Tassiulas, "KerGNNs: interpretable graph neural networks with graph kernels," in *AAAI Conference on Artificial Intelligence*, Feb.-Mar. 2022 (oral presentation, oral acceptance rate: 4.6%, overall acceptance rate: 15.0%). [DOI] [Code]

[L25] S. Pasteris, T. He, F. Vitale, **S. Wang**, M. Herbster, "Online learning of facility locations," in *the 32nd International Conference on Algorithmic Learning Theory (ALT)*, Mar. 2021. [Proceedings Link]

[L26] S. Wang, J. Li, **S. Wang**, "Online algorithms for multi-shop ski rental with machine learned advice," in *the 34th Conference on Neural Information Processing Systems (NeurIPS)*, Dec. 2020 (acceptance rate: 20.1%). [Proceedings Link] [Code]

[L27] S. Pasteris, F. Vitale, K. Chan, **S. Wang**, M. Herbster, "MaxHedge: maximising a maximum online," in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Apr. 2019. [Proceedings Link]

High-Quality Networking & Systems Conferences (full papers only, at least 9 pages including everything)

[N1] L. Yuan, D.-J. Han, **S. Wang**, C. Brinton, "Local-Cloud Inference Offloading for LLMs in Multi-Modal, Multi-Task, Multi-Dialogue Settings," in *ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc)*, Oct. 2025 (best paper runner-up, top 3 of 169 submissions, overall acceptance rate: 23.1%). [DOI] [Journal Version] [Code]

[N2] H. Woisetschläger, A. Erben, R. Mayer, **S. Wang**, H.-A. Jacobsen, "FLEdge: benchmarking federated machine learning applications in edge computing systems," in *ACM/IFIP International Middleware Conference (MIDDLEWARE)*, Dec. 2024. [DOI] [Code]

[N3] C.-C. Chiu, T. Nguyen, T. He, **S. Wang**, B.-S. Kim, K.-I. Kim, "Active learning for WBAN-based health monitoring," in *ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc)*, Oct. 2024 (acceptance rate: 24.5%). [DOI]

[N4] E. Chen, **S. Wang**, C. Brinton, "Taming subnet-drift in D2D-enabled fog learning: a hierarchical gradient tracking approach," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2024 (acceptance rate: 19.6%). [DOI]

[N5] P. Han, **S. Wang**, Y. Jiao, J. Huang, "Federated learning while providing model as a service: joint training and inference optimization," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2024 (acceptance rate: 19.6%). [DOI]

[N6] B. Luo, Y. Feng, **S. Wang**, J. Huang, L. Tassiulas, "Incentive mechanism design for unbiased federated learning with randomized client participation," in *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Jul. 2023 (acceptance rate: 18.9%) [DOI].

[N7] **S. Wang**, J. Perazzone, M. Ji, K. Chan, "Federated learning with flexible control," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2023 (acceptance rate: 19.2%). [DOI] [Code]

[N8] J. Perazzone, **S. Wang**, M. Ji, K. Chan, "Communication-efficient device scheduling for federated learning using stochastic optimization," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2022 (acceptance rate: 19.9%). [DOI]

[N9] B. Luo, W. Xiao, **S. Wang**, J. Huang, L. Tassiulas, "Tackling system and statistical heterogeneity for

federated learning with adaptive client sampling," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2022 (acceptance rate: 19.9%). [DOI]

[N10] K. Yu, Q. Li, D. Chen, M. Rahman, **S. Wang**, "PrivacyGuard: enhancing smart home user privacy," in *ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, May 2021 (acceptance rate: 24.8%). [DOI] [Code]

[N11] B. Luo, X. Li, **S. Wang**, J. Huang, L. Tassiulas, "Cost-effective federated learning design," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2021 (acceptance rate: 19.9%). [DOI]

[N12] Y. Han, S. Shen, X. Wang, **S. Wang**, V. C. M. Leung, "Tailored learning-based scheduling for kubernetes-oriented edge-cloud system," in *IEEE International Conference on Computer Communications (INFOCOM)*, May 2021 (acceptance rate: 19.9%). [DOI] [Journal Version] [Code]

[N13] P. Han, **S. Wang**, K. K. Leung, "Adaptive gradient sparsification for efficient federated learning: an online learning approach," in *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Nov. 2020 (acceptance rate: 18.0%). [DOI] [Code]

[N14] H. Lu, T. He, **S. Wang**, C. Liu, M. Mahdavi, V. Narayanan, K. Chan, S. Pasteris, "Communication-efficient k-means for edge-based machine learning," in *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Nov. 2020 (acceptance rate: 18.0%). [DOI]

[N15] H. Lu, C. Liu, **S. Wang**, T. He, V. Narayanan, K. Chan, S. Pasteris, "Joint coreset construction and quantization for distributed machine learning," in *IFIP Networking*, Jun. 2020 (acceptance rate: 27.5%). [Proceedings Link]

[N16] C. Liu, X. He, T. Chanyaswad, **S. Wang**, P. Mittal, "Investigating statistical privacy frameworks from the perspective of hypothesis testing," in *Privacy Enhancing Technologies Symposium (PETS)*, Jul. 2019 (acceptance rate: 22.3%). [DOI]

[N17] T. Tuor, **S. Wang**, K. K. Leung, B. J. Ko, "Online collection and forecasting of resource utilization in large-scale distributed systems," in *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Jul. 2019 (acceptance rate: 19.6%). [DOI]

[N18] S. Pasteris, **S. Wang**, M. Herbster, T. He, "Service placement with provable guarantees in heterogeneous edge computing systems," in *IEEE International Conference on Computer Communications (INFOCOM)*, Apr. 2019 (acceptance rate: 19.7%). [DOI]

[N19] Y. Lin, T. He, **S. Wang**, K. Chan, S. Pasteris, "Looking glass of NFV: inferring the structure and state of NFV network from external observations," in *IEEE International Conference on Computer Communications (INFOCOM)*, Apr. 2019 (acceptance rate: 19.7%). [DOI] [Journal Version]

[N20] V. Farhadi, F. Mehmeti, T. He, T. La Porta, H. Khamfroush, **S. Wang**, K. Chan, "Service placement and request scheduling for data-intensive applications in edge clouds," in *IEEE International Conference on Computer Communications (INFOCOM)*, Apr. 2019 (acceptance rate: 19.7%). [DOI] [Journal Version]

[N21] T. He, H. Khamfroush, **S. Wang**, T. La Porta, S. Stein, "It's hard to share: joint service placement and request scheduling in edge clouds with sharable and non-sharable resources," in *IEEE International Conference on Distributed Computing Systems (ICDCS)*, July 2018 (acceptance rate: 20%). [DOI]

[N22] **S. Wang**, T. Tuor, T. Salonidis, K. K. Leung, C. Makaya, T. He, K. Chan, "When edge meets learning: adaptive control for resource-constrained distributed machine learning," in *IEEE International Conference on Computer Communications (INFOCOM)*, Apr. 2018 (acceptance rate: 19.2%). [DOI] [Journal Version] [Code of Journal Version]

[N23] I.-H. Hou, T. Zhao, **S. Wang**, K. Chan, "Asymptotically optimal algorithm for online reconfiguration of edge-clouds," in *Proc. of ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc) 2016* (acceptance rate: 18.7%). [DOI] [Journal Version] [Code]

[N24] R. Urgaonkar, **S. Wang**, T. He, M. Zafer, K. Chan, K. K. Leung, "Dynamic service migration and workload scheduling in edge-clouds," in *Proc. of IFIP International Symposium on Computer Performance, Modeling, Measurements and Evaluation (Performance) 2015*, Oct. 2015 (acceptance rate: 28.40%). [DOI]

[N25] **S. Wang**, R. Urgaonkar, M. Zafer, T. He, K. Chan, K. K. Leung, "Dynamic service migration in mobile edge-clouds," in *Proc. of IFIP Networking 2015*, May 2015 (acceptance rate: 23.27%). [DOI] [Journal Version] [Code of Journal Version]

Journals & Magazines

[J1] L. Yuan, D.-J. Han, **S. Wang**, C. Brinton, "Device-cloud collaborative LLM inference with multi-modal, multi-task, and multi-turn conversations," *IEEE Transactions on Networking*, vol. 34, pp. 6124 – 6139, Jul. 2026. [DOI] [Code]

[J2] F. Wu, J. Hu, G. Min, **S. Wang**, "Adaptive rank allocation for federated parameter-efficient fine-tuning of language models," *IEEE Transactions on Computers*, vol. 75, no. 4, pp. 1650 – 1663, Apr. 2026. [DOI]

[J3] E. Chen, **S. Wang**, C. Brinton, "A hierarchical gradient tracking algorithm for mitigating subnet-drift in fog learning networks," *IEEE Transactions on Networking*, vol. 34, pp. 4684 – 4699, Mar. 2026. [DOI]

[J4] X. Zhang, K. Wan, H. Sun, **S. Wang**, M. Ji, G. Caire, "Optimal communication and key rate region for hierarchical secure aggregation with user collusion," *IEEE Transactions on Information Theory*, vol. 72, no. 2, pp. 1030 – 1050, Feb. 2026. [DOI]

[J5] Z. Chen, K. K. Leung, **S. Wang**, L. Tassiulas, K. Chan, P. J. Baker, "Multi-policy reinforcement learning for network resource allocation with periodic behaviors," *Computer Networks*, vol. 272, Nov. 2025. [DOI]

[J6] J. Perazzone, **S. Wang**, M. Ji, K. Chan, "Communication-efficient device scheduling for federated learning using Lyapunov optimization," *IEEE/ACM Transactions on Networking*, vol. 33, no. 4, pp. 1407 – 1421, Aug. 2025. [DOI]

[J7] C. Yu, S. Shen, **S. Wang**, K. Zhang, H. Zhao, "Communication-efficient hybrid federated learning for E-health with horizontal and vertical data partitioning," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 36, no. 3, pp. 5614 – 5628, Mar. 2025. [DOI]

[J8] T. Castiglia, **S. Wang**, S. Patterson, "Flexible vertical federated learning with heterogeneous parties," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 35, no. 12, pp. 17878 – 17892, Dec. 2024. [DOI]

[J9] B. Luo, W. Xiao, **S. Wang**, J. Huang, L. Tassiulas, "Adaptive heterogeneous client sampling for federated learning over wireless networks," *IEEE Transactions on Mobile Computing*, vol. 23, no. 10, pp. 9663 – 9677, Oct. 2024. [DOI]

[J10] X. Liu, **S. Wang**, Y. Deng, A. Nallanathan, "Adaptive federated pruning in hierarchical wireless networks," *IEEE Transactions on Wireless Communications*, vol. 23, no. 6, pp. 5985 – 5999, Jun. 2024. [DOI]

[J11] Y. Jiang, **S. Wang**, V. Valls, B. J. Ko, W.-H. Lee, K. K. Leung, L. Tassiulas, "Model pruning enables efficient federated learning on edge devices," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 34, no. 12, pp. 10374 – 10386, Dec. 2023. [DOI] [Code]

[J12] S. Shen, Y. Han, X. Wang, **S. Wang**, V. C. M. Leung, "Collaborative learning-based scheduling for Kubernetes-oriented edge-cloud network," *IEEE/ACM Transactions on Networking*, vol. 31, no. 6, pp. 2950 – 2964, Dec. 2023. [DOI]

[J13] C.-C. Chiu, X. Zhang, T. He, **S. Wang**, A. Swami, "Laplacian matrix sampling for communication-efficient decentralized learning," *IEEE Journal on Selected Areas in Communications*, vol. 41, no. 4, pp. 887 – 901, Apr. 2023. [DOI]

[J14] Z. Chen, K. K. Leung, **S. Wang**, L. Tassiulas, K. Chan, D. Towsley, "Use coupled LSTM networks

to solve constrained optimization problems," *IEEE Transactions on Cognitive Communications and Networking*, vol.9, no. 2, pp. 304 – 316, Apr. 2023. [DOI]

[J15] A. Das, T. Castiglia, **S. Wang**, S. Patterson, "Cross-silo federated learning for multi-tier networks with vertical and horizontal data partitioning," *ACM Transactions on Intelligent Systems and Technology*, vol. 13, no. 6, Dec. 2022. [DOI]

[J16] H. Lu, T. He, **S. Wang**, C. Liu, M. Mahdavi, V. Narayanan, K. Chan, S. Pasteris, "Communication-efficient k-means for edge-based machine learning," *IEEE Transactions on Parallel and Distributed Systems*, vol. 33, no. 10, pp. 2509 – 2523, Oct. 2022. [DOI]

[J17] A. Imteaj, U. Thakker, **S. Wang**, J. Li, M. H. Amini, "A survey on federated learning for resource-constrained IoT devices," *IEEE Internet of Things Journal*, vol. 9, no. 1, pp. 1 – 24, Jan. 2022. [DOI]

[J18] B. Luo, X. Li, **S. Wang**, J. Huang, L. Tassiulas, "Cost-Effective federated learning in mobile edge networks," *IEEE Journal on Selected Areas in Communications*, vol. 39, no. 12, pp. 3606 – 3621, Dec. 2021. [DOI]

[J19] V. Farhadi, F. Mehmeti, T. He, T. La Porta, H. Khamfroush, **S. Wang**, K. Chan, K. Poularakis, "Service placement and request scheduling for data-intensive applications in edge clouds," *IEEE/ACM Transactions on Networking*, vol. 29, no. 2, pp. 779 – 792, Apr. 2021. [DOI]

[J20] **S. Wang**, "Efficient deep learning," *Nature Computational Science*, vol. 1, pp. 181 – 182, Mar. 2021, invited News & Views paper. [DOI]

[J21] H. Lu, M.-J. Li, T. He, **S. Wang**, V. Narayanan, K. Chan, "Robust Coreset Construction for Distributed Machine Learning," *IEEE Journal on Selected Areas in Communications*, vol. 38, no. 10, pp. 2400 – 2417, Oct. 2020 (acceptance rate of this special issue of the journal: 20.8%). [DOI] [Code]

[J22] Y. Lin, T. He, **S. Wang**, K. Chan, S. Pasteris, "Looking glass of NFV: inferring the structure and state of NFV network from external observations," *IEEE/ACM Transactions on Networking*, vol. 28, no. 4, pp. 1477 – 1490, Aug. 2020. [DOI] [Code]

[J23] **S. Wang**, T. Tuor, T. Salonidis, K. K. Leung, C. Makaya, T. He, K. Chan, "Adaptive federated learning in resource constrained edge computing systems," *IEEE Journal on Selected Areas in Communications*, vol. 37, no. 6, pp. 1205 – 1221, Jun. 2019 (acceptance rate of this special issue of the journal: 13%, received the IEEE Communications Society Leonard G. Abraham Prize in 2021). [DOI] [Code]

[J24] **S. Wang**, R. Urgaonkar, M. Zafer, T. He, K. Chan, K. K. Leung, "Dynamic service migration in mobile edge computing based on Markov decision process," *IEEE/ACM Transactions on Networking*, vol. 27, no. 3, pp. 1272 – 1288, Jun. 2019. [DOI] [Code]

[J25] T. Zhao, I.-H. Hou, **S. Wang**, K. Chan, "ReD/LeD: an asymptotically optimal and scalable online algorithm for service caching at the edge," *IEEE Journal on Selected Areas in Communications*, vol. 36, no. 8, pp. 1857 – 1870, Aug. 2018. [DOI] [Code]

[J26] A. Machen, **S. Wang**, K. K. Leung, B. J. Ko, T. Salonidis, "Live service migration in mobile edge clouds," *IEEE Wireless Communications*, vol. 25, no. 1, pp. 140 – 147, Feb. 2018. [DOI]

[J27] T. He, E. N. Ciftcioglu, **S. Wang**, K. Chan, "Location privacy in mobile edge clouds: a chaff-based approach," *IEEE Journal on Selected Areas in Communications*, vol. 35, no. 11, pp. 2625 – 2636, Nov. 2017. [DOI]

[J28] **S. Wang**, R. Urgaonkar, T. He, K. Chan, M. Zafer, K. K. Leung, "Dynamic service placement for mobile micro-clouds with predicted future costs," *IEEE Transactions on Parallel and Distributed Systems*, vol. 28, no. 4, pp. 1002 – 1016, Apr. 2017. [DOI]

[J29] **S. Wang**, M. Zafer, K. K. Leung, "Online placement of multi-component applications in edge computing environments," *IEEE Access*, vol. 5, pp. 2514 – 2533, Feb. 2017. [DOI]

[J30] F. Wang, L. Guo, **S. Wang**, Q. Song, A. Jamalipour, "Approaching single-hop performance in multi-hop networks: end-to-end known-interference cancellation (E2E-KIC)," *IEEE Transactions on Vehicular*

Technology, vol. 65, no. 9, pp. 7606 – 7620, Sept. 2016. [DOI]

[J31] R. Urgaonkar, **S. Wang**, T. He, M. Zafer, K. Chan, K. K. Leung, "Dynamic service migration and workload scheduling in edge-clouds," *Performance Evaluation*, vol. 91, pp. 205 – 228, Sept. 2015 (accepted directly through IFIP Performance 2015). [DOI]

[J32] Q. Song, L. Guo, F. Wang, **S. Wang**, A. Jamalipour, "MAC-centric cross-layer collaboration: a case study on physical-layer network coding," *IEEE Wireless Communications*, vol. 21, no. 6, pp. 160 – 166, Dec. 2014. [DOI]

[J33] Y. Huang, **S. Wang**, Q. Song, L. Guo, A. Jamalipour, "Synchronous physical-layer network coding: a feasibility study," *IEEE Transactions on Wireless Communications*, vol. 12, no. 8, pp. 4048 – 4057, Aug. 2013. [DOI]

[J34] **S. Wang**, Q. Song, X. Wang, A. Jamalipour, "Distributed MAC protocol supporting physical-layer network coding," *IEEE Transactions on Mobile Computing*, vol. 12, no. 5, pp. 1023 – 1036, May 2013. [DOI]

[J35] F. Wang, **S. Wang**, Q. Song, L. Guo, "Adaptive relaying method selection for multi-rate wireless networks with network coding," *IEEE Communications Letters*, vol. 16, no. 12, pp. 2004 – 2007, Dec. 2012. [DOI]

[J36] Q. Song, Z. Ning, **S. Wang**, A. Jamalipour, "Link stability estimation based on link connectivity changes in mobile ad-hoc networks," *Journal of Network and Computer Applications*, vol. 35, no. 6, pp. 2051 – 2058, Nov. 2012. [DOI]

[J37] **S. Wang**, Q. Song, X. Wang, A. Jamalipour, "Rate and power adaptation for analog network coding," *IEEE Transactions on Vehicular Technology*, vol. 60, no. 5, pp. 2302 – 2313, June 2011. [DOI]

Book Chapters

[B1] **S. Wang**, T. Tuor, K. K. Leung, "Optimized federated learning in wireless networks with constrained resources," in *Machine Learning and Wireless Communications*, Y. Eldar, A. Goldsmith, D. Gündüz and H. V. Poor (Eds.), Cambridge University Press, 2022.

[B2] G. Joshi, **S. Wang**, "Communication-efficient distributed optimization algorithms," in *Federated Learning*, H. Ludwig and N. Baracaldo (Eds.), Springer Nature, 2022.

Other Conferences, Workshops & Short Papers (all are peer-reviewed)

[C1] **S. Wang**, H. Woisetschläger, "Agentic performance at the edge: insights from benchmarking," in *Workshop on Autonomic and Agentic AI For IoT and Edge Systems (AutoEdge) in Conjunction with MobiSys 2026*, Jun. 2026. [DOI]

[C2] R. Zhang, H. Woisetschläger, **S. Wang**, H.-A. Jacobsen, "MESS+: energy-optimal inferencing in language model zoos with service level guarantees," in *Workshop on Adaptive Foundation Models in Conjunction with NeurIPS 2024*, Dec. 2024.

[C3] H. Woisetschläger, A. Erben, B. Marino, **S. Wang**, N. D. Lane, R. Mayer, H.-A. Jacobsen, "Federated learning priorities under the European Union Artificial Intelligence Act," in *Workshop on Generative AI and Law (GenLaw) in Conjunction with ICML 2024*, Jul. 2024.

[C4] D. Jhunjhunwala, N. Jali, G. Joshi, **S. Wang**, "Erasure coded neural network inference via Fisher averaging," in *International Symposium on Information Theory (ISIT)*, Jul. 2024. [DOI]

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Patents

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Languages

- **English:** Fluent
- **Chinese:** Native
- **German:** Intermediate
  Lived in Germany for 7 years at young age, attended primary school and half a year of Gymnasium (middle school) in Germany.