

Jiayuan Chen (陈嘉源)

College of Computer Science and Technology,
Nanjing University of Aeronautics and Astronautics (NUAA)

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Website: <https://www.jiayuanchen123.com>

Date of Birth: 1997-11-24, Gender: Male

Native Place: Quanzhou, Fujian Province

Expected Graduation Date: 2027

Seeking Faculty or Postdoctoral Opportunities



Research Interests

AI (e.g., Generative Artificial Intelligence, Reinforcement Learning) and their applications in resource management for communication networks. The targeted networks and applications include semantic communication, Internet of things (IoT), immersive communication, virtual-physical interaction, digital twin, and mobile edge computing (MEC) reconfigurable intelligent surface (RIS), unmanned aerial vehicle (UAV).

Currently, I've published or had accepted 15 SCI-indexed journal articles (including 6 first-authored articles: 3 first-authored + 1 co-first-authored (listed second) in SCI Q1, and 2 first-authored in SCI Q2), 12 conference papers (including 4 first-authored: 3 papers in IEEE ICC (flagship conferences in communications), and 1 paper in IEEE INFOCOM Workshop), and obtained 4 patents (including 1 first inventor with 1 authorized and 1 published, and other 2 authorized). Additionally, I've participated in 6 research projects (leading 1 independently and participating in 5 others).

Education

- **Ph.D.** in Computer Science and Technology (April 2023 - March 2027)
Nanjing University of Aeronautics and Astronautics (NUAA)
Advisor: [Prof. Changyan Yi](#) (Associate Director of the Department of Computer Science and Engineering, NUAA)
- **Master Degree** in Computer Science and Technology (Sept. 2020 - Mar. 2023)
Nanjing University of Aeronautics and Astronautics (NUAA)
Advisor: [Prof. Changyan Yi](#) (Associate Director of the Department of Computer Science and Engineering, NUAA)
- **Bachelor Degree** in Internet of Things Engineering (Sept. 2016 - Jun. 2020)
Huaqiao University

Work Experience

- **Teaching Assistant**
 - Principles and Applications of Embedded Systems (National First-Class Undergraduate Course / Jiangsu First-Class Undergraduate Course), NUAA
 - Optimization Theory and Its Applications, NUAA

Honors and Awards

- **China**
 - 2026 NUAA International Academic Exchange Program for Ph.D. Students, NUAA
 - 2025 National Graduate Scholarship, Ministry of Education & Ministry of Finance, PRC
 - 2025 NUAA International Academic Exchange Program for Ph.D. Students, NUAA

- 2024 "Puxin Elite" Scholarship, Nanjing Pukou District Industry and Information Technology Bureau
- 2024 Outstanding Master Thesis Award, NUAA
- Outstanding Graduate Student (Class of 2023), NUAA
- 2021-2022 Merit Graduate Student, NUAA (2021-2022)
- 2020-2022 Outstanding Graduate Student Cadre, NUAA (consecutive two years)
- **International**
 - 2025 Exemplary Reviewer Award, IEEE Transactions on Mobile Computing
 - 2023 Best Presentation Award, A3 Foresight Program, NSFC, JSPS, NRF

Publications

Journal Papers:

- [15] Fang Zhu[†], **Jiayuan Chen**[†], Junjie Wen, Yuye Yang, Changyan Yi, Yun Tie, Peng Zhang, Jun Cai, Dusit Niyato and Mohsen Guizani, "From Data Mirror to Smart Copilot: A Survey on NextG Semantic Communication for Propelling Digital Twin World into Cognitive Stage," IEEE Communications Surveys and Tutorials, vol. 28, pp. 4915-4947, 2026. (†equal contribution) (JCR Q1, SCI Q1 Top, IF:46.7)
- [14] **Jiayuan Chen**, Changyan Yi, Shimin Gong, Hongyang Du, Wen Wu, Jiawen Kang and Dusit Niyato, "Generative AI-Aided QoE-Aware Resource Allocations for RIS-Assisted Digital Twin Interaction with Uncertain Evolution," IEEE Transactions on Mobile Computing, Early Access. (JCR Q1, SCI Q1 Top, CCF-A, IF:9.2)
- [13] **Jiayuan Chen**, Changyan Yi, Samuel D. Okegbile, Jun Cai and Xuemin (Sherman) Shen, "Networking Architecture and Key Supporting Technologies for Human Digital Twin in Personalized Healthcare: A Comprehensive Survey," IEEE Communications Surveys and Tutorials, vol. 26, no. 1, pp. 706-746, Firstquarter 2024. (ESI Highly Cited Paper) (JCR Q1, SCI Q1 Top, IF:46.7)
- [12] **Jiayuan Chen**, Changyan Yi, Ran Wang, Kun Zhu and Jun Cai, "Learning Aided Joint Sensor Activation and Mobile Charging Vehicle Scheduling for Energy-Efficient WRSN-Based Industrial IoT," IEEE Transactions on Vehicular Technology, vol. 72, no. 4, pp. 5064-5078, Apr. 2023. (JCR Q1, SCI Q2, IF:7.1)
- [11] **Jiayuan Chen**, You Shi, Changyan Yi, Hongyang Du, Jiawen Kang and Dusit Niyato, "Generative AI-Driven Human Digital Twin in IoT-Healthcare: A Comprehensive Survey," IEEE Internet of Things Journal, vol. 11, no. 21, pp. 34749-34773, Nov. 2024. (JCR Q1, SCI Q1, IF:8.9)
- [10] **Jiayuan Chen**, Changyan Yi, Hongyang Du, Dusit Niyato, Jiawen Kang, Jun Cai and Xuemin (Sherman) Shen, "A Revolution of Personalized Healthcare: Enabling Human Digital Twin with Mobile AIGC," IEEE Network, vol. 38, no. 6, pp. 234-242, Nov. 2024. (JCR Q1, SCI Q2, IF:6.3)
- [9] Liping Nong, Guifa Zhu, Jie Peng, Jinling Liu, **Jiayuan Chen** and Junyi Wang, "High-order Feature Guided Efficient Semantic Communication System for Point Cloud Transmission," IEEE Transactions on Vehicular Technology, accepted, 2026. (JCR Q1, SCI Q2, IF:7.1)
- [8] Kun Wu, **Jiayuan Chen**, Lucheng Chen, Zili Liu, Changyan Yi, Shuai Xu, Junyi Wang and Jiawen Kang, "QoE-Aware Joint Visual and Haptic Signal Transmission with Adaptive Data Compression for Immersive Interactions in Human Digital Twin," IEEE Transactions on Network and Service Management, vol. 22, no. 3, pp. 2780-2794, Jun. 2025. (JCR Q1, SCI Q2, IF:5.4)
- [7] Samuel D. Okegbile, Jun Cai, Hao Zheng, **Jiayuan Chen** and Changyan Yi, "Differentially Private Federated Multi-Task Learning Framework for Enhancing Human-to-Virtual Connectivity in Human Digital Twin," IEEE Journal on Selected Areas in Communications, vol. 41, no. 11, pp. 3533-3547, Nov. 2023. (CCF A, JCR Q1, SCI Q1 Top, IF:17.2)
- [6] Samuel D. Okegbile, Jun Cai, Junjie Wu, **Jiayuan Chen** and Changyan Yi, "A Prediction-Enhanced Physical-to-Virtual Twin Connectivity Framework for Human Digital Twin," IEEE Transactions on Cognitive Communications and Networking, vol. 11, no. 4, pp. 2440-2455, Aug. 2025. (JCR Q1, SCI Q1, IF:7.0)
- [5] Samuel D. Okegbile, Jun Cai, **Jiayuan Chen** and Changyan Yi, "A Reputation-Enhanced Shard-Based Byzantine

Fault-Tolerant Scheme for Secure Data Sharing in Zero Trust Human Digital Twin Systems,” IEEE Internet of Things Journal, vol. 11, no. 12, pp. 22726-22741, Jun. 2024. (JCR Q1, SCI Q2, IF:8.9)

[4] Jialiuyuan Li, Changyan Yi, **Jiayuan Chen**, Kun Zhu and Jun Cai, “Joint Trajectory Planning, Application Placement and Energy Renewal for UAV-Assisted MEC: A Triple-Learner Based Approach,” IEEE Internet of Things Journal, vol. 10, no. 15, pp. 13622-13636, Aug. 2023. (JCR Q1, SCI Q2, IF:8.9)

[3] Jialiuyuan Li, Changyan Yi, **Jiayuan Chen**, You Shi, Tong Zhang, Xiaolong Li, Ran Wang and Kun Zhu, “A Reinforcement Learning Based Stochastic Game for Energy-Efficient UAV Swarm Assisted MEC with Dynamic Clustering and Scheduling,” IEEE Transactions on Green Communications and Networking, vol. 9, no. 1, pp. 255-270, Mar. 2025. (ESI Highly Cited Paper) (JCR Q1, SCI Q2, IF:7.0)

[2] Hao Xiang, Changyan Yi, Kun Wu, **Jiayuan Chen**, Jun Cai, Dusit Niyato and Xuemin (Sherman) Shen, “Realizing Immersive Communications in Human Digital Twin by Edge Computing Empowered Tactile Internet: Visions and Case Study,” IEEE Network, 2025. (JCR Q1, SCI Q3, IF:6.3)

[1] Xiaolong Li, Ruiting Deng, Jianhao Wei, Xin Wu, **Jiayuan Chen**, Changyan Yi, Jun Cai, Dusit Niyato and Xuemin (Sherman) Shen, “AIGC-Driven Real-Time Interactive 4D Traffic Scene Generation in Vehicular Networks,” IEEE Network, accepted. (JCR Q1, SCI Q3, IF:6.3)

Conference Papers:

[12] **Jiayuan Chen**, Chen Dai, Haotong Cao, Bintao Hu, Kun Wu, Changyan Yi, “Continual Reinforcement Learning-Based Social-Aware Resource Allocation for Uncertain Multi-Modal Virtual-Physical Interaction,” IEEE International Conference on Communications (ICC), Glasgow, United Kingdom, May 24-28, 2026. (Flagship Conference)

[11] **Jiayuan Chen**, Yuxiang Li, Changyan Yi and Shimin Gong, “Generative AI-Aided QoE Maximization for RIS-Assisted Digital Twin Interaction,” IEEE International Conference on Computer Communications Workshops (INFOCOM WKSHPS), London, United Kingdom, May 19-22, 2025.

[10] **Jiayuan Chen**, Changyan Yi, Jialiuyuan Li, Kun Zhu and Jun Cai, “A Triple Learner Based Energy Efficient Scheduling for Multi-UAV Assisted Mobile Edge Computing,” IEEE International Conference on Communications (ICC), Rome, Italy, May 28-Jun. 1, 2023. (Flagship Conference)

[9] **Jiayuan Chen**, Changyan Yi, Ran Wang, Kun Zhu and Jun Cai, “A Joint Optimization of Sensor Activation and Mobile Charging Scheduling in Industrial Wireless Rechargeable Sensor Networks,” IEEE International Conference on Communications (ICC), Seoul, Korea, May 16-20, 2022. (Flagship Conference)

[8] Yuxiang Li, **Jiayuan Chen** and Changyan Yi, “Distributionally Robust Optimization for Digital Twin Service Provisioning over Edge Computing,” IEEE International Conference on Computer Communications Workshops (INFOCOM WKSHPS), London, United Kingdom, May 19-22, 2025.

[7] Hao Xiang, Tong Zhang, **Jiayuan Chen** and Changyan Yi, “Multi-Objective Bayesian Approach for Optimizing Subjective-Objective Performance of Tactile Internet,” IEEE Global Communication Conference (GLOBECOM), Taipei, Taiwan, Dec. 8-12, 2025. (Flagship Conference)

[6] Hao Xiang, Tong Zhang, **Jiayuan Chen** and Changyan Yi, “Joint Optimization of Feedback Signal Transmission and Reconstruction in Tactile Internet,” IEEE Global Communication Conference (GLOBECOM), Taipei, Taiwan, Dec. 8-12, 2025. (Flagship Conference)

[5] Hao Wu, Haifeng Zhu, **Jiayuan Chen**, Hao Zheng and Changyan Yi, “Edge-Cloud Collaborative Multi-Axis Servo Coordination Control: A Reinforcement Q-Knapsack Approach,” IEEE International Conference on Systems, Man, and Cybernetics (SMC), Vienna, Austria, Oct. 5-8, 2025.

[4] Jialiuyuan Li, You Shi, **Jiayuan Chen** and Changyan Yi, “A Two-Timescale DRL-Based Stochastic Game for Energy-Efficient Hierarchical Aerial Computing,” IEEE Vehicular Technology Conference (VTC2025-Fall), Chengdu, China, Oct. 19-22, 2025.

[3] Jialiuyuan Li, **Jiayuan Chen**, Changyan Yi, Tong Zhang, Kun Zhu and Jun Cai, “Energy-Efficient UAV Swarm Assisted MEC with Dynamic Clustering and Scheduling,” IEEE Wireless Communications and Networking Conference

(WCNC), Dubai, UAE, Apr. 21-24, 2024.

[2] Kun Wu, **Jiayuan Chen**, Changyan Yi, Zili Liu, Xiaoping Lu, Junyi Wang and Jun Cai, "Joint Visual and Haptic Signal Transmission for Immersive Interactions in Human Digital Twin," International Conference on Ubiquitous Communication (UCOM), Xi'an, China, Jul. 5-7, 2024.

[1] Xiang Chen, Wenjie Zhu, **Jiayuan Chen**, Tong Zhang, Changyan Yi and Jun Cai, "Edge Computing Enabled Real-Time Video Analysis via Adaptive Spatial-Temporal Semantic Filtering," IEEE International Conference on Internet of Things (iThings), Ocean Flower Island, Hainan, China, Dec. 17-21, 2023.

Books/Chapters:

[B1] Changyan Yi, Ruoyang Chen, **Jiayuan Chen**, Xiaolong Li and Jun Cai, "Self-Evolving Digital Twin over Wireless Networks: Dynamic Twin Construction and Service Interaction," Springer Wireless Network Series, Springer press, 2026 (ISBN:978-3-032-08119-3).

[BC2] Yuye Yang, **Jiayuan Chen**, Ruoyang Chen and Changyan Yi, "Digital Twin Networks," Foundations of Digital Twins, Elsevier press, 2026. (ISBN: 978-0-443-43896-7).

[BC1] Samuel D. Okegbile, Jun Cai, **Jiayuan Chen** and Changyan Yi, "Blockchain for Secure Data Sharing in Zero-Trust Human Digital Twin Systems," Blockchain and Digital Twin for Smart Hospitals, Elsevier press, 2025. (ISBN: 978-0-443-34226-4).

Patents:

[4] **Jiayuan Chen**, Changyan Yi, Ran Wang, Kun Zhu, "An Energy Optimization Approach for Industrial Wireless Rechargeable Sensor Networks", Patent No. ZL 2022 1 0355670.X (**Authorized**)

[3] **Jiayuan Chen**, Changyan Yi, Xiaolong Li, "A Digital Twin Interaction Experience Optimization Approach Based on Generative AI", Application No. 202510413185.7 (**Published**)

[2] Changyan Yi, Xiang Chen, Wenjie Zhu, **Jiayuan Chen**, Tong Zhang, "Edge-Terminal Synergy for Real-Time Video Analytics Exploiting Spatial-Temporal Semantic Pruning", Patent No. ZL 2023 1 0703624.9 (**Authorized**)

[1] Jialiuyuan Li, Changyan Yi, **Jiayuan Chen**, Qiang Wu, "A Triple-Learner Augmented Reinforcement Learning Approach for UAV-Enabled Edge Computing", Patent No. ZL 2022 1 1099729.X (**Authorized**)

Academic Activities

- Reviewer:
 - IEEE Transactions on Mobile Computing
 - IEEE/ACM Transactions on Networking
 - IEEE Journal on Selected Areas in Communications
 - IEEE Transactions on Communications
 - IEEE Transactions on Wireless Communications
 - IEEE Transactions on Vehicular Technology
 - IEEE Internet of Things Journal
 - IEEE Systems Journal
 - IEEE Transactions on Dependable and Secure Computing
 - IEEE Network
 - IEEE Communications Magazine
 - IEEE Wireless Communications
 - IEEE ICC, GLOBECOM, WCNC, VTC, etc.

- Technical Program Committee Member:

- IEEE Vehicular Technology Conference-Spring (IEEE VTC-Fall WKSHPS), 2025
 - WS-23: Workshop on Digital Twin Networks for Next-Gen Mobile Ecosystems
- IEEE International Conference on Communications Workshops (IEEE ICC WKSHPS), 2026
 - WS-13: Next-Evolution Waveform (NEW) for Future Wireless Networks
 - WS-26: Delay-Doppler and Chirp-Based Modulation for Future Communication Systems
- IEEE Vehicular Technology Conference-Spring (IEEE VTC-Spring), 2026
 - Track: Signal Processing for Wireless Communications, Cooperative Communication
 - WS-15: Intelligent Synergy of Sensing and Communications for Green IoT
- IEEE Vehicular Technology Conference-Spring (IEEE VTC-Fall), 2026
 - Track: Machine Learning and AI for Communications

Research Projects

Leader:

Intelligent Decision Optimization for Personalized Digital Twin Systems, Jiangsu Provincial Graduate Innovation Program, 2024-2025

Participant:

-High-Precision State Assessment and Life Prediction of New Energy Vehicles Integrating AI Technology, China Automotive Software (Shenzhen) Industry Collaboration Project, 2025-2026

-Dynamic Optimization of Manufacturing Resources for Large-Scale Personalization, Haier National Key Laboratory Project, 2023-2025

-Low-Latency High-Reliability Integrated Communication, Sensing, and Computation Technologies, NUAA Graduate Innovation Program, 2022-2023

-Ultra-Low Latency and High Reliability Multi-Access Lean Network (LeaNet) Symbiotic Evolution Architecture and Key Technologies, National Key R&D Program, 2022-2025

-Resource Scheduling Schemes for Hierarchical and Heterogeneous Edge Computing Networks for Latency-Sensitive Applications, NSFC Youth Fund, 2021-2023

Google Scholar

Citations: 1107, h-index: 13, i10-index: 16