Ruoyang Chen（陈若阳）

Currently working toward Ph.D., Student Member, IEEE

Student
College of Computer Science and Technology
Nanjing University of Aeronautics and Astronautics (NUAA)
Nanjing, Jiangsu 211106, China
Lab: SMILINNET LAB, 01-900, Jiangjun Rd. Campus, 29 Jiangjun Ave.

Email: ruoyangchen@nuaa.edu.cn

[Biography] [Selected Honors] [Publications] [Professional Activities]

Biography

Ruoyang Chen received the M.S. degree at the College of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics (NUAA), Jiangsu, China, in 2024. He is currently working toward the Ph.D. degree at the College of Computer Science and Technology, NUAA, under the supervision of Prof. Changyan Yi.

His main research interests include digital twin construction, federated/distributed system, game-theoretical AI agent design, DRL-based online optimization and physical/virtual layer security.

Experience

- Ph.D. Student: Spring 2024 to Present,
  College of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics (NUAA), China.
- M.S. Degree: Fall 2021 to Spring 2024,
  College of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics (NUAA), China.
- Overseas Studies for Undergraduates: Summer 2019,
  Anderson School of Management, University of California Los Angeles (UCLA), USA.
- B.S. Degree: Fall 2017 to Summer 2021,
  School of Computer Science, Nanjing University of Information Science & Technology (NUIST), China.
- High School Degree: Fall 2014 to Summer 2017,
  Nanjing Jinling High School, China.

Selected Honors

• Yinhang Program of NUAA, 2025-2027.	NUAA
• Postgraduate Research & Practice Innovation Program of Jiangsu Province, 2025-2026.	Jiangsu Provincial Department of Education
• Suzhou Industrial Park Scholarship, 2024.	Suzhou Industrial Park
• Postgraduate Research & Practice Innovation Program of NUAA, 2023-2024.	NUAA
• Excellent Paper Award by the 11th International Academic Conference for Graduates, 2023.	NUAA
• NUAA Graduate Study Scholarship, 2021-2024.	NUAA
• Scholarship Program of Overseas Studies for Undergraduates, 2019.	Jiangsu Provincial Department of Education

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Selected Publications

- ***Book/Book Chapter***

[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", *Wireless Networks Series*, Springer press, 2025. (ISBN: 978-3-032-08120-9)

- ***Journal/Magazine*** *(* denotes the corresponding author)*

[J9] **Ruoyang Chen**, Changyan Yi*, Haifeng Zhu, Wen Wu, Jiawen Kang and Dusit Niyato, "Dynamic Digital Twin Update by Adaptive Model Splitting and Reliable Crowdsourcing under Uncertain Data Distortions", *IEEE Transactions on Mobile Computing*, accepted. **(SCI-Q1 TOP, CCF-A)**

[J8] Cong Tang, Youwen Zhu*, **Ruoyang Chen**, Changyan Yi and Jian Wang, "GBC-UG: An Advanced Location Data Distribution Estimation Mechanism under Geo-Indistinguishability", *IEEE Transactions on Mobile Computing*, Accepted. **(SCI-Q1 TOP, CCF-C)**

[J7] Xiaolong Li, Jianhao Wei, Haidong Wang, Li Dong, **Ruoyang Chen**, Changyan Yi, Jun Cai, Dusit Niyato and Xuemin (Sherman) Shen, "Towards Intelligent Transportation with Pedestrians and Vehicles In-the-Loop: A Surveillance Video-Assisted Federated Digital Twin Framework", *IEEE Network Magazine*, Early Access. **(SCI-Q3)**

[J6] **Ruoyang Chen**, Changyan Yi*, Fuhui Zhou, Jiawen Kang, Yuan Wu and Dusit Niyato, "Federated Digital Twin Construction via Distributed Sensing: A Game-Theoretic Online Optimization with Overlapping Coalitions", *IEEE Transactions on Mobile Computing*, vol. 24, no. 11, pp. 12221-12238. **(SCI-Q1 TOP, CCF-A)**

[J5] Zenghui Qian, **Ruoyang Chen**, Changyan Yi*, Xiangping Zhai and Bing Chen, "Collision Avoidance Control for Autonomous Driving with Multiple Dynamic Obstacles in IoV: A Prediction-Enhanced APF-Based Approach", *IEEE Internet of Things Journal*, vol. 12, no. 13, pp. 24968-24984, Jul. 2025. **(SCI-Q1 TOP, CCF-C)**

[J4] Haipeng Zhou, **Ruoyang Chen**, Changyan Yi*, Jianjun Zhang, Jiawen Kang, Jun Cai and Mohsen Guizani, "A Repeated Coalition Formation Game for Physical Layer Security Aware Wireless Communications with Third-Party Intelligent Reflecting Surfaces", *IEEE Transactions on Wireless Communications*, vol. 24, no. 9, pp. 7612-7626, Sept. 2025. **(SCI-Q1 TOP, CCF-B)**

[J3] Denghui Liu, **Ruoyang Chen**, Changyan Yi*, Tong Zhang, Xiaolong Li, Juan Li, Ran Wang and Kun Zhu, "A Hierarchical Game for Physical Layer Security Aware Cooperative Communications with Dynamic Interchangeable Relaying and Jamming", *IEEE Transactions on Vehicular Technology*, vol. 74, no. 1, pp. 968-983, Jan. 2025. **(SCI-Q2 TOP)**

[J2] **Ruoyang Chen**, Changyan Yi*, Kun Zhu, Bing Chen, Jun Cai and Mohsen Guizani, "A Three-Party Hierarchical Game for Physical Layer Security Aware Wireless Communications with Dynamic Trilateral Coalitions", *IEEE Transactions on Wireless Communications*, vol. 23, no. 5, pp. 4815-4829, May 2024. **(SCI-Q1 TOP, CCF-B)**

[J1] Shanfei Shang, Changyan Yi*, Tong Zhang, **Ruoyang Chen** and Jun Cai, "Latency-Energy Aware Dynamic Application Placement for Edge Computing: A Vacation Queue Based Optimization Approach", *IEEE Transactions on Network Science and Engineering*, vol. 11, no. 2, pp. 2249-2263, Mar.-Apr. 2024. **(SCI-Q2)**

- ***Conference***

[C12] **Ruoyang Chen**, Yijie Zhang, Ruizhi Wang and Changyan Yi, "DTAS: Adaptive Model Splitting for Dynamic Digital Twin Update with Edge Cloud Collaboration," *IEEE International Conference on Computer Communications (INFOCOM)*, Tokyo, Japan, May 18-21, 2026. **(CCF-A)**

[C11] You Shi, Yuye Yang, **Ruoyang Chen** and Chen Dai, "Quality-Aware Online Optimization for Reliability Guaranteed Microservice Deployment for Edge Computing Enabled Industrial IoT," *International Conference on Wireless Communications and Signal Processing (WCSP)*, Chongqing, China, Oct. 23-25, 2025. **(EI)**

[C10] You Shi, Yuye Yang, **Ruoyang Chen**, Chen Dai and Jiantao Shi, "Reliability-Aware Online Learning for Layer-Sharing-Based Digital Twin Deployment in Multi-Edge Systems," *IEEE Vehicular Technology Conference Workshops (VTC WKSHPS)*, Chengdu, China, Oct. 19-22, 2025. **(EI)**

[C9] Xinyu Yu, Yuye Yang, **Ruoyang Chen** and Changyan Yi , "Online Optimization of Edge Vehicle Digital Twin Migration with Adaptive Mobility Prediction," *IEEE Vehicular Technology Conference (VTC)*, Chengdu, China, Oct. 19-22, 2025. **(EI)**

[C8] Tianqing Man, Haifeng Zhu, **Ruoyang Chen** and Changyan Yi , "Hierarchical DRL-Based Multi-Motor Control with Torque Synchronization in Industrial IoT," *International Conference on Wireless Artificial Intelligent Computing Systems and Applications (WASA)*, Tokyo, Japan, Jun. 24-26, 2025. **(CCF-C)**

[C7] Junjie Wu, **Ruoyang Chen** and Changyan Yi , "A DRL-Based Deviation-Aware Federated Digital Twin Construction over Wireless Edge Network," *International Conference on Wireless Artificial Intelligent Computing Systems and Applications (WASA)*, Tokyo, Japan, Jun. 24-26, 2025. **(CCF-C)**

[C6] **Ruoyang Chen** and Changyan Yi, "A Game-Theoretic Online Optimization for Federated Digital Twin Construction via Wireless Sensing," *IEEE International Conference on Communications (ICC)*, Montreal, Canada, Jun. 8-12, 2025. **(CCF-C)**

[C5] Yuye Yang, You Shi, **Ruoyang Chen**, Changyan Yi and Jiawen Kang, "Online Optimization of Edge Empowered Human Digital Twin Deployment and Task Offloading," *IEEE/CIC International Conference on Communications in China (ICCC)*, Hangzhou, China, Aug. 7-9, 2024. **(EI)**

[C4] Denghui Liu, **Ruoyang Chen**, Tong Zhang and Changyan Yi, "A DRL-Based Hierarchical Game for Physical Layer Security Aware Cooperative Communications," *IEEE/CIC International Conference on Communications in China (ICCC)*, Hangzhou, China, Aug. 7-9, 2024. **(EI)**

[C3] Haipeng Zhou, **Ruoyang Chen**, Changyan Yi, Juan Li and Jun Cai, "A Three-Party Repeated Coalition Formation Game for PLS in Wireless Communications with IRSs," *IEEE Wireless Communications and Networking Conference (WCNC)*, Dubai, UAE, Apr. 21-24, 2024. **(CCF-C)**

[C2] Wenjie Zhu, **Ruoyang Chen**, Changyan Yi and Jun Cai, "Edge-Assisted Video Transmission with Adaptive Key Frame Selection: A Hierarchical DRL Approach," *Biennial Symposium on Communications (BSC)*, Montreal, Canada, Jul. 4-Jul. 7, 2023. **(EI)**

[C1] **Ruoyang Chen**, Changyan Yi, Kun Zhu, Bing Chen and Jun Cai, "A DRL-Based Hierarchical Game for Physical Layer Security with Dynamic Trilateral Coalitions," *IEEE International Conference on Communications (ICC)*, Rome, Italy, May 28-Jun. 1, 2023. **(CCF-C)**

Professional Activities

• Reviewer

— IEEE Transactions on Mobile Computing
— IEEE Transactions on Dependable and Secure Computing
— IEEE Transactions on Wireless Communications
— IEEE Transactions on Consumer Electronics
— IEEE Transactions on Transportation Electrification
— IEEE Transactions on Network and Service Management
— IEEE Transactions on Vehicular Technology
— IEEE Transactions on Industry Applications
— IEEE Internet of Things Journal
— IEEE Network Magazine
— IEEE Wireless Communication Magazine
— IEEE Industry Applications Magazine
— IEEE Sensor Letter
— IEEE Access
— International Journal of Production Economics
— The Journal of Supercomputing
— Computer Animation and Virtual Worlds
— Engineering Science and Technology
— Sustainable Energy, Grids and Networks
— Journal of Systems Architecture
— Journal of Renewable and Sustainable Energy
— Electronics
— PLOS One
— CMC-Computers, Materials & Continua
— Scientific Reports
— Applied Soft Computing Journal
— Advances in Differential Equations and Control Processes
— Journal of Game Studies
— Contemporary Mathematics
— Journal of King Saud University Computer and Information Sciences
— Digital Transportation and Safety
— IEEE ICC, IEEE WCNC, IEEE VTC, IEEE GLOBECOM, WASA, etc.