Ran WANG

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Birth	23 April 1991 Beijing (Chinese)	**E-mail**	wangran@xs.ustb.edu.cn
		Citizenship	Chinese

Education

Sept 2022 — Now

Doctor of Philosophy (PhD) · University of Science & Technology Beijing
Supervisor: Prof. Xiaotong Zhang and Cheng Xu
Research topic: Blockchain-Enabled Distributed System Management, mainly including the application of blockchain technology in distributed swarm intelligence systems and scientific big-data management.

Aug 2013 — Jan 2016

Master of Science (MSc) · University of Science & Technology Beijing
Supervisor: Prof. Qin Wang
Thesis: Collaborative localization in multi-agent systems based on Time-of-Arrival.

Sept 2009 — July 2013

Bachelor of Science (BSc) · Beijing Information Science & Technology University
Major: Information Security
Thesis: Design and implementation of automatic PC-unlock software based on Bluetooth.

Employment

June 2018 — August 2022

Assistant Research Fellow · China Academy of Information and Communication Technology
My research focuses on big data and data security governance, including blockchain and privacy computing.

March 2016 — June 2018

Assistant Research Fellow · Third Research Insititute of the Ministry of Public Security of PRC
My work focuses on the information security risk assessment of distributed systems. I am also responsible for the testing and evaluation of classified protection of information systems, as well as network security product testing.

Awards

Feb 2023

Outstanding Award · China Computer Federation (CCF)
Our project, MatFed, in which I am the team leader, was awarded the outstanding award by the CCF Blockchain Committee in the Innovative Application Competition. Our work introduces blockchain into material big-data systems, enabling efficient collaboration between different research and development institutions to accelerate new material research using machine learning methods.

Research Topics

Intelligent Computing — **Blockchain-Enabled Distributed System Management** • June 2018 - Now

- **Blockchain-Enabled Swarm Robotics:** Blockchain technology is used to achieve consensus on tasks in distributed systems, as well as audit and traceability throughout the system's operation.
- **Blockchain-Enabled Scientific Big-data Management:** A heterogeneous data storage system based on MongoDB and blockchain is being investigated to solve the problem of data storage, computing, and management in heterogeneous multi-agent systems, which could also be applied to scientific big-data management, such as intelligent manufacturing of materials.

Internet of Things — **Colloborative Localization & Navigation** • Sept 2016 — Now

Multi-source fusion navigation using statistical inference, belief propagation, and deep learning methods. RFID (CSS/UWB) based wireless localization techniques, including error modeling, protocol, and algorithm investigation.

Research Fundings (Principal participant)

Jan 2022 — Dec 2024 — **Research on collaborative searching model and key algorithms for emergency rescue in uncertain environment**
- National Science Foundation of China (NSFC)

Jan 2023 — Dec 2025 — **Research on blockchain enabled confidential computing for data privacy protection**
- Natural Science Foundation of Shandong Province

Refereed Journal Publications

J10 **Wang R**, Xu C*, Tang S, Zheng R, Zhang X*. MatFed: MatFed: Federated Transfer Learning Driven Materials Computation for Secure Big Data Sharing[J], submitted to **Nature Communications**, under review.

J9 **Wang R**, Xu C*, Zhang X*. Toward Materials Genome Big-Data: A Blockchain-based Secure-Storage and Efficient-Retrieval Method[J], submitted to **IEEE Transactions on Parallel and Distributed Systems**, *Major revisioned, under review*.

J8 **Wang R**, Xu C*, Ye F, Tang S, Zhang X*. S-MBDA: A Blockchain-based Architecture for Secure Storage and Sharing of Material Big-Data[J], submitted to **IEEE Internet of Things Journal**, *Major revisioned, under review*.

J7 Ye F, **Wang R***, Tang S, Duan S, Xu C. Federated Learning-Enabled Cooperative Localization in Multi-agent System[J]. **International Journal of Wireless Information Networks**, accepted.

J6 **Wang R**, Xu C*, Li R, Duan S, Zhang X. Cooperative Localization and Mapping based on UWB/IMU Fusion using Factor Graphs[J]. **IEEE Sensors Journal**, 2023: 1–1. (online)

J5 **Wang R**, Xu C*, Wu H, Shi Y, Duan S, Zhang X. Gaussian Condensation Filter Based on Cooperative Constrained Particle Flow[J]. **IEEE Internet of Things Journal**, 2023, 10(15): 13533–13543.

J4 Wan J, Xu C*, Chen W, **Wang R**, Zhang X*. Abrupt moving target tracking based on quantum enhanced particle filter[J]. **ISA Transactions**, 2023: S001905782300068X.

J3 **Wang R**, Xu C*, Dong R, Luo Z, Zheng R, Zhang X*. A secured big-data sharing platform for materials genome engineering: State-of-the-art, challenges and architecture[J]. **Future Generation Computer Systems**, 2023, 142: 59–74.

J2 Duan S, He H, Xu C*, Yin N, **Wang R**. DS-MCTS: A Deep Sequential Monte Carlo Tree Search Method for Source Navigation in Unknown Environments[J]. **Acta Electronica Sinica**, 2022: 1744–1752.

J1 Xu C*, Yin N, Duan S, He Hao, **Wang R**. Reward-Filtering-Based credit assignment for Multi-Agent Deep Reinforcement Learning[J]. Chinese Journal of Computers, 2022, 45(11): 2306–2320