

Ruirui Zhong

Curriculum Vitae

🏠 No.6 Kaiwu Yuan Building, Zijingang Campus, Hangzhou 310058, China
☎ +86 19857118665
✉ zhongruirui@zju.edu.cn
🌐 <https://www.expresso2.top/>

RESEARCH INTEREST

- Smart Manufacturing
- Digital Twin
- Human-robot Collaboration
- Industrial AI

EDUCATION

- 2021 – NOW **Doctor of Philosophy**
Supervisor: Prof. Yixiong Feng and Dr. Bingtao Hu
School of Mechanical Engineering
Zhejiang University
- 2017 – 2021 **Process Equipment and Control Engineering**
NATIONAL SCHOLARSHIP, OUTSTANDING GRADUATE
School of Mechanical Engineering
Jiangnan University

RESEARCH EXPERIENCE

Scheduling Optimization for Smart Manufacturing and Industrial Internet of Things

CURRENT, FROM JULY 2023

- Solved a flexible flow shop scheduling problem using reinforcement learning algorithm
- Designed a computing task scheduling approach using hybrid programming algorithm
- Proposed an end-to-end computing task scheduling algorithm based on GNN and RL
- Developed a FJSP scheduling method in HCPS via MDGAT

Human Digital Twin Modeling and Application

FEB 2023 – OCT 2021

- Built a human data acquisition platform based on multimodal signals, including: IMU, RGB-D, plantar pressure sensor and EMG, and proposed the framework of human digital twin modeling
- Constructed a human motion pattern recognition model based on LSTM and CNN
- Integrating a hierarchical HDT model and transfer learning for HRC assembly intention Recognition
- Constructed a time series prediction method considering spatio-temporal dependencies
- Developed an adaptive federated aggregation strategy for equalizing the variability of different clients for secure IIoB

SKILLS

- **Programming:** Python, Matlab, L^AT_EX, HTML/CSS, Julia
- **Technologies:** Linux, GitHub, Solidworks, AutoCAD
- **Languages:** English (CET 6, fluent), Mandarin (native)

AWARDS

- 2023 **Outstanding Poster Award**
Human-Centric Smart Manufacturing Conference

PUBLICATIONS

Zhong, R., Hu, B., Feng, Y., Zheng, H., Hong, Z., Lou, S., & Tan, J. (2023). Construction of human digital twin model based on multimodal data and its application in locomotion mode identification. *Chinese Journal of Mechanical Engineering*, 36(1), 126.

Zhong, R., Hu, B., Hong, Z., Zhang, Z., Lou, S., Song, X., Feng, Y., & Tan, J. (2024). Human-Robot Handover Task Intention Recognition Framework by Fusing Human Digital Twin and Deep Domain Adaptation. *Journal of Engineering Design*, 1-17.

Zhong, R., Feng, Y., Li, P., Wu, X., Guo, A., Zhang, A., & Li, C. (2024). Uncertainty-aware Nuclear Power Turbine Vibration Fault Diagnosis Method Integrating Machine Learning and Heuristic Algorithm. *IET Collaborative Intelligent Manufacturing*.

Zhong, R., Hu, B., Feng, Y., Lou, S., Hong, Z., Wang, F., Li, G., & Tan, J. (2024). Lithium-ion battery remaining useful life prediction: a federated learning-based approach. *Energy, Ecology and Environment*, 1-14.

Hu, B., **Zhong, R.**, Song, J., Guo, J., Wang, Y., Lou, S., & Tan, J. (2024). A Federated Deep Domain Adaptation-based Framework for Nuclear Power Steam Turbines Considering Privacy-Preserving. *IET Collaborative Intelligent Manufacturing*.

Pan, J., **Zhong, R.**, Hu, B., Feng, Y., Zhang, Z., & Tan, J. (2024). Smart scheduling of hanging workshop via digital twin and deep reinforcement learning. *Flexible Services and Manufacturing Journal*, 1-22.

Wang, T., Peng, T., Hu, B., **Zhong, R.**, Feng, Y., Chen, X., & Tan, J. (2024). Two-stage imbalanced learning-based quality prediction method for wheel hub assembly. *Advanced Engineering Informatics*, 59, 102309.

REVIEWS

Journal Papers

- Advanced Engineering Informatics
- Neural Computing and Applications

MEMBERSHIP

- IEEE Graduate Student Member
- IEEE RAS Graduate Student Member