Xiangxin An

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EDUCATION

Shanghai Jiao Tong University (SJTU) Shanghai, China

M.E. in Industrial Engineering and Management, GPA:3.94/4 2020.09 – 2023.03

Thesis: Maintenance and production joint scheduling of manufacturing systems under time-of-use tariffs (Excellent Master Dissertation of School of Mechanical Engineering)

B.S. in Industrial Engineering, GPA:3.48/4 2016.09 – 2020.06

Thesis: Fault prediction and platform application of automobile manufacturing equipment using machine learning methods

PUBLICATIONS (Xiangxin An - Google Scholar)

[1] **Xiangxin An**, Guojin Si, Tangbin Xia, Dong Wang, Ershun Pan, Lifeng Xi. An energy-efficient collaborative strategy of maintenance planning and production scheduling for serial-parallel systems under time-of-use tariffs. Applied Energy 2023, 336, 120794: 1-14. (SCI, IF=11.446)

[2] **Xiangxin An**, Guojin Si, Tangbin Xia, Qinming Liu, Yaping Li, Rui Miao. Operation and maintenance optimization for manufacturing systems with energy management. Energies, 2022, 15(19), 7338. (SCI)

[3] **Xiangxin An**, Lei Cao, Guojin Si, Zhen Chen, Meimei Zheng, Jianfeng Tao, Tangbin Xia. Energy-conscious maintenance and production scheduling for a single machine under time-of-use tariffs. Journal of Physics: Conference Series. 2022, 2369, 012097: 1-7. (EI, Third Prize Paper Award)

[4] Tangbin Xia, **Xiangxin An**, Huaqiang Yang, Yimin Jiang, Yuhui Xu, Meimei Zheng, Ershun Pan. Efficient energy use in manufacturing systems—modeling, assessment, and management strategy. Energies. 2023, 16(3), 1095. (SCI)

[5] Yingcui Xu, **Xiangxin An**, Ying Zhu, Tangbin Xia, Rui Miao. Joint Optimization for Product Warranty and Preventive Maintenance in Service Supply Chain. Journal of Physics: Conference Series. 2021, 1983, 012113: 1-8. (EI)

[6] Lei Cao, **Xiangxin An**, Tangbin Xia, Meimei Zheng, Lifeng Xi. Multi-level Optimization Policy of Opportunistic Maintenance and Inventory Control of the k-out-of-n System. Journal of Shanghai Jiao Tong University (Chinese). 2022, 030, doi:10.16183/j.cnki.jsjtu. (EI Chinese Version)

[7] Huaqiang Yang, Jian Xiong, **Xiangxin An**, Tangbin Xia. Energy-oriented Maintenance Decision-making for Sustainable Manufacturing Based on Energy Saving Window. Industrial Engineering and Management (Chinese). 2022, 27(2), 173-182. doi:10.19495/j.cnki.1007-5429.2022.02.021.

[8] Huaqiang Yang, Liqiong Wang, **Xiangxin An**, Yifan Dong, Tangbin Xia. Multi-attribute Health Model of Equipment Based on Subjective and Objective Integrated Weighting. Machine Design & Research (Chinese). 2021, 37(4), 154-158. doi:10.13952/j.cnki.jofmdr.2021.0156.

RESEARCH EXPERIENCE

Lean Control of Spare Parts Inventory in Cigarette Factory

Team Member | Hubei China Tobacco Industry Corporation Cooperation Project 2022.11 – 2023.03

- Analyzed bottlenecks in existing spare parts management measures through onsite investigation and data.
- Devised a dynamic, opportunistic maintenance and inventory control policy for a k-out-of-n production system.[6]

Fault Diagnosis and Proactive Maintenance of Equipment with Coupling Failures for High Service Reliability

Team Member | "National Quality Infrastructure System" Special Project 2022.09 –2023.03

- Optimized the proactive maintenance policy for the whole production line while supporting machine's quality evaluation.

Quality Assessment of Regional Advanced Manufacturing Industry

Core Member | Consulting Project under the Chinese Academy of Engineering 2021.05 – 2021.11

- Devised an evaluation standard to measure quality of regional advanced manufacturing activity by analyzing enterprises' annual reports and quality development data over the past decade.
- Built a systematic interpretive model based on the interaction mechanisms of supply chain to improve product quality.

Preventive Maintenance and Production Scheduling to Optimize Energy Management of Manufacturing Systems

Team Member | Ministry of Education-China Mobile Research Fund R&D Project 2020.10 – 2022.12

- Reviewed maintenance and operation optimization methods for the energy management of manufacturing systems.[2][4]
- Developed a joint two-stage optimization model for preventive maintenance and production scheduling under Time-of-Use (ToU) tariffs accounting for equipment degradation, and reduced on-peak power use proportion from 37% to 6%.[1]

Maintenance Expert System for Shanghai Metro Line 5

Team Member | Shanghai Intelligent Manufacturing Function Platform Co., Ltd 2021.03 – 2021.08

- Designed an expert system for Metro Line 5 infrastructure maintenance by studying the maintenance process and scheme.

Decision-making for Equipment Maintenance and Prediction of Factory Energy Consumption

Team Member | Hubei China Tobacco Industry Corporation Cooperation Project 2020.07 – 2021.06

- Constructed a multi-attribute health maintenance model by integrating subjective and objective monitoring data.[8]
- Predicted factory's energy consumption using features extracted from historical data through multi-factor index-grey interval GM (1,1) method.

Decision-making for Energy Optimization Control of Manufacturing Systems

Team Member | State Laboratory for Mechanical Systems and Vibration 2019.12 – 2020.12

- Established a triple-level energy usage improvement framework for manufacturing systems comprising modeling, assessment and management.
- Proposed a machine-system, multi-level energy optimization control strategy to enable an integrated solution for maintenance and production scheduling. [3]

Design and Development of a Maintenance Platform and Expert System

Team Member | SAIC Volkswagen University Enterprise Cooperation Project 2019.12 – 2020.06

- Developed a fault diagnosis model for different equipment using historical operating data, achieving 99% accuracy rate with model built on Support Vector Machine (SVM) and K Nearest Neighbors (KNN) algorithms.
- Constructed an information management system with functions such as spare parts management, maintenance experience data integration, and human resource management.

AWARDS

Outstanding Graduate in Shanghai (2023)	2023.03
SJTU Top 10 Student Merit Award (2021-2022)	2022.12
National Scholarship for Postgraduates (2021-2022)	2022.10
SJTU Graduate Student First-class Acedemic Scholarship (Top 30%)	2021.10, 2022.10
Ruiyuan-Sequoia Talent Development Fund of SJTU	2021.11
First Prize, 5th Shanghai Engineering Management Innovation Competition	2021.11
Special Prize, Rising Shanghai Teen Talent in Science and Technology	2020.12
Outstanding Undergraduate Graduate of SJTU (2020)	2020.06
First Prize, SMC Takada Scholarship of SJTU	2019.12
Grand Prize, National Undergraduate Science and Technology Race Challenge Cup	2019.11
Grand Prize, The RoboMaster University Championship (2019)	2019.09
Academic Excellence Scholarship (Second-Class) of SJTU	2017.12, 2018.12

LEADERSHIP EXPERIENCES

Student Affairs Steering Committee of SJTU, Graduate Affairs Office

Student Assistant 2021.10 – 2023.03

- Organized annual Graduate Student Academic Star Selection of SJTU and the follow-up experience-sharing workshops.

Senior Design Projects of School of Mechanical Engineering

Teaching Assistant 2020.11 – 2022.06

- Served over 60 IE major undergraduates to complete their graduation projects, provide supervision and answer questions.

***Challenge Cup*, National Undergraduate Science and Technology Race**

Core Member 2018.09 – 2019.11

- Applied photometric stereo technology to a gastroscope and designed the gastroscope's structure. (National Grand Prize)

SKILLS

Language: Chinese (native), English (proficient, IELTS 7.0)

Technical: Python, MATLAB, SolidWorks