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Editorial

Editorial for Special Issue on "Intelligent Technologies and Processes for Advanced Nuclear Power and Energy Engineering"

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This Special Issue, entitled "Intelligent Technologies and Processes for Advanced Nuclear Power and Energy Engineering", was organized by the journal *Processes* as a way to collect original research articles on the latest developments in intelligent technologies and processes for advanced nuclear power and energy systems. From April 2022 to February 2023, we received 24 submissions for this Special Issue. After a comprehensive review process for each submission, 13 papers [1–13] were accepted for publication in this journal (i.e., the acceptance rate of this Special Issue was 54%).

Most of the published papers highlighted the role of intelligent optimization algorithms in this research area. For example, Wu et al. [1] proposed an optimal power flow problem and analyzed it with a decomposition-based multi-objective algorithm. In this regard, they first employed the barnacle optimization algorithm to improve the diversity of the initial population, which benefits from the differential evolution algorithm. Then, they defined an adaptive mutation strategy using similarity selection to create an interaction between the exploration and exploitation phases. Based on a comparative study for intelligent algorithms, Zhang et al. [4] developed a water cycle algorithm enhanced by the local search for solving an energy-efficient disassembly-line balancing problem. In another study, Shi et al. [5] studied an adaptive energy system in plug-in hybrid electric vehicles. They analyzed the vehicle dynamics as well as the relationship between vehicle fuel consumption and the driving cycle. In this regard, a prediction algorithm using the backpropagation neural network and particle swarm optimization was proposed to estimate the equivalent consumption minimization strategy. Furthermore, Wei et al. [6] studied an energy consumption system in the mobile edge computing environment. They proposed a multi-resource computing unloading energy consumption model. Their main novelty was a new fitness calculation method for evaluating the energy consumption of edge devices. In this regard, they proposed a multi-resource computing offloading particle swarm optimization task scheduling algorithm. Last, but not least, Yang et al. [12] applied a non-dominated sorting genetic algorithm to maximize the protective effect of the restraint system on the driver for developing a pre-tensioned force-limiting seatbelt.

Electric vehicles and energy management topics attracted many scholars to this Special Issue. For example, Jia et al. [8] improved the battery state of charge of the electric vehicle via a master–slave electro-hydraulic hybrid electric vehicle system. In another study, Xu et al. [3] designed a solar-powered green energy-based multifunctional system for school interventions while improving public health in primary and

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secondary schools during the COVID-19 pandemic. Zhou et al. [2] analyzed the feasibility of improving the surface quality of 3D-printed parts by dry milling post-processing during the application of polyetheretherketone in additive manufacturing systems. Ma et al. [7] proposed a mathematical model for a synchronous rotation coordinate system. Using extensive simulations, the voltage-stabilizing circuit model was analyzed and tested. Shakerian et al. [9] studied a solar distillation technology for the assessment of desalinating brackish groundwater resources under threat of saltwater intrusion in Iran. Zhao et al. [10] studied the stability of the path-tracking control and fuel economy of new energy vehicles. They proposed a model predictive controller to find the optimal control strategy of path tracking and a braking energy recovery system. Sun et al. [11] studied the temperature of a diesel oxidation catalyst. They analyzed a test method for determining the safe regeneration temperature of the diesel particulate filter. Finally, Chen et al. [13] proposed an electro-hydraulic power-coupled electric vehicle based on the working principle of an electro-hydraulic power-integrated drive system for light-duty cargo vehicles.

In conclusion, this Special Issue aimed to cover the major topics related to intelligent technologies and processes for advanced nuclear power and energy systems while filling in the existing gaps in the literature. Last, but not least, the Guest Editors would like to thank the Editorial Board of *Processes*, the reviewers, and the authors who contributed to this Special Issue.

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References

1. Wu, Z.; Liu, H.; Zhao, J.; Li, Z. An Improved MOEA/D Algorithm for the Solution of the Multi-Objective Optimal Power Flow Problem. *Processes* **2003**, *11*, 337. [CrossRef]
2. Zhou, H.; Cheng, X.; Jiang, X.; Zheng, G.; Zhang, J.; Li, Y.; Tang, M.; Lv, F. Green Manufacturing-Oriented Polyetheretherketone Additive Manufacturing and Dry Milling Post-Processing Process Research. *Processes* **2022**, *10*, 2561. [CrossRef]
3. Xu, Q.; Zheng, B.; Zhou, H.; Chen, J.; Zhang, Z.; Wu, X. Digital Technology and Innovative Technology to Promote the Professional Development of Digital Media Based on Green Energy under COVID-19. *Processes* **2022**, *10*, 1915. [CrossRef]
4. Zhang, X.; Yuan, J.; Chen, X.; Zhang, X.; Zhan, C.; Fathollahi-Fard, A.M.; Wang, C.; Liu, Z.; Wu, J. Development of an Improved Water Cycle Algorithm for Solving an Energy-Efficient Disassembly-Line Balancing Problem. *Processes* **2022**, *10*, 1908. [CrossRef]
5. Shi, D.; Li, S.; Liu, K.; Wang, Y.; Liu, R.; Guo, J. Adaptive Energy Management Strategy Based on Intelligent Prediction of Driving Cycle for Plug−In Hybrid Electric Vehicle. *Processes* **2022**, *10*, 1831. [CrossRef]
6. Wei, Z.; Yu, X.; Zou, L. Multi-Resource Computing Offload Strategy for Energy Consumption Optimization in Mobile Edge Computing. *Processes* **2022**, *10*, 1762. [CrossRef]
7. Ma, J.; Shi, L.; Golmohammadi, A.-M. Voltage-Stabilizing Method of Permanent Magnet Generator for Agricultural Transport Vehicles. *Processes* **2022**, *10*, 1726. [CrossRef]
8. Jia, Q.; Zhang, H.; Zhang, Y.; Yang, J.; Wu, J. Parameter Matching and Performance Analysis of a Master-Slave Electro-Hydraulic Hybrid Electric Vehicle. *Processes* **2022**, *10*, 1664. [CrossRef]
9. Shakerian, M.; Karrabi, M.; Gheibi, M.; Fathollahi-Fard, A.M.; Hajiaghaei-Keshteli, M. Evaluating the Performance of a Solar Distillation Technology in the Desalination of Brackish Waters. *Processes* **2022**, *10*, 1626. [CrossRef]
10. Zhao, B.; Liu, R.; Shi, D.; Li, S.; Cai, Q.; Shen, W. Optimal Control Strategy of Path Tracking and Braking Energy Recovery for New Energy Vehicles. *Processes* **2022**, *10*, 1292. [CrossRef]
11. Sun, H.; Liu, Y.; Li, N.; Tan, J. Study on Characteristics and Control Strategy of Diesel Particulate Filters Based on Engine Bench. *Processes* **2022**, *10*, 1246. [CrossRef]

12. Yang, X.; Shi, J.; Fu, Q.; Pu, S.; Pan, Z.; Lian, C.; Yin, Z.; Liu, S.; Wang, G. Optimization Design and Injury Analysis of Driver's Restraint System in Sedan Small Offset Collision. *Processes* **2022**, *10*, 940. [CrossRef]
13. Chen, H.; Zhang, T.; Zhang, H.; Tian, G.; Liu, R.; Yang, J.; Zhang, Z. Power Parametric Optimization of an Electro-Hydraulic Integrated Drive System for Power-Carrying Vehicles Based on the Taguchi Method. *Processes* **2022**, *10*, 867. [CrossRef]

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