

Review Form 3

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| Journal Name: | Current Journal of Applied Science and Technology |
| Manuscript Number: | Ms_CJAST_130317 |
| Title of the Manuscript: | Online Reinforcement Learning for Real-Time Monitoring and Control in Production Systems |
| Type of the Article | Original Research Article |

PART 1: Comments

| | Reviewer's comment | Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i> |
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| Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part. | This manuscript provides a thorough review of the evolution of reinforcement learning (RL) in manufacturing, focusing on the shift from offline to online methods. It highlights the key advancements in RL, such as Deep RL, policy-based techniques, and hybrid frameworks, emphasizing their application in real-time production environments. The manuscript also explores emerging trends like multi-agent RL and its potential in collaborative manufacturing systems. This work offers valuable insights for both researchers and practitioners, contributing significantly to the development of intelligent, adaptive production systems in modern industrial settings. | |
| Is the title of the article suitable? (If not please suggest an alternative title) | The title "Online Reinforcement Learning for Real-Time Monitoring and Control in Production Systems" is quite suitable however, in order to capture the broader impact of online RL on production systems, emphasizing its role in optimization and aligning with Industry 4.0 advancements, it needs some modification. Suggested alternative: "Advancing Production Systems with Online Reinforcement Learning: Real-Time Monitoring, Control, and Optimization" | |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | The abstract is quite comprehensive though it lacks in a few areas: examples of applications, clarification of the link to Industry 4.0 technologies, expansion on research directions and streamlining the conclusion. The few points of correction are indicated in the manuscript. | |
| Is the manuscript scientifically, correct? Please write here. | Based on the provided content, the manuscript is scientifically correct and presents a well-supported argument for the potential and challenges of applying online reinforcement learning to modern production systems. | |
| Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. | Apart from three references (12, 15 and 16) which are too old need replacement, the references are recent. While these references are relatively recent and reflect advancements in RL, IoT, and smart manufacturing, expanding reference list further is necessary to include Advanced deep learning models, Specific IoT-based applications and Integration of reinforcement learning with other AI approaches. Some additional suggested references <ol style="list-style-type: none"> Liu, Z., Xu, X., Qiao, P., & Li, D. (2024). Acceleration for Deep Reinforcement Learning using Parallel and Distributed Computing: A Survey. <i>ACM Computing Surveys</i>, 57(4), 1-35. Nievas, N., Pagès-Bernaus, A., Bonada, F., Echeverria, L., & Domingo, X. (2024). Reinforcement learning for autonomous process control in industry 4.0: Advantages and challenges. <i>Applied Artificial Intelligence</i>, 38(1), 2383101. | |

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| Is the language/English quality of the article suitable for scholarly communications? | The language and overall quality of the article are generally suitable for scholarly communication | |
| Optional/General comments | The manuscript provides a comprehensive overview of online reinforcement learning (RL) and its applications in real-time production systems, focusing on predictive maintenance, dynamic scheduling, and process optimization across various industries. It effectively highlights the strengths of RL algorithms such as Q-learning, DQN, PPO, and Actor-Critic in enhancing operational efficiency and sustainability, with practical examples from companies like BASF and Amazon. However, the paper could benefit from a deeper exploration of real-world challenges such as computational resource constraints, data quality issues, and the need for algorithmic stability in live industrial settings. While the discussion on emerging technologies like hybrid RL frameworks and multi-agent systems is insightful, further emphasis on standardized benchmarks and practical deployment considerations would strengthen the manuscript's applicability to broader industrial contexts. | |

PART 2:

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| | Reviewer's comment | Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here) |
| Are there ethical issues in this manuscript? | <i>(If yes, Kindly please write down the ethical issues here in details)</i> | |

Reviewer Details:

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| Name: | Kenneth Besigomwe |
| Department, University & Country | School of Management Science, Uganda Management Institute, Uganda |