

Analyzing AI applications improving system efficiency

Problem statement :

With the rapid advancement of computing technologies and the increasing complexity of digital systems across various fields , such as operating system efficiency has become a fundamental challenge for technology and industrial organizations , many of these systems rely on traditional methods of resources management and decision – making , which can lead decreased operational efficiency and increased resource and energy consumption , in this context artificial intelligence (AI) technologies have emerged as a promising solution for improving system performance through the use of advanced algorithms capable of analyzing data, predicting problems , and optimizing process management.

Numerous studies have demonstrated that the application of machine learning and deep learning algorithms can significantly contribute to improving system performance and more efficient resource management, for example , a study by Smith et al (2021) indicates that using reinforcement learning algorithms in process scheduling within operating systems led to improved resource utilization and reduced response times, similarly , a study by Kumar and Patel (2022) showed that integrating AI Technologies into industrial automation can increase productivity and reduce operational errors , the study by Zhang et al (2022) also demonstrated that using AI-based control models contributes to improving system responsiveness and reducing the impact of noise in electrical systems.

Despite these positive results , the literature review indicates several challenges and limitations in previous studies , many studies relied on simulation environments or limited data rather than large – scale real – world applications , which may limit the generalizability of their findings to real world systems (Ahmed et al 2020) , furthermore some studies focused on specific AI applications without providing a comprehensive framework demonstrating how these technologies can be integrated to improve the efficiency of various systems (Garcia et al 2023) additionally , the scarcity of applied studies based on real – world operational data represents a research gap in this area.

Therefore, an analytical study is needed to examine the applications of AI in improving system efficiency and to assess the effectiveness of these technologies in addressing challenges related to resource management and improving operational performance , the importance of this research lies in contributing to clarifying the true role of artificial intelligence in raising the efficiency of systems , and identifying the best methods and techniques that can be adopted to achieve real and sustainable improvement in the performance of different systems.

Research objectives

1. To analyze the role of artificial intelligence techniques in improving the efficiency of modern computing and industrial systems.
2. To examine the different artificial intelligence algorithms used in optimizing system performance and resource management.
3. To evaluate the effectiveness of current artificial intelligence – based solutions proposed in previous studies for improving system efficiency.
4. To identify limitations and challenges associated with applying artificial intelligence in system optimization.
5. To propose insights or recommendations that may enhance the use of artificial intelligence for improving system efficiency in practical environments.

The reviewer:

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