

AI-BASED APPROACHES FOR EFFICIENT RESOURCE UTILIZATION

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ABSTRACT

The new-age industries demand scalable and efficient resource utilization strategies in order to cope with growing complexity and business demands. Newly emerging importance has been seen with AI-based approaches as a tool for optimizing resource allocation, reducing operational costs, and increasing productivity across different domains. This paper discusses the use of artificial intelligence in resource utilization and its application areas, such as cloud computing, manufacturing, and logistics. Specifically, AI systems use machine learning, deep learning, and optimization algorithms to make predictions, track, and monitor resources in real time, resulting in significant gains in efficiency. AI helps reduce waste, optimizes energy use, and optimizes operations through process automation and analysis of enormous data. Moreover, predictive analytics allows organizations to predict resource demands, thus helping them make informed decisions and preventing resource shortages or surpluses. The integration of AI with IoT and blockchain technologies further promotes the transparency and accountability of the management of resources. This study provides an integrative review of AI-based solutions currently in place, identifies implementation challenges, and presents future directions in the domain. This paper bases its arguments and discussions on a number of case studies and empirical data, all of which establish the revolutionary power of AI upon industries dependent upon the use of resources with pinpoint accuracy and with efficiency. The last argument is that the paper indicates how AI-based approaches can be beneficial to the maximization of value from resources, and thereby boost business growth, while fostering sustainability in a dynamic environment.

KEYWORDS: AI-Based Approaches, Resource Utilization, Machine Learning, Optimization Algorithms, Cloud Computing, Manufacturing, Logistics, Predictive Analytics, Real-Time Monitoring, Iot Integration, Blockchain Technology, Energy Efficiency, Sustainable Operations, Operational Costs, Resource Management, Automation

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