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ROLE OF ROBOTICS AND ARTIFICIAL INTELLIGENCE IN HORTICULTURE FOR SUSTAINABLE RESOURCE DEVELOPMENT: A REVIEW

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Abstract

The horticulture sector, a critical component of agriculture, is confronted with various challenges such as labor shortages, resource inefficiencies, and environmental issues. In response to these challenges, robotics and artificial intelligence (AI) present promising solutions to enhance sustainability in horticultural practices. This study delves into the impact of robotics and AI in fostering sustainable development within the horticulture industry. Numerous models have been proposed by researchers to improve various agricultural functions such as prediction, weed control, resource management, and advanced care of crops, due to the continuous advancement of AI in agriculture. This article makes a valuable contribution to the horticulture sector by reviewing a comprehensive literature on robotics and of AI applications. It commences by providing an overview of AI, encompassing a thorough examination of various AI techniques employed in the horticulture industry. These techniques include machine learning, the Internet of Things (IoT), expert systems, image processing, and computer vision. This article assesses a systematic review of artificial intelligence models in horticulture operations. Additionally, it examines the utilization of robotics and AI models in achieving sustainable goals within the sector. This paper extensively examines the considerations and limitations associated with utilizing AI to construct the future of sustainable horticulture.

Key words: artificial intelligence, horticulture, internet of things robotics, sustainability

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