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Integrating AI-Based Systems for Sustainable Agricultural Development in Tanzania

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Artificial Intelligence (AI) offers potential for innovative solutions to the longstanding challenges of agriculture sector in Tanzania. This paper provides an overview of AI applications in the sector, emphasizing its use in predicting and monitoring crop growth rates and yields, analysing climate change and weather patterns, managing pests and diseases, improving crop irrigation, and managing soil health. The study explores various AI technologies, such as machine learning, computer vision, and precision agriculture, underscoring their significant potential to enhance agricultural productivity, efficiency, and sustainability. Additionally, the study addresses the challenges and limitations associated with AI adoption in agriculture, including issues related to data quality and availability, infrastructure needs, and ethical concerns. Overall, this paper highlights the transformative impact of AI in agriculture and emphasizes the necessity for ongoing research and investment in this vital field to develop more resilient and sustainable agricultural systems in Tanzania.

Keywords: Artificial Intelligence , Sustainable Agriculture , Smart Farming , Machine Learning.