A Review of Deep Learning Applications in Agriculture Development

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Abstract : With the rise of the AI era, there is a growing inclination towards utilizing artificial intelligence across various domains. Deep Learning, as the most potential branch of Machine Learning, has gained significant attention in the field of Agriculture, becoming one of the most popular research domains. The advancements in algorithm optimization, GPU computation, and the development of large-scale models have provided promising methods for various applications in agriculture. Recent research has created diverse Machine Learning techniques, including Support Vector Machines (SVM), Random Forests (RF), Neural Networks, and more, to address challenges such as weed detection and localization, plant identification, and disease and pest prevention. These advancements have unlocked new opportunities for improving agricultural practices by harnessing the power of machine learning algorithms and technologies. This review highlights the advantages of Machine Learning, including its ability to analyze complex datasets, make accurate predictions, and improve decision-making in farming operations. Additionally, it discusses the implications of Deep Learning in terms of increased productivity, resource efficiency, and sustainability in agriculture. Future research directions and potential challenges are also addressed, underscoring the need for continued exploration and advancement of DL techniques for agricultural applications. Ultimately, Deep Learning holds great promises for transforming agriculture and ensuring global food security in the face of mounting challenges.

Keywords : artificial intelligence, smart agriculture, robotics, mechatronics

Conference Title : ICAB 2025 : International Conference on Agriculture and Biotechnology

Conference Location : Istanbul, Türkiye

Conference Dates : May 01-02, 2025