



A Privacy-Preserving Machine Learning Tactic to Hydroponic Agriculture

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Abstract

Full Spectral Imaging (FSI) is a type of imaging spectroscopy that succeeds hyper spectral imaging. It also includes experiential reflectance retrieval and independent remote sensing, which are components of new remote sensing systems that succeed the Lands at series of satellites. Land Cover Land Use is a Full Spectral Image that is based on two issues: dimensionality reduction and the elimination of redundant data. Land Cover Land Use is a Full Spectral Image that is based on two issues: dimensionality reduction by removing redundant and noisy bands, and the number of spectral bands, which has a negative impact on the accuracy of supervised classifiers. Using the variable bands elimination feature selection approach, see the effect of reducing dimensionality by picking pertinent bands and deleting unnecessary and superfluous ones. We give a comprehensive review of studies on machine learning applications in hydroponic agriculture production systems in this study. Crop management applications on yield prediction using Lasso Regression, disease detection, and crop quality were investigated in this study of this paper. The sieve and classification are shown to demonstrate how machine-learning technology might benefit hydroponic gardening. Machine learning is being applied to full spectral based hydroponic data using Time Series Classification and farm management system to create a real-time artificial intelligence empowerment tool that delivers sarcastic cues and insights into farmer decision support and action.

Keywords: Hydroponic Agriculture, Privacy Preserving Machine Learning, Lasso Regression

1. INTRODUCTION

Hydroponics is a type of horticulture and a subculture of hydro culture in which plants, typically crops, and soil are cultivated without the use of mineral fertilizer solutions in aqueous solution. Earthly plants can only expose their roots with nutrient fluid, or an inert medium such as per light, gravel, or other surfaces can support the roots bodily. Despite the inert medium, root exudates affect rhizo sphere life and produce pH variations in the rhizosphere. Experts can choose from a wide range of settings to get the right combination of spatial clarity and wavelength range for a hydroponic farming application. Drones are frequently employed in this application, which covers medium distances (acres). Multispectral and hyper spectral cameras that are small and light have been designed expressly for use on unmanned aerial vehicles (UAVs). Hydroponic agriculture is one of the more accessible forms of contemporary agriculture for dealing with both water scarcity and farmland scarcity. Pests and soil-borne diseases are reduced. The major purpose is to ensure that consumers may get fresh, pesticide-free produce within three hours of harvest. Agriculture has always been an interest of mine. Cooking aromatic plants oil extraction, alternative medicinal

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