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A Comprehensive Updated Review of Machine Learning in Agriculture

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Abstract: (600 Words)

The digital transformation of agriculture has evolved various aspects of management into artificial intelligent systems for the sake of making value from the ever-increasing data originated from numerous sources. A subset of artificial intelligence, namely machine learning, has a considerable potential to handle numerous challenges in the establishment of knowledge-based farming systems. The present study aims at shedding light on machine learning in agriculture by thoroughly reviewing the recent scholarly literature based on keywords' combinations of "machine learning" along with "crop management", "water management", "soil management", and "livestock management", and in accordance with PRISMA guidelines. Only journal papers were considered eligible that were published within 2018–2020. The results indicated that this topic pertains to different disciplines that favour convergence research at the international level. Furthermore, crop management was observed to be at the centre of attention. A plethora of machine learning algorithms were used, with those belonging to Artificial Neural Networks being more efficient. In addition, maize and wheat as well as cattle and sheep were the most investigated crops and animals, respectively.

Importance of Research: (200 Words)

As pointed out above, because of the multiple applications of ML in agriculture, several review studies have been published recently. However, these studies usually concentrate purely on one sub-field of agricultural production. Motivated by the current tremendous progress in ML, the increasing interest worldwide, and its impact in various do-mains of agriculture, a systematic bibliographic survey is presented on the range of the categories proposed in which were summarized. In particular, we focus on reviewing the relevant literature of the last three years (2018–2020) for the intention of providing an updated view of ML applications in agricultural systems. In fact, this work is an updated continuation of the work presented at following, consequently, exactly the same framework and inclusion criteria.

Biography: (200 Words)

Samodimo has received his PhD at the University of Birmingham in 2003. He is the Dean of Research and Graduate Studies at Botswana University of Agriculture and Natural Resources (BUAN) and currently Acting Deputy Vice Chancellor Academic Affairs and Research. He is an Associate Professor in Plant Breeding and was the Head

of Department of Crop Science and Production from 2011 to 2017 and Acting Dean Faculty of Agriculture (2017 to 2019). He has published more than 20 papers in reputed journals and has served as an Editor for a number of journals. He is the Dean, Research and Graduate Studies (2019 to 2022) at Botswana University of Agriculture and Natural Resources.

Information of Institute: (200 Words)

The mandate of the University is to provide higher education and training in the field of agriculture, natural resources and such other allied and related subjects as can be determined by the University Council from time to time. The University intends to produce market ready graduates for the agricultural and natural resource sectors through innovative teaching and research.

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