

Artificial Intelligence-based Machine Learning Model for Identification of Spices and Herbs: A Systematic Review

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July 6, 2023

Abstract

Spices and herbs play an important role in our day to day life with its application varying from flavouring the food to various medicinal uses. But the major limitations linked with these nature oriented spices are individualized and restricted information about the identification and quality mapping. With increasing demands, adulteration of spices and herbs become a major problem for all the stakeholders. Artificial intelligence based machine learning and deep learning models have already been implemented in the various ways for the identification of herbal images in real time basis. Evidence from past studies related to identification of plants images strengthens our concept for the implementation of the artificial intelligence in the spice sector for the adulteration identification which can become pioneer step in solving the problem of adulteration. There are various opportunities for advancement in producing a robust model for the identification of spices accurately in real time basis. In this review paper, various reliable and efficient machine learning algorithms for herbs and spice image classification has been reviewed. Techniques involved for preparation of such model have been discussed in details for the better understanding of readers. With inclusion of various globally available herbal image datasets and review of recent research related to plants image identification through machine learning, this article also explains various machine learning model such as artificial neural network, convolutional neural network etc along with different parameters involved in the authentication of the developed model to devise an artificial intelligence based methodology for quality assessment of herbs and spices.

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