

Aromatic Medicinal Plant Classification Using Deep Learning

Authors : Tsega Asresa Mengistu, Getahun Tigistu

Abstract : Computer vision is an artificial intelligence subfield that allows computers and systems to retrieve meaning from digital images. It is applied in various fields of study self-driving cars, video surveillance, agriculture, Quality control, Health care, construction, military, and everyday life. Aromatic and medicinal plants are botanical raw materials used in cosmetics, medicines, health foods, and other natural health products for therapeutic and Aromatic culinary purposes. Herbal industries depend on these special plants. These plants and their products not only serve as a valuable source of income for farmers and entrepreneurs, and going to export not only industrial raw materials but also valuable foreign exchange. There is a lack of technologies for the classification and identification of Aromatic and medicinal plants in Ethiopia. The manual identification system of plants is a tedious, time-consuming, labor, and lengthy process. For farmers, industry personnel, academics, and pharmacists, it is still difficult to identify parts and usage of plants before ingredient extraction. In order to solve this problem, the researcher uses a deep learning approach for the efficient identification of aromatic and medicinal plants by using a convolutional neural network. The objective of the proposed study is to identify the aromatic and medicinal plant Parts and usages using computer vision technology. Therefore, this research initiated a model for the automatic classification of aromatic and medicinal plants by exploring computer vision technology. Morphological characteristics are still the most important tools for the identification of plants. Leaves are the most widely used parts of plants besides the root, flower and fruit, latex, and barks. The study was conducted on aromatic and medicinal plants available in the Ethiopian Institute of Agricultural Research center. An experimental research design is proposed for this study. This is conducted in Convolutional neural networks and Transfer learning. The Researcher employs sigmoid Activation as the last layer and Rectifier liner unit in the hidden layers. Finally, the researcher got a classification accuracy of 66.4 in convolutional neural networks and 67.3 in mobile networks, and 64 in the Visual Geometry Group.

Keywords : aromatic and medicinal plants, computer vision, deep convolutional neural network

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