Embedded portable device for herb leaves recognition using image processing techniques and neural network algorithm

Abstract

Herbs have been widely used in food preparation, medicine and cosmetic industry. Knowing which herbs to be used would be very critical in these applications. Nevertheless, the current way of identification and determination of the types of herbs is still being done manually and prone to human error. Designing a convenient and automatic recognition system of herbs species is essential since this will improve herb species classification efficiency. This research focus on recognition approach to the shape and texture features of the herbs leaves. It aims to realize the computerized method to classify the herbs plants in a very convenient way. Portable herb leaves recognition system through image and data processing techniques is implemented as automated herb plant classification system. It is very easy to use and inexpensive system designed especially for helping scientist in agricultural field. The proposed system employs neural networks algorithm and image processing techniques to perform recognition on twenty species of herbs. One hundred samples for each species went through the system and the recognition accuracy was at 98.9%. Most importantly the system is capable of identifying the herbs leaves species even though they are dried, wet, torn or deformed. The efficiency and effectiveness of the proposed method in recognizing and classifying the different herbs species is demonstrated by experiments.