PLANT SEEDING CLASSIFICATION BY IBM WATSON

Abstract

Plant seedling classification is crucial for biodiversity conservation. Based on analysis of CNN, we propose a system to classify plant seedlings with minimum classification error. By machine learning algorithm, convolutional neural network have been applied to different datasets. We used training set and test set of images of plant seedlings at various stages of grown. The dataset comprises 12 plant species. The goal is to create a classifier capable of determining a plant's species from a photo. The experimental results validate that the proposed method effectively classifies plant seedlings which are there in dataset. The training set achieved an accuracy of 93% and test set achieved accuracy of 95%. In future works, we plan to detect disease on identified plant species.

The plant seedlings dataset contains images of approximately 960 unique plants belonging to 12 species at several growth stages. It comprises annotated RGB images with a physical resolution of roughly 10 pixels per mm.The application of machine learning techniques for automatic plant seedling classification has become a significant and promising field of research towards improving agriculture outcomes. Deep learning is a specific type of machine learning that has gained substantial interest in various disciplines. The Convolutional Neural Network (CNN) is a deep neural network architecture that is generally used to analyze visual images. Latterly, CNNs have achieved a significant breakthrough in computer vision fields. Additionally, the CNNs proved to have high ability to obtain the efficient features needed for image classification process. Traditional image classification algorithms, handcrafted features are firstly extracted, then a feature selection process is achieved, and finally, a suitable classifier is chosen. However, CNN is proficient in learning various features from images, it covers global and local features, and it uses these features for efficient classification. CNN showed superior performance compared to other image processing techniques. Therefore, in this project, the enforcement of the CNN approach for plant seedling classification is investigated. We are implementing our project using CNN that is Convolutional Neural Network due to its extraordinary features from other existing techniques.

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