

PROJECT

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Topic: Plant identification using CNN(Convolutional Neural Network)

Guide: Dr. Ramani Bai V

About project:

Plants are the backbone of life on earth, as it provides us food and oxygen. Hence, a good understanding of plants is needed to help in identifying new or rare plant species. Such identification will in turn improve the drug industry, balance the ecosystem as well as the agricultural productivity and sustainability. Botanists are interested in the variations on leaf characteristics as it helps them to carry out a comparative analysis on plants.

Object detection is one of the most important topics in digital image analysis. In object detection the system automatically locates an object from the given input image and then classify the object into one of the different available categories. Object detection has found its use in many systems like autonomous cars, video surveillance and many other applications. CNN along with deep learning and are considered to be best suited for object detection. CNN incrementally extract features from the given input image from lower to higher layer until it comes across an ideal feature for pattern classification. For an object detection model to work we have two main requirements i.e. a dataset to train the model and then a good graphical processing unit (GPU).

In this project I use You Only Look Once(YOLO), one of the new and best available object detection models. The detection model classify the given leaf image into its category. Once the classification is performed the additional modules for feature extraction identifies features such as time series, minima/maxima, etc... and output them along with the class. These features will help biologists to understand the species even more thoroughly. Since it is using a plain photograph taken using a regular camera, it can be implemented even in mobiles which will help in plant identification and feature extraction on the go.

PUBLICATIONS

- Paper - Study on pedestrian detection
Conference - ICICT 2018
Journal - IEEE
Status - Presented
- Paper - Performance study of object detection models
Conference - ICECCT 2019
Journal - IEEE
Status - Accepted