Plant Object Detection using Faster R-CNN in Agriculture Meadow

Student

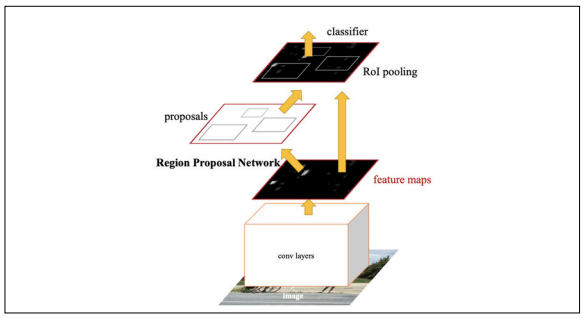
Severin Weiss

Introduction: A healthy meadow is needed to provide good food quality to cows and other animals in agriculture. However, plant diseases or anomalous plants in agriculture meadows have a major impact on agricultural production and the use of pesticides and fungicides. A conventional approach is mainly based on hand labor experiences of farmers or extensive use of chemicals to avoid anomalous plants.

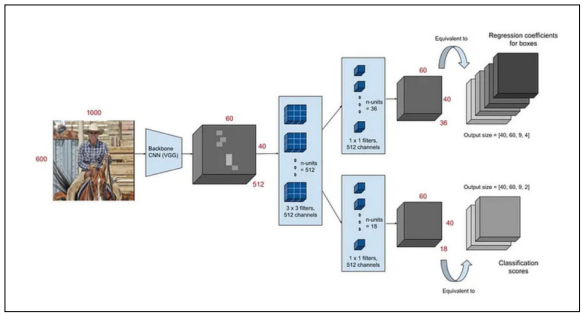
Approach / Technology: This paper proposes a method for identifying rumex (ampher) in an agriculture meadow with computer vision object detection. This method is developed based on region proposal deep convolutional neural network (R-CNN).

Result: Original images are processed via Metashape API and converted to COCO dataset format. The overall prediction score on test set was on average 80.00 percent

Faster R-CNN Principle
https://paperswithcode.com/method/faster-r-cnn



Faster R-CNN Network Architecture
https://towardsdatascience.com/



Detection of rumex in agriculture meadow
Own presentment

Advisor
Prof. Dr. Dejan Šeatović

Subject Area
Data Science, Mechatronics and Automation