FLOWER SPECIES IDENTIFICATION

INTRODUCTION

- Flower is a very important part of nature. Mostly we identify a plant through its flower.

- Experienced botanists do this identification of flower but a naive person will have to consult flower guidebooks or browse any relevant web pages on the Internet through keywords searching.

- Our system can recognizes the flower in real time using mobile camera

MOTIVATION

▶ There have a special motivation behind this research and project work.

▶ When farmers walk along the farm in afternoon. That time they used to observed a lot of unknown flower around the area. They are curious about that flowers but they could not recognize it.

▶ That time I discussed about an idea to make a system which can identify our desired flower automatically.

▶ Since my journey has started and dream have come true now.

DESCRIPTION

- The purpose of this work was to develop a non-invasive method for grapevine flower counting by on-the-go image acquisition, using a combination of deep learning and computer vision technology

- The developed algorithm comprised two general steps: inflorescences' segmentation, and individual flower detection

- The best results were obtained using the deep fully convolutional neural network SegNet architecture with a VGG19 network.,

- In my paper, I found this F1 score values of 0.93 and 0.73 in the inflorescences segmentation and the individual flower detection steps

- These values showed the high accuracy of the network

- A determination coefficient (R2) of 0.91 between the detected number of flowers and the actual number of flowers per vine was obtained

- A linear regression model was trained to estimate the actual number of flowers from the number of detected flowers

- These results show that the number of flowers per vine can be estimated using machine vision and deep learning.

INFERENCE

- The results presented show that the algorithm developed in this system was able to detect and quantify the number of grapevine flowers in RGB images new developed algorithm was composed of two steps

- **FIRST STEP** The ROI containing only inflorescences in the image is segmented.
(Return on investment)ROI is the performance measurement and evaluation metric expressed as a ratio or a percentage.
SECOND STEP The flowers are detected and quantified in the ROI segmented in the previous step.

- The VGG19 trained model achieved the best results in both step
VGG19 is a variant of VGG model which in short consists of 19 layers (16 convolution layers, 3 Fully connected layer, 5 MaxPool layers and 1 SoftMax layer

ADVANTAGES

Performing the semantic segmentation task on images from different field gives the good accuracy.

CNN compared to its predecessors is that it automatically detects the important features without any human supervision.

DISADVANTAGES

CNN requires High computational cost.

CNN use to need a lot of training.

COMPUTERS AND ELECTRONICS IN AGRICULTURE - 2023

- ❑ The Purpose of this Paper Is to find a automated flower counting method based on multiple hypothesis tracking with a connected flower plant model which is based on detection of flowers.

- ❑ The Method considered include a single view point approach a heuristic State of the practice approach & an MHT approach.

- ❑ To demonstrate the validity of the approach he proposed counting method is tested on a Dataset.

- ❑ It contains multiple viewpoints of Phalaenopsis plants.

INFERENCE:

- ❑ A method which estimate the no of flowers in a single plant by MHT Tracker.

- ❑ In MHT Tracker where partial detection contribute a single object model.

- ❑ As a result correlation between estimated Flower position & the plant movement can be exploited.

- ❑ By using green house data set detection can be occur.

TOMORROW WORLD ELECTRONIC AGRICULTURE

- In this rapid growing world everyone using mobile phones.

- From small child to big person couldn't pass out a day without mobile phone.

- In future all farmers are using mobile phone for their agriculture purpose.

- For irrigation, ploughing, Harvesting all are going to be smart method.

- So we decided to develop a system in mobile to identify desired flower automatically.

- This project helpful to famers and even though small children also use this system to gain unknown flower name and its types.

- It also helpful identify the new species in flower family.

- That must be very use full for famers and students for discovering new one in the world.

FLOW CHART

Fine-tuned YOLO v4 for apple flower detection
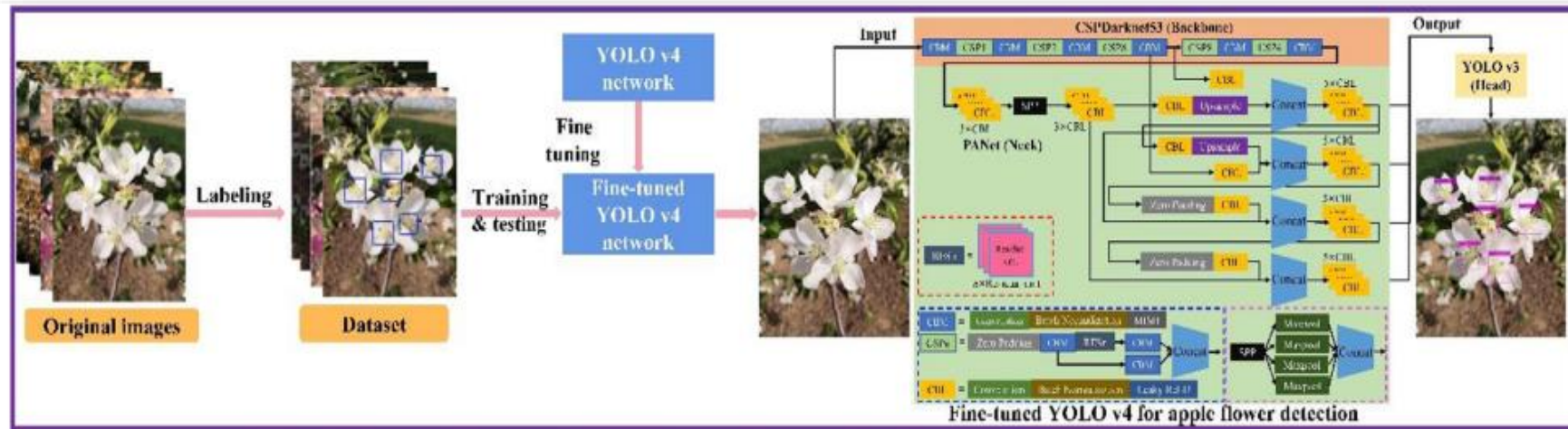
Model pruning of YOLOv4 based channel pruning algorithm

Channel pruning algorithm
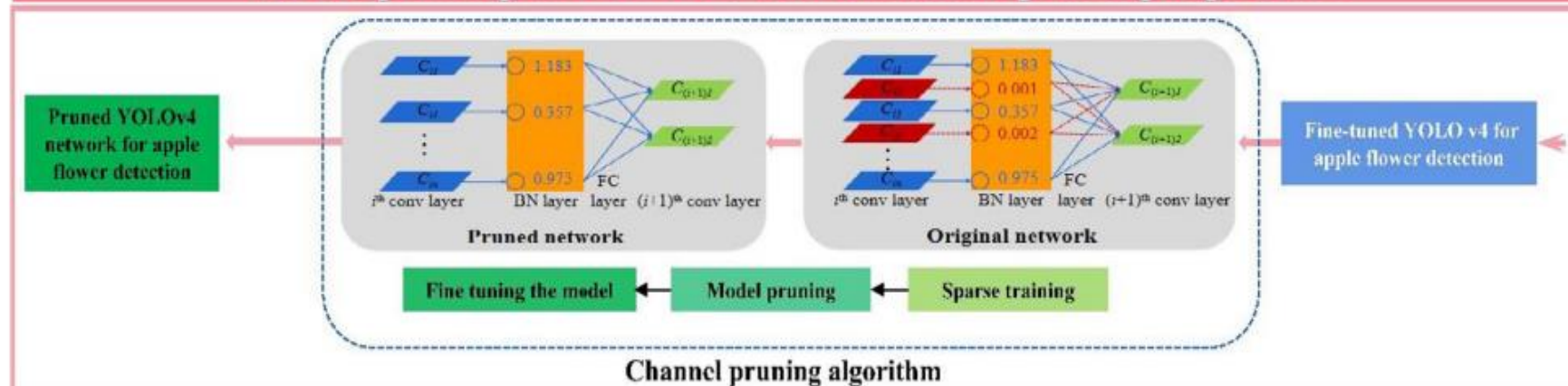
TOOLS

- **TENSORFLOW**

It is an open source artificial intelligence library, using data flow graphs to build models. It allows developers to create large-scale neural networks with many layers. TensorFlow is mainly used for: Classification, Perception, Understanding, Discovering, Prediction and Creation.

- **Python**

Python is commonly used for developing websites and software, task automation, data analysis, and data visualization. Since it's relatively easy to learn, Python has been adopted by many non-programmers such as accountants and scientists, for a variety of everyday tasks, like organizing finances.

CONCLUSION

▶ We got a result in 97.3% accuracy in 72.33% f/s.

▶ Our project is very use full for farmer and other peoples in future .

▶ To desired the unknown flower easily and automatically.

▶ From this research project children , farmers and other people are gain the knowledge of different types of flower and also known the unknown flowers name by using this system.

REFERENCE

- **Using channel pruning-based YOLO v4 deep learning algorithm for the real-time and accurate detection of apple flowers in natural environments**

  https://doi.org/10.1016/j.compag.2020.105742

- **Automated grapevine flower detection and quantification method based on computer vision and deep learning from on-the-go imaging using a mobile sensing platform under field conditions Refference link :**
  https://doi.org/10.1002/jsfa.7797

THANK YOU

BY

PIRATES