

Plant Classification using Inception Module

Mohaiminul Islam Meshal
Student ID: 16201043
Department of CSE
BRAC University, Dhaka
mohaiminul.islam.meshal@bracu.ac.bd

Md Zunayedul Islam
Student ID: 20101381
Department of CSE
BRAC University, Dhaka
md.zunayedul.islam@bracu.ac.bd

Mohammad Siam
Student ID: 19301205
Department of CSE
BRAC University, Dhaka
mohammad.siam@bracu.ac.bd

III. DESCRIPTION OF THE DATASET

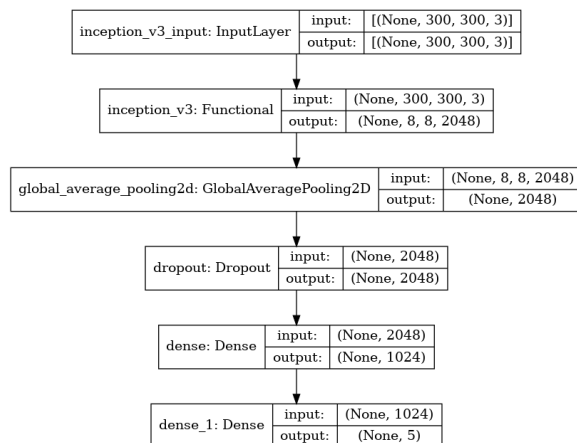
Abstract -

“Building a network architecture suitable for efficiently identifying different flower plants through preprocessing and with the help of Inception Module.”

I. INTRODUCTION

If there is no flower, beauty is incomplete. Bangladesh is a flower-filled country. We used to see a lot of flowers in our daily lives, including in our gardens, along the rail line, and when walking. But most of the time, we don't know anything about that bloom. Even we are unaware of its name. In that situation, we decide to investigate and develop this concept for our project. That will educate others about that obscure flower they see but are unaware of. In order to learn the flower species for this project, we initialize our model architecture and change its upper level convolutional layer. In order to learn the filters themselves, we add convolution layers rather than creating any custom feature descriptors for the fusion features. We first train the layers of the CNN based on flower classes before incorporating flower species. After we trained the species layers, we test our model for the classification of the data.

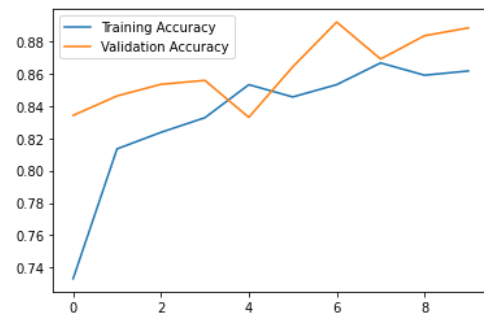
II. NETWORK ARCHITECTURE



This dataset contains 4317 images of flowers which are divided into five classes: Daisy, Tulip, Rose, Sunflower, and Dandelion. The collection is based on the data flicr, google images, yandex images. For each class there are approximately 864 photos on an average. Photos are not high resolution, about 320x240 pixels. They have different proportions and are not reduced to a particular size. This dataset can be used to recognize plants from a given images.

IV. PERFORMANCE OF THE MODEL

The deep learning model was trained using the Keras library of TensorFlow. All image of the dataset went through a phase of preprocessing where their contrast was stretched using Contrast Limited Adaptive Histogram Equalization (CLAHE) that enhanced the points of interest of the images. After that, the dataset was batched by 32 and run for 10 epochs. There were ups and downs in the performance metric but at the end it stood at 89% accuracy on the validation set.



V. SUMMARY

We utilized a dataset of five distinct types of flowers. Even before Deep Learning, it was feasible to recognize flowers using machine learning, but the accuracy levels were very poor or the datasets were small. A common pattern recognition issue that researchers have worked on since the early days of machine learning is flower recognition.