R.I.S.E. (Reverse Image Search Engine)

Roshni Pasi[1], Sakshi Tiwari[2], Shubham Pawar[3]

[1]*Roshni Pasi, Thane Maharashtra India*
[2]*Sakshi Tiwari, kalyan Maharashtra India*
[3]*Shubham Pawar, Badlapur Maharashtra India*
[4]*Sulochana Madachane, Assistant Professor at K.C. College of Engineering and Management Studies and Research, Thane Maharashtra India*

Abstract - *The primary students of schools and university are facing the problem of not getting the exact image of leaves they want for their different specific purpose. The various search engines are restricted where the student needed to type the name of leaves and there is possibility of student not knowing leaves name as there are thousands of different species of leaves and which result in not getting desirable image. The R.I.S.E. system overcomes the problem of this textual data retrieval as the student only need to give the image of the leaves as the input to system and the system will provide the similar looking leaves image to the students with their species name. Hence the student does not need of knowing the name of leaves and the students can complete their project easily. The students can get the similar looking leaves images with their name of species.*

The R.I.S.E Using Deep Learning system is user friendly interface only for the primary students as the system focused on their requirement and any other user are not benefited and the system requires images limited to leaves only .There are some conditions for the images i.e images should not be blur and images should be clear and of good quality as input to get the best result

***Key Words*: *K means, VGG, Edge detection,* Resize, RGB Image, Greyscale Image.**

1. INTRODUCTION

Primary students in the school and university have been facing the problem in their biotic project and presentation to get the desirable image of leaves. The primary student also wants to gain more knowledge in the biotic field, but they are not provided with better source. The search engines provide extra information like species, types, varieties but not the exact information like similar looking leaves which the student want for their project. The search engine platform restricted where the students needed to first type the name of leaves, what if they don't know name of type specific leaf as there are thousand species of leaves present which results in not getting desirable image. If the student search for the image they get image of leaves of different types. The primary student only has a visual perception of leaves. The students don't know the source from where to get their exact similar looking leaves images as the image of leaves are million in numbers and different species of leaves makes it difficult for students to get their exact image. Our system provides the primary students with the need getting the top similar leaf images according to their input leaf image and helps in overcoming these specific problems. The system provides the student better results of leaves images and helping in understanding, visualizing and finding the different larger species of similar types of leaf images which are not easily accessible using various search engines or not provided by the static source.

Our system would mainly focus on the primary students (10-15 years old) as user which would give input as images of different species of leaves and in return our system gets the top similar images of the leaves which looks similar to the input user image. This is done using VGG trained model which involves different process like convolution and pooling .The primary students gets the benefit of getting not one but more number of similar images of leaves and getting the similar image of leaves which is not usually possible as there are thousands of different species of leaves, so our system gives image retrieved according to student requirement which they requires for the botanic knowledge.

2. METHODOLOGY

2.1 RGB to Greyscale

Our system initially accepts the image as input from user. Then we convert the RBG image to Greyscale image. Conversion of RBG to Greyscale helps in fast processing and which helps in getting output quickly. Entire system flow is shown [Figure 1].

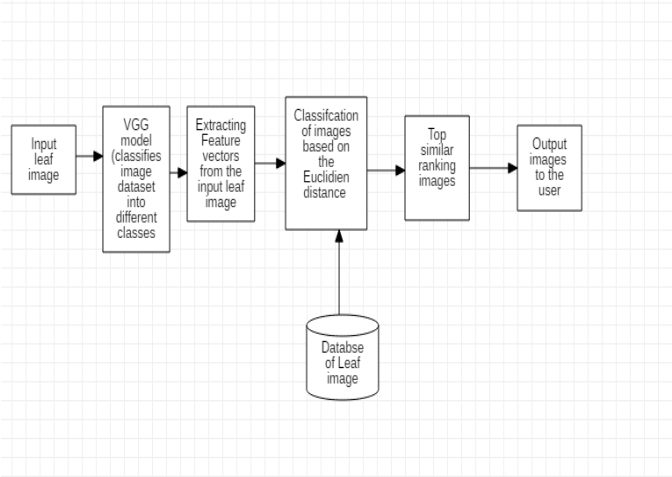

Figure -1: System Flow

We convert image to grayscale to avoid excess of work on system. So, we can get our output quick.

Figure -2: Greyscale Image

2.2 Edge Detection

Edge detection algorithm works on boundaries of leaf image, thus helping estimating boundaries or edges of image. Here, we use the algorithm which serve the purpose well and give us well defined edges of leaf. The edge detection algorithm gives us the exact shape of the image so we can perform our other process on it easily. Edge detection algorithm give us the size and shape of the image. Edges gives the idea about shape of leaf, their vein structure, petiole size.

Figure -3: Edge of Image

2.3 Resize Image

We have to convert image to specific size to work on image efficiently. User can give input image of various size, so we have to convert it into specific size. Resizing also helps to make image size minimal which helps in getting output image quickly.

Figure -4: Resize Image

2.4 Classification

We have to classify images to get output image. Here, Classification of image is done by using k means algorithm. Classification was done on parameters like shape of image, their vein structure, the surface of the leaf, edges of the leaf. We extract this information from input image and use it in classification.

2.5 Method for extracting features from image

We use VGG model to extract feature from images. VGG model extract feature vector from image and store it. VGG use convolution and pooling to extract useful and important features from the image. The feature extracted from image from image are used for getting output image. This features are compared with other to generate output.

3. CONCLUSIONS

This System presents a technique to retrieve similar leaf images using VGG model. We demonstrated an application of image retrieval system on the leaves. Leaves dataset to introduce the concept of Pre-training the VGG model released by Oxford group for classification. We achieved similar ranking images classifying leaves images in test data To retrieve images similar to query image, Euclidean distance was used as similarity metric on the last-but-one fully connected layer of the find-tuned VGG model. The VGG model can achieve up to 90% of accuracy.

The VGG model consists of 16 layers that make the training of this network difficult on the machines having only CPUs and not GPUs. Also, the proposed method of finding an image similar to query image does not always give a semantically accurate result for the invalid input. Also, evaluation of retrieval results corresponding to query image is based only on visual perception and have not been evaluated on the basis on any textual data and the primary student have been provided with the necessary query images.

ACKNOWLEDGEMENT

We would like to express special thanks of gratitude to our guide Prof. Sulochana Madachane, for providing guidance and assistance when required and who gave us the golden opportunity to do this wonderful project on the topic Cell detection and Segmentation in microscopic images using contour analysis.

REFERENCES

[1] Mathieu Gaillard and Elod; "Large scale reverse image search" in 2017

[2] WengargZhou, HougiaryLi and Qi Tan; "Recent advance content based image retrieval" in 2018

[3] Narayan Hedge and Jason D; "Similar image search for Histopathathology" in 2019.

[4] Pushpa m. chutel and Apeksha Sutare; "Evalution of compact composite descriptor based reverse image search engine in 2014

BIOGRAPHIES

Roshni Pasi

Engineering in the stream of Computer Science from Excelssior Education Society's KC College of Engineering and Management Studies and Research and will earn his UG degree by 2020. Her research interests are Pattern Recognition, image processing.

Sakshi Tiwari

Engineering in the stream of Computer Science from Excelssior Education Society's KC College of Engineering and Management Studies and Research and will earn his UG degree by 2020. Her research interests are Pattern Recognition, image processing.

Shubham Pawar

Engineering in the stream of Computer Science from Excelssior Education Society's KC College of Engineering and Management Studies and Research and will earn his UG degree by 2020. His research interest are general Programming, Image Processing.

Sulochana Madachane

M.E. Computer Engineering, Assistant Professor at Excelsior Education Society's KC College of Engineering and Management Studies and Research. Her research interest are Image Processing, Deep Learning.