Identification of flower based on the intelligent system

Zarna Parmar[1]

[1] *M.E. student, Computer Department, Government Engineering College, Sector 28, Gandhingar,Gujarat*

ABSTRACT

Nowadays it is very important to identify naturally occurring objects and recognize their types. To identify different flower images based on its surface parameter is challenging and also an expensive task. Flower classification is a useful way for grouping a flower in certain class using specific features. Flowers have different parameters like color, texture and grains. The combined feature extracted from each of its parameter can be used to identify flower type and recognize its signature. Different supervised classification algorithms are being used to build model.
Flower surface has different parameters like grain, color, texture etc. Image color is a combination of similar patterns with a regular frequency. It is an attribute that represents a spatial pixel arrangement in a region. Flower color contains clusters of grain patches with regular interval. So we can identify different flowers based on its color image. The feature extracted from color parameter is used to identify flower type or recognize its signature.
.

Keyword: - *Flower Classification, SVM, Grain Analysis*

1. INTRODUCTION:

Flower identification research has been growing nowadays and it is mainly used to recognize the flower by extracting its features. Without having proper resources like books, notes etc., many researchers, scientists of agriculture, medical and other fields find difficulties to identify and define various flower images. Applications of classification of flowers are also found to be useful in floriculture; flower searching for patent analysis, etc. [3]. The floriculture industry comprises flower trade, nursery and potted plants, seed and bulb production, micro propagation, and extraction of essential oil from flowers [3]. Classification method is needed to help the researcher in finding the relevant name of the flower easily.

Developing a system for classification of flowers is a difficult task because of considerable similarities among different classes and also due to a large intra-class variation [2]. In a real environment, images of flowers are often taken in natural outdoor scenes where the lighting condition varies with the weather and time [2]. Also, there is lot more variation in viewpoint, occlusions, scale of flower images [2]. In addition, a flower has to be segmented from its background. All these problems lead to find an effective solution for classification and identification of flower images.

1.1 Purpose

To develop a system to identify flower grain image using computational intelligence algorithms. Flower surface parameters are grain, color and texture. Flower grain is defined by its relationship with nearest grain particles. The feature extracted from grain parameter is used to identify flower type or recognize its signature.

1.2 Scope and Objective

This project is developed for classifying flower by its surface parameters and prediction of flower type. This system provide algorithms for features extraction using image processing algorithm and after classified this feature using supervised classification algorithm.
This system will be developed to identify only flower based on its grain image.

- The System will provide following image processing algorithm.
  - Flower grain analysis.
- The system will provide following classification algorithm.
  - Supervised classification algorithm like neural network, svm or etc.

2. General Approach for Flower Identification:

Introduction The identification of flower takes place into three main phases:

1) Flower Segmentation

2) Feature Extraction

3) Feature Classification

3. Proposed Method

3.1 Proposed Algorithm:

Data generation: In this phase take images of flower surface with microscope. Here we take 1600x1200 resolution JPEG image format data for grain analysis.
Take flower surface images from USB handheld digital microscope for grain analysis with high magnification (100X).
Image processing:
Grain analysis algorithm: To find nearest (close) Flower color relationships from entire flower grain image we design an algorithm that take two nearest random hue color-pair from a flower grain image and the most occurring hue color pairs are used for the grain analysis.

3.2 Flow Chart

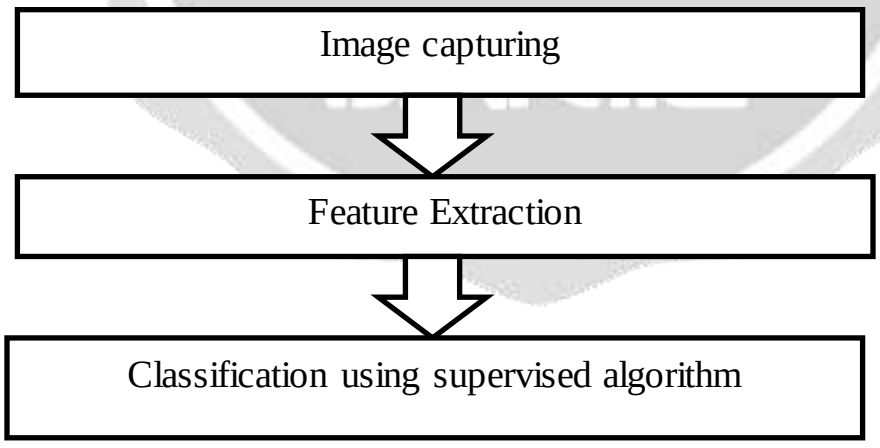

Fig 3.1 Flow chart

3.1 Algorithm Steps:

1) Take image of flower grain and convert RGB TO HSV color format image data: Select one random pixel of image and find its nearest pixel with minimum distance and Get this two pixel data and convert it RGB to HSV and find its hue color pair.
HSV mathematical formula is used to convert RGB to HSV color format image data. George Paschos compared and shown in his work that HSV color space performs better than L*a*b and RGB.
To extract the color parameter independent of external illumination, the RGB space is converted to Hue, Saturation and intensity Value (HSV) parameters, where Hue represents the color component independent of color saturation and illumination intensity. Hue ranges from 0° to
359° when measured in degrees. Saturation defines a range from pure color (100%) to gray (0%) at a constant lightness level and pure color is fully saturated. Lightness defines a range from dark (0%) to fully illuminate (100%). Any original hue has the average lightness level of 50% .
2) Generate grain histogram data.
(X-axis → Hue color pair, Y-axis → Frequency occurrence of hue-color pair)
3) Normalize histogram data and scale it.
4) Apply Normalized data to supervised classification algorithm.
Supervised classification algorithm: After feature generation we will apply this feature to support vector machine and check its accuracy.

3.2 Results:
The experimental results show the accuracy of 87% .

4. CONCLUSIONS

The experimental results shows 87% accuracy. With the use of grain feature, the efficiency gets improved. To classify the results, SVM has provided efficient results. In future work, neural network can be used as classifier.

5. REFERENCES

[1] Sari, Yuita Arum, and Nanik Suciati. "Flower Classification using Combined a* b* Color and Fractal-based Texture Feature." *International Journal of Hybrid Information Technology* 7.2 (2014): 357-368.
[2] Guru, D. S., Y. H. Sharath, and S. Manjunath. "Texture features and KNN in classification of flower images." *IJCA, Special Issue on RTIPPR (1)* (2010): 21-29.
[3] Mukane, S. M., and Ms JA Kendule. "Flower Classification Using Neural Network Based Image Processing."
[4] Nilsback, Maria-Elena, and Andrew Zisserman. "A visual vocabulary for flower classification." *Computer Vision and Pattern Recognition, 2006 IEEE Computer Society Conference on*. Vol. 2. IEEE, 2006.
[5] Nilsback, Maria-Elena, and Andrew Zisserman. "Automated flower classification over a large number of classes." *Computer Vision, Graphics & Image Processing, 2008. ICVGIP'08. Sixth Indian Conference on*. IEEE, 2008.
[6] Gonzalez, Rafael C., Richard Eugene Woods, and Steven L. Eddins. *Digital image processing using MATLAB*. Pearson Education India, 2004.
[7] Otsu, Nobuyuki. "A threshold selection method from gray-level histograms."*Automatica* 11.285-296 (1975): 23-27.
[8]M. Varma, D. Ray, in: IEEE 11th International Conference on Computer Vision, pp. 1–8.