1. Introduction:
The cotton holds a large contributory factor in the country's textile industries. The use of cotton varies from clothing, medical appliances, etc. The diseases that afflict cotton plants are as follows:

- Bacterial Blight
- Crown Gall
- Lint Degradation
- Anthracnose
- Leaf Spot
- Leaf Curl
- Leaf Crumple
- Leaf Roll

Besides, the purpose of the choice of cotton plant for the research is because of the way it shows symptoms of its diseases. The range of diseases visually seen on the leaves of the cotton plant varies between 80%-90%. This provides a basic component for the domain of image processing to segment, analyze, combine, store the image into pixel format (data). Image processing is a vast domain with functionalities, namely:

- Image conversion
- Image analysis
- Image retrieval

Various algorithms are in forms of module, and analyzed in the application software to execute the functionalities. One of the important features of the domain in feature detection, which can provide study cases robustly. Image processing toolbox and Java processing APIs are used for dynamic allocation of diagnosis for the diseases of cotton plant.

The best solution will be use of CBIR technique.

2. Goals and Objectives:
So we would like to propose a model which will help farmers to:

- Understand different types of leaf disease
- To find a disease if he/she provide ONLY image of leaf
- To find solution of the disease

To achieve precise solutions, CBIR mechanism would be liable analyze the image format of diseases of cotton leaf.

3. Literature Survey:
Upon conducting a survey, it is found that there are various papers suggesting an array of ways to deal with the detection of diseases in cotton plants. The common factor, of course, being the integration of Computer in agriculture. When the question arises for use of computer in this field, a prime factor has to be dug out, which shall be used for the task to be carried out. Here, the factor is feature selection and the various methods and algorithms followed to carry out the same. Depending on how well this is dealt with, directly shows how well the system shall perform in terms of speed, pattern recognition and matching accuracy. Boiling down to two approaches that are accepted as well as prevail among other contenders are – Fuzzy Curve (FC) and Fuzzy Surfaces (FS).
These are the two proposed solutions that can be used by the CBIR system to detect the diseases appearing over the leaf of cotton plant. To extract the best possible outcome, fuzzy selection approach is exploited. Initially, use FC to automate the quick isolation of a set of significant features from the set of original features according to the importance. Now, prune off the spurious ones. Further, use FS to remove features that are coherently dependent on the significant features found in previous step. This approach reduces complexity when feature extraction is undertaken and induces simplicity in the mechanism. Moreover, this seems a more viable option than random human selection or any other method for feature extraction and granulizing the complexity.

However, survey suggests another way for the detection of diseases being shown on leaves. For instance, consider grape plant, which exhibits a similar property of diseases being revealed by symptoms surfacing over plant leaf. This way suggests use of hybrid systems. This system can show expertise in detection of diseases once well-trained. It reduces the necessity of admin-intervention at later stages, if not eliminate them. [Cotton leaf spot diseases using image processing edge detection techniques, IEEE 2013].

Segmentation algorithms are categorized into two classes, viz. searching similarities or searching discontinuities. The algorithms used for locating discontinuities in the data are edge-based, while the other, dealing with locating pixels being adjacent, based on similarities being region based. Majority of algorithms can be classified under either of the two classes. However, apart from these two major classes, there are a number of general sub-categories as well. Exemplifying the same, it can be said that algorithms either process colour or grayscale data, operating individually on pixel-basis or neighbourhood of local pixels. Cheng discussed major segmentation approaches for segmenting images that were monochrome. These approaches are: characteristic feature clustering, neural networks, fuzzy techniques, region-based methods, training method, edge detection, histogram threshold.

To conclude, the segmented image found as a result, is filtered by Gabor Wavelet which allows the system to analyze colour features of leaf afflicted with disease, more efficiently. The SVM or Support Vector Machines are applied to classify the type of diseases. This system can also be implemented for plants such as grapes which show a similar characteristic of exhibiting symptoms and presence of diseases on its leaves.

4. Ideas and Approaches:
4.1 Algorithms:
The algorithms perceptively denoted for this system are:

4.1.1 Color feature extraction:
HSV (Hue Saturation Value) color model uses a linear gauge to form a uniform color space. Euclidean distance is used to determine distance between colors, depicting proportionality between corresponding pixels. It is very suitable for color based image similarity comparison

4.1.2 Texture feature extraction based on GLCM
GLCM with the help of directions and distances between pixels, creates a legitimate matrix and then extracts meaningful statistics from the matrix as texture features. According the correlation of the couple pixels gray-level, GLCM expresses the texture feature at different positions. The feature is precisely described by quantification ally.

In the figure above, a systematic and brief overview has been presented. The mechanism of image retrieval is as follows:

- Algorithms provided, the values of Query image and database image are extracted and stored in a database.
- Query image values are combined with database image and similarity measurement is calculated by Euclidian distance.

$$D = \sqrt{(x + y)^2(x - y)^2}$$
The threshold value considered, precise output images along with respective results are provided.

Advantages:
- Faster output than previous image retrieval and analyzing methodologies.

5. Conclusion:
CBIR is indeed a field that is rapidly advancing and keeping up the pace with other fields of technology including artificial intelligence and hybrid system. Different methodologies are implemented; varying from use of Euclidean Distance, use of Hamming Distance an image transformation, making use of histogram. Further prospect lies in improving the retrieval efficiency, speed and accuracy of the result provided. Moreover, the view-point of making it “self-evolving” would improve its credibility and chances of surviving in the ever-pacing up race of technological advancement.

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