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Improved Information for Endoscopy Diseases Using K-Mean and Super-Pixel Segmentation in Wireless Endoscopy Dataset

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Abstract: ***Wireless Capsule Endoscopy (WCE) needs computerized method to reduce the review time for its large image detain this paper, we propose an improved Bag Of Feature (BOF) method to assist classification of polyps in WCE images. Instead of utilizing a single Scale-Invariant Feature Transform (SIFT) feature in the traditional BoF method, we extract different textural features from the neighborhoods of the key points and integrate them together as synthetic descriptors to carry out classification tasks. Specifically, we study influence of the number of visual words, the patch size and different classification methods in terms of classification performance. Comprehensive experimental results reveal that the best classification performance is obtained with the integrated feature strategy using the SIFT and the Complete Local Binary Pattern (CLBP) feature, the visual words with a length of 120, the patch size of 8*8, and the Support Vector Machine (SVM). The achieved classification accuracy reaches 93.2%, confirming that the proposed scheme is promising for classification of polyps in WCE images To locate and identify next stages of ulcer and tuberculosis using Gaussian kernel algorithm, canny edge detection and k-mean algorithm for clustering .This can be implemented using dot net and c-sharp languages.***

I. INTRODUCTION

To locate and identify next stages of ulcer and tumour using Gaussian filtering algorithm, canny edge detection and k-mean algorithm for clustering. This can be implemented using dot net and c-sharp languages. Endoscopy means looking inside and typically refers to looking inside the body for medical reasons using an endoscope, an instrument used to examine the interior of a hollow organ or cavity of the body. Unlike most other medical imaging devices, endoscopes are inserted directly into the organ. Endoscope can also refer to using bore scope.

Diseases of gastrointestinal (GI) tract, such as stomach and intestine cancer, are now great threats to human's health. According to a publication in Hong Kong, it has been reported that GI tract related cancers have accounted for18% of the total cancer deaths in Hong Kong in 2000. Most diseases, especially cancers, in GI tract can be prevented and cured through early detection. Traditional endoscopies, such as colonoscopy and gastro copy, help physicians to view both ends of GI tract. But the main body of GI tract, small intestine, cannot be reached by traditional endoscopies due to their respective limitations. Some other techniques such as ultrasound, computed tomography (CT) scan, and X-ray have also been widely used to detect status of GI tracts; however, different drawbacks, e.g., invasiveness or illegibility, are related to them. Capsule endoscopy, first invented by Given Imaging in 2000, can directly view the entire small intestine without pain, sedation, or air insufflations, so it has been widely used in many hospitals to detect status of stomach and intestine. Our aim is to work on images captured by capsule endoscopy and detect defected region efficiently .The implementation uses in Windows platform and Developed in C# .Net using Visual studio 4.0 IDE.

II. EXISTING SYSTEM

The ulcer and polyp detection include texture spectrum along with neural networks geometric and texture features based on co-occurrence matrices.

The Chrominance Moments combined with local binary pattern (LBP) texture features and Wavelet-based local binary pattern analysis (LBP) of color moment invariants.

Existing methods can be roughly classified into image based methods, pixel based methods, and patch based methods.

Color channel, threshold methods are unreliable. The existing methods of classification at pixel level work better but suffer from high computational cost.

LBP and ULBP analysis for limited number of endoscopy images and in some time it may lead to inexplicable report.

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III. DISADVANTAGES-EXISTING SYSTEM

CR-ULBP approach was drawn from patients with ulcerous diseases, such as unexplained ulceration examination.
Disease Ulcer ROIs were equally divided into two classes: easy [distinct ulcers of high severity] and hard [hard to detect, low severity ulcers].
LBP and ULBP analysis for one normal and one ulcer image for various combinations of neighbors (P) and distances (R).

IV. PROPOSED SYSTEM

We first detect the edge pixels, and then use the morphological dilation to locate and remove the edge regions. We group pixels adaptively based on color and location through Super pixel Segmentation.

Our method relies on pixel similarity to find clusters instead of using curve evolution, and thus works much faster with the help of K-Mean algorithm

A proposed method to detect bleeding pixels by using probabilistic neural network (PNN).
It assigns a new label to the disjoint segment, and thus the small bleeding region can show up as a single super pixel.
The color similarity between pixels can be measured in the CIE Lab space as uniform changes of components in CIE Lab correspond to uniform changes in perceived color.
Feature of each super pixel is extracted using the red ratio in RGB space and fed into informative patches are classified by multilayer perception (MLP) neural network.
Super pixel method relies on pixel similarity to find clusters instead of using curve evolution.

V. ADVANTAGES

Accuracy is used to evaluate the overall performance of the proposed method.

High sensitivity means high capability of detecting bleeding frames. High specificity means high capability of avoiding false detection.
It is known that color is the most effective clue for clinicians to examine the GI tract.

VI. SYSTEM ARCHITECTURE

System Architecture Diagram

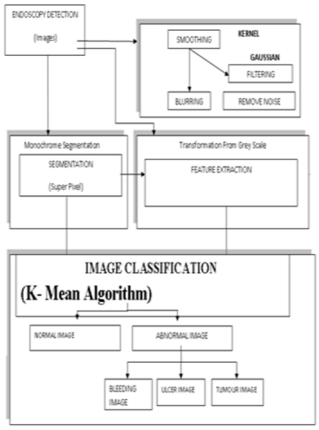

Figure 1: Block about image classification

VII. IMPLEMENTATION

The study of any algorithm that takes an image as input and returns an image as output is called Image processing. A method to change an image into digital form and execute some operations on it, in order to get an improved image or to mine some constructive information from it is called Image processing.

Image processing generally involves three steps:

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An image is imported with an optical scanner or directly through digital photography.

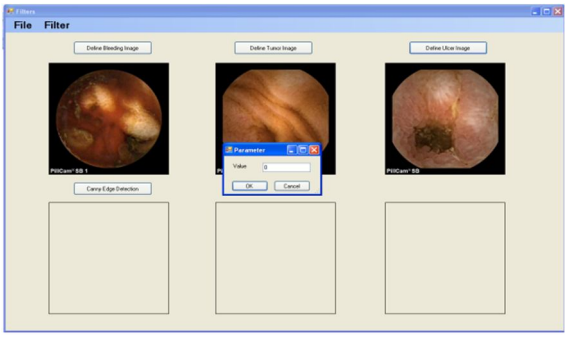

Figure 2: ulcer detection

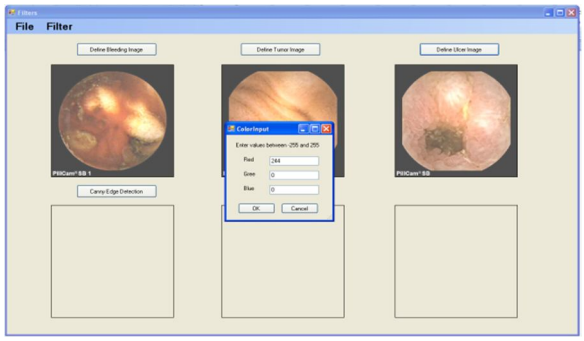

Figure 3: ulcer Detection using RGB

The image is analyzed and manipulated in some way. This stage can include image enhancement and data compression, or the image may be analyzed to discover patterns that aren't visible by the human eye.
Output the result. Image altered in some way or e a report based on analysis of the image might be the result. The study of any algorithm that takes an image as input and returns an image as output is called Image processing .A method to change an image into digital form and execute some operations on it, in order to get an improved image or to mine some constructive information from it is called Image processing .Image processing generally involves three steps: An image is imported with an optical scanner or directly through digital photography. The image is analyzed and manipulated in some way. This stage can include image enhancement and data compression, or the image may be analyzed to discover patterns that aren't visible by the human eye. Output the result. Image altered in some way or e a report based on analysis of the image might be the result. Smoothing is also called blurring. It is a simple and frequently used image processing operation. Here smoothing is used in order to reduce noise. It output pixel's value is determined
Canny Edge Detector is well known for its ability to generate single-pixel thick continuous edges. It has four inputs: Input image I, value of smoothing parameter sigma, high threshold Th and low threshold Thl. Dilation can also be used for edge detection by taking the dilation of an image and then subtracting away the original image, thus highlighting just those new pixels at the edges of objects that were added by the dilation. Monochrome segmentation is that each pixel is stored as a single bit, i.e., a 0 or 1 either black-and-white. It may also designate any images that have only one sample per pixel, such as gray scale image. Transforming the input data into set of features is called feature extraction. It involves simplifying the amount of resources required to describe a large set of data accurately.

A. Clustering Via K-Means Algorithm

The K-Means algorithm is a method to cluster objects based on their attributes into k partitions. **i**t assumes that the *k* clusters exhibit Gaussian distributions. It assumes that the object attributes form a vector space. The objective it tries to achieve is to minimize total intra-cluster variance.The sk algorithm is used for classification which leads to achieve an efficient prediction and accuracy. SVM works really well with clear margin of separation .It is effective in high dimensional spaces. It uses a subset of training points in the decision function (called support vectors), so it is also memory efficient. *K*NN classifier operate on the premises that classification

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of unknown instances can be done by relating the unknown to known according to some distance/similarity function and it is commonly based on the Euclidean distance .

VIII. CONCLUSION AND FUTURE ENHANCEMENT

A novel intelligent system has been proposed to defected regions in CE images in this paper. This new CAD system takes advantage of a new approach that combining use of pixel value, statistical parameters and number of contours for image classification. This proposed method defines all CE images perfectly and classify all images with great accuracy. Furthermore, the computational simplicity and great success of attaining accuracy in detecting defected regions is increased. By using such a feature extraction techniques shows strong discrimination ability. Experiments also validate that the proposed system is stable to the pixel order change.60,000 images in total per examination that yield very strict requirements for the detection accuracy. Future perspective of the work aims for implementing image classification done using hardware implementation. Hardware implementation increases the speed of processing and accuracy of outcome.

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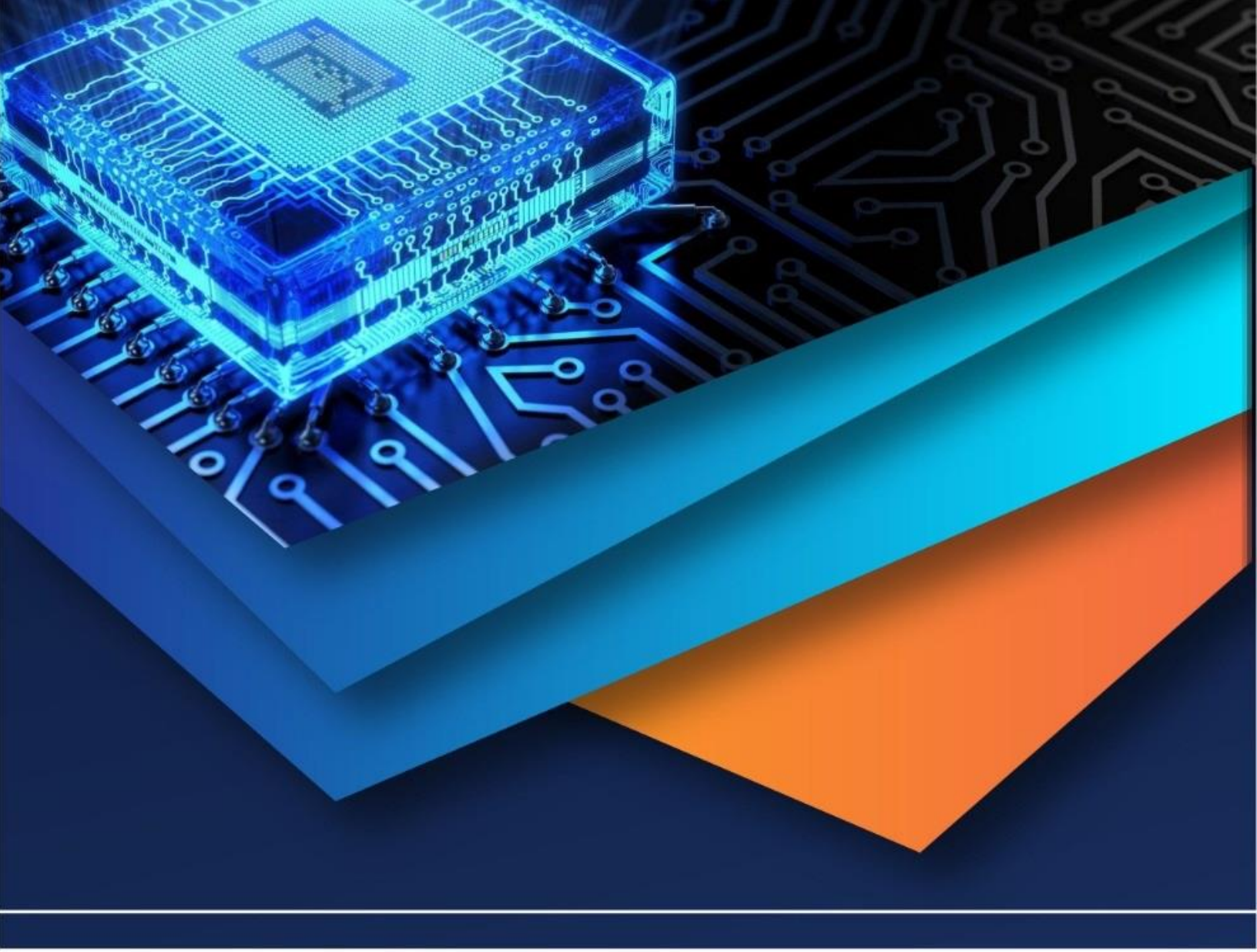

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