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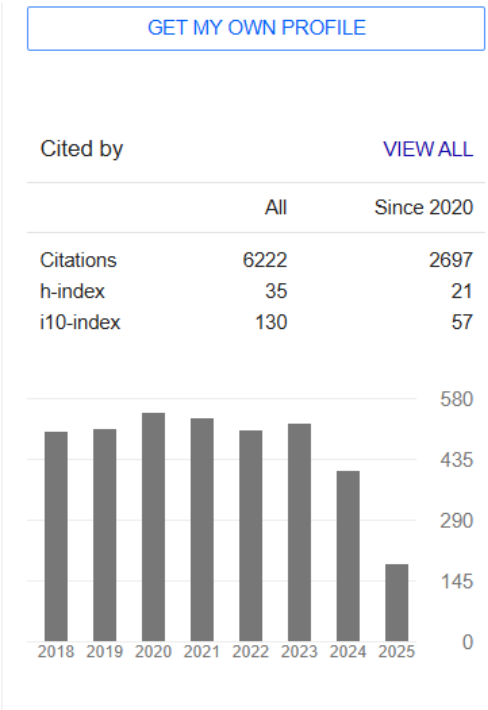

A Review Paper : Noise Models in Digital Image Processing

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ABSTRACT

Noise is always presents in digital images during image acquisition, coding, transmission, and processing steps. Noise is very difficult to remove it from the digital images without the prior knowledge of noise model. That is why, review of noise models are essential in the study of image denoising techniques. In this paper, we express a brief overview of various noise models. These noise models can be selected by analysis of their origin. In this way, we present a complete and quantitative analysis of noise models available in digital images.

KEYWORDS

Noise model, Probability density function, Power spectral density (PDF), Digital images.

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Content Based Image Retrieval Using Color and Texture

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ABSTRACT

The increased need of content based image retrieval technique can be found in a number of different domains such as Data Mining, Education, Medical Imaging, Crime Prevention, Weather forecasting, Remote Sensing and Management of Earth Resources. This paper presents the content based image retrieval, using features like texture and color, called WBCHIR (Wavelet Based Color Histogram Image Retrieval).The texture and color features are extracted through wavelet transformation and color histogram and the combination of these features is robust to scaling and translation of objects in an image. The proposed system has demonstrated a promising and faster retrieval method on a WANG image database containing 1000 general-purpose color images. The performance has been evaluated by comparing with the existing systems in the literature.

Keywords

Image Retrieval, Color Histogram, Color Spaces, Quantization, Similarity Matching, Haar Wavelet, Precision and Recall.

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Algorithm and Technique on Various Edge Detection : A Survey

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ABSTRACT

An edge may be defined as a set of connected pixels that forms a boundary between two disjoints regions. Edge detection is basically, a method of segmenting an image into regions of discontinuity. Edge detection plays an important role in digital image processing and practical aspects of our life. .In this paper we studied various edge detection techniques as Prewitt, Robert, Sobel, Marr Hildrith and Canny operators. On comparing them we can see that canny edge detector performs better than all other edge detectors on various aspects such as it is adaptive in nature, performs better for noisy image, gives sharp edges , low probability of detecting false edges etc.

KEYWORDS

Edges, Edge detection, Canny edge detection.

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Histopathological Image Analysis Using Image Processing Techniques: An Overview

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ABSTRACT

This paper reviews computer assisted histopathology image analysis for cancer detection and classification. Histopathology refers to the examination of invasive or less invasive biopsy sample by a pathologist under microscope for locating, analyzing and classifying most of the diseases like cancer. The analysis of histoapthological image is done manually by the pathologist to detect disease which leads to subjective diagnosis of sample and varies with level of expertise of examiner. The pathologist examine the tissue structure, distribution of cells in tissue, regularities of cell shapes and determine benign and malignancy in image. This is very time consuming and more prone to intra and inter observer variability. To overcome this difficulty a computer assisted image analysis is needed for quantitative diagnosis of tissue. In this paper we reviews and summarize the applications of digital image processing techniques for histology image analysis mainly to cover segmentation and disease classification methods.

KEYWORDS

Image processing, histopathological image analysis, image segmentation, and computer assisted diagnosis.

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Feature Extraction Using MFCC

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ABSTRACT

Mel Frequency Ceptral Coefficient is a very common and efficient technique for signal processing. This paper presents a new purpose of working with MFCC by using it for Hand gesture recognition. The objective of using MFCC for hand gesture recognition is to explore the utility of the MFCC for image processing. Till now it has been used in speech recognition, for speaker identification. The present system is based on converting the hand gesture into one dimensional (1-D) signal and then extracting first 13 MFCCs from the converted 1-D signal. Classification is performed by using Support Vector Machine. Experimental results represents that proposed application of using MFCC for gesture recognition have very good accuracy and hence can be used for recognition of sign language or for other household application with the combination for other techniques such as Gabor filter, DWT to increase the accuracy rate and to make it more efficient.

KEYWORDS

Hand gesture, 1D signal, MFCC (Mel Frequency Cepstral Coefficient), SVM (Support Vector Machine).

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A Comparative Study of Histogram Equalization Based Image Enhancement Techniques for Brightness Preservation and Contrast Enhancement

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ABSTRACT

Histogram Equalization is a contrast enhancement technique in the image processing which uses the histogram of image. However histogram equalization is not the best method for contrast enhancement because the mean brightness of the output image is significantly different from the input image. There are several extensions of histogram equalization has been proposed to overcome the brightness preservation challenge. Contrast enhancement using brightness preserving bi-histogram equalization (BBHE) and Dualistic sub image histogram equalization (DSIHE) which divides the image histogram into two parts based on the input mean and median respectively then equalizes each sub histogram independently. This paper provides review of different popular histogram equalization techniques and experimental study based on the absolute mean brightness error (AMBE), peak signal to noise ratio (PSNR), Structure similarity index (SSI) and Entropy.

KEYWORDS

Histogram Equalization, Contrast Enhancement, Brightness Preservation, Absolute Mean Brightness Error, Peak Signal to Noise Ratio, Structure Similarity Index.

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Image Denoising Using New Adaptive Based Median Filter

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ABSTRACT

Noise is a major issue while transferring images through all kinds of electronic communication. One of the most common noise in electronic communication is an impulse noise which is caused by unstable voltage. In this paper, the comparison of known image denoising techniques is discussed and a new technique using the decision based approach has been used for the removal of impulse noise. All these methods can primarily preserve image details while suppressing impulsive noise. The principle of these techniques is at first introduced and then analysed with various simulation results using MATLAB. Most of the previously known techniques are applicable for the denoising of images corrupted with less noise density. Here a new decision based technique has been presented which shows better performances than those already being used. The comparisons are made based on visual appreciation and further quantitatively by Mean Square error (MSE) and Peak Signal to Noise Ratio (PSNR) of different filtered images.

KEYWORDS

Impulse Noise, Nonlinear filter, Adaptive Filters, Decision Based Filters.

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Vehicle Detection and Tracking Techniques : A Concise Review

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2Iraqi University, Iraq and 3Baghdad University, Iraq

ABSTRACT

Vehicle detection and tracking applications play an important role for civilian and military applications such as in highway traffic surveillance control, management and urban traffic planning. Vehicle detection process on road are used for vehicle tracking, counts, average speed of each individual vehicle, traffic analysis and vehicle categorizing objectives and may be implemented under different environments changes. In this review, we present a concise overview of image processing methods and analysis tools which used in building these previous mentioned applications that involved developing traffic surveillance systems. More precisely and in contrast with other reviews, we classified the processing methods under three categories for more clarification to explain the traffic systems.

KEYWORDS

Vehicle detection, Tracking, Traffic surveillance, Occlusion, Shadow & Classification

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Red Blood Cells Estimation Using Hough Transform Technique

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ABSTRACT

The number of red blood cells contributes more to clinical diagnosis with respect to blood diseases. The aim of this research is to produce a computer vision system that can detect and estimate the number of red blood cells in the blood sample image. Morphological is a very powerful tool in image processing, and it is been used to segment and extract the red blood cells from the background and other cells. The algorithm used features such as shape of red blood cells for counting process, and Hough transform is introduced in this process. The result presented here is based on images with normal blood cells. The tested data consists of 10 samples and produced the accurate estimation rate closest to 96% from manual counting.

KEYWORDS

Red blood cells, MATLAB, Hough Transform, Morphological Image Processing.

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