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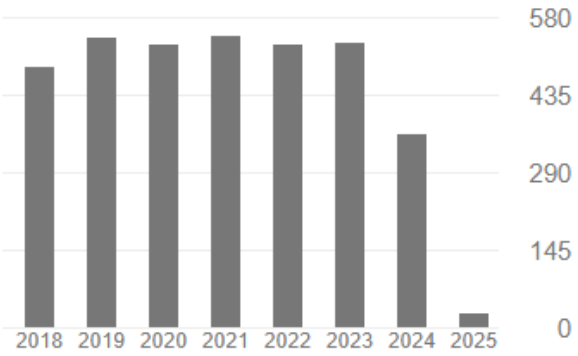

# A Review Paper : Noise Models in Digital Image Processing

**Ajay Kumar Boyat and Brijendra Kumar Joshi,**

**Military College of Tele Communication Engineering, India**

## 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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## AUTHORS

**Ajay Boyat** is a Research scholar in Electronics & Telecommunication and Computer Engineering Department at Military College of Telecommunication Engineering (MCTE), Military Head Quarter of War (MHOW), M.P., India. He has completed B.E. in Electronics and Communication Engineering from MITS, Gwalior in 2005, M.E. in Electronics and Telecommunication Engineering from SGSITS, Indore in 2008 and Currently Pursuing Ph.D. in Electronics and Telecommunication Engineering from Devi Ahiliya University, Indore. His research interests are Image processing, Adaptive and Non-Linear Filtering, Signal Processing, Mobile adhoc and Wireless Communication networks. He has number of research papers to his credit and has supervised three Post Graduate scholar and currently supervising three Post Graduate scholars. He has 09 years of teaching experience. He is Research and Project Cordinator in Department of Electronics & Communication Engineering at Medi-Caps Institute of Technology and Management, Indore (MP), India. He is a Global member of Internet Society. Recently he won the Best paper award Rank 1 in track 5 in 2014 IEEE ICCIC from IEEE PODHIGAI and IEEE-SIPCICOM.

**Dr. Brijendra Kumar** Joshi is a Professor in Electronics & Telecommunication and Computer Engineering Department at Military College of Telecommunication Engineering (MCTE), Military Head Quarter of War (MHOW), M.P., and India. Dr. Joshi, Fellow IETE India and IE(I). He is Life time Senior Member of CSI and Life Member of ISTE. He is Member of Cryptology Research Society of India (CRSI) and Member of IEEE, IEEE Communication Society and ACM (USA). He has completed B.E. in Electronics and Telecommunication Engineering from Govt. Engineering. College, Jabalpur, M.E. in Computer Science and Engineering from Indian Institute of Science, Bangalore, Ph.D. in Electronics and Telecommunication Engineering from Rani Durgavati University, Jabalpur and M. Tech. in Digital Communication from MANIT, Bhopal. His research interests are Programming Languages, Compiler Design, Digital Communications, Mobile adhoc and Wireless Sensor Networks, Signal Processing, Parallel Computing and Software Engineering. He has number of research papers to his credit and has supervised three PhD scholars and currently supervising eight PhD scholars. He has published two books on Data Structures and Algorithms with Tata McGraw-Hill. He has 30 years of teaching experience.

# Content Based Image Retrieval Using Color and Texture

**Manimala Singha and K. Hemachandran**

**Assam University, India**

## 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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## AUTHORS

**Ms. Manimala Singha** received her B.Sc. and M.Sc. degrees in Computer Science from Assam University, Silchar in 2005 and 2007 respectively. Presently she is working, for her Ph.D., as a Research Scholar and her area of interest includes image segmentation, feature extraction, and image searching in large databases.

**Prof. K. Hemachandran** is associated with the Dept. of Computer Science, Assam University, Silchar, since 1998. He obtained his M.Sc. Degree from Sri Venkateswara University, Tirupati and M.Tech. and Ph.D. Degrees from Indian School of Mines, Dhanbad. His areas of research interest are Image Processing, Software Engineering and Distributed Computing.

# Algorithm and Technique on Various Edge Detection : A Survey

**Rashmi, Mukesh Kumar and Rohini Saxena,**

**SHIATS, India**

## 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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## AUTHORS

**Rashmi** is doing Masters in Engineering From Digital Signal Processing Specialization, in Electronics And Communications, From SHIATS Allahabad, (U.P.). Her field of interest is focused on digital image processing. Email- rasmishubh@gmail.com Mobile: +91-8953803830.

**Mukesh Kumar** is working as a Asst. Prof. in the Department of Electronics & Communication Engineering in SHIATS, Allahabad. He received his M.Tech. Degree in Advanced Communication System Engineering from SHIATS, Allahabad in 2010. His research is focused on Signal processing, Wireless Sensor Network and Computer Networks ,Microwave Engineering, as well as Optical fiber communication. Email- mukesh044@gmail.com, Mobile: +91-9935966111

**Rohini Saxena** is working as a Asst. Prof. in the Department of Electronics & Communication Engineering in SHIATS, Allahabad. She received her M.Tech. Degree in Advanced Communication System Engineering from SHIATS, Allahabad in 2009. Her research is focused on Signal processing, Microwave Engineering, Wireless Sensor Network and Computer Networks and Mobile communication. Email- rohini.saxena@gmail.com, Mobile: +91-9208548881

# Histopathological Image Analysis Using Image Processing Techniques: An Overview

**A. D. Belsare and M. M. Mushrif**

**Yeshwantrao Chavan College of Engineering, India**

## 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

**Shikha Gupta1, Jafreezal Jaafar1, Wan Fatimah Wan Ahmad1 and Arpit Bansal2**

**1Universiti Tecknologi PETRONAS, Malaysia and 2Indian Institute of Information and Technology, India**

## 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

**Omprakash Patel, Yogendra P. S. Maravi and Sanjeev Sharma,**

**RGPV, India**

## 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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## AUTHORS

**Omprakash Patel** He was born in Jabalpur, India. He received his Bachelor of Engineering degree in Computer Science & Engineering from GGITS Jabalpur affiliated from RGPV Bhopal, in 2010. He is currently pursuing Master of Technology (M.Tech.) in Computer Science & Application from School of Information Technology, UTD, RGPV, Bhopal, India. His research interest includes image enhancement and medical image processing.

**Yogendra P.S. Maravi** He obtained his Bachelor's degree in Information Technology from UIT, RGPV, Bhopal. He received his M.Tech degree in Computer Science from School of Computer Science, DAVV, Indore. He is working as Assistant Professor in School of Information Technology, UTD, RGPV, Bhopal, India.

**Dr. Sanjeev Sharma** He is working as Associate Professor in the School of Information Technology, UTD, RGPV, Bhopal, India. His research interest is in Mobile Computing. He is a member of Computer Society of India ACM, Computer Science Teachers Association (CSTA).

# Image Denoising Using New Adaptive Based Median Filter

**Suman Shrestha**

**The University of Akron, USA**

## 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

**Raad Ahmed Hadi1,2, Ghazali Sulong1 and Loay Edwar George3,**

**1University Technology Malaysia, Malaysia,**

**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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## AUTHORS

**Raad Ahmed Hadi** was born in June 1, 1979, Baghdad, Iraq. He received his M.Sc. Computer Science 2006 Iraqi Commission for Computers and Informatics, Baghdad, Iraq, B.Sc. Computer Science 2003 University of Technology, Baghdad, Iraq. Currently he is PhD. student in University Technology Malaysia (UTM), Johor, Malaysia.

**Ghazali Sulong** was born in May 21, 1958 Malaysia. He received his Ph.D. Computing 1989 University of Wales College of Cardiff (UWCC), Wales, U.K., M.Sc. Computing 1982 University of Wales College Cardiff (UCC), Wales, U.K., B.Sc. Statistic 1979 UKM, Malaysia. Currently he is a Professor in Image Processing.

**Loay Edwar George** was born in July 1, 1957 Baghdad, Iraq. He received his Ph.D. Computer Science 1997 Baghdad University, Baghdad, Iraq, M.Sc. Physics 1983 Baghdad University, Baghdad, Iraq, B.Sc. Physics 1979 Baghdad University, Baghdad, Iraq. Currently he is a Professor in Image Processing.

# Red Blood Cells Estimation Using Hough Transform Technique

**Nasrul Humaimi Mahmood and Muhammad Asraf Mansor**

**Universiti Teknologi Malaysia, Malaysia**

## 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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## AUTHORS:

**N. H. MAHMOOD** received his B.Eng. and M.Eng. degrees in Electrical Engineering from Universiti Kebangsaan Malaysia (UKM) and Universiti Teknologi Malaysia (UTM) respectively. He obtained his Ph.D. degree from the University of Warwick, United Kingdom. His research areas are biomedical image processing, medical electronics and rehabilitation engineering. Currently he is a Senior Lecturer at Faculty of Health Science and Biomedical Engineering, UTM.

**M. A. MANSOR** received his B. Eng and M. Eng. in Electrical Engineering from Universiti Teknologi Malaysia (UTM). His research areas are biomedical signal processing and medical electronics. He is now serving as a tutor at the Faculty of Health Science and Biomedical Engineering, UTM for past 3 years.