Classification and Regression Analysis of the Prognostic Breast Cancer using Generation Optimizing Algorithms

Experimental Comparison of Face detection Techniques on the basis of Intrinsic and Extrinsic Parameters

Jebran Khan  
Department of Computer Systems Engineering, University of Engineering & Technology, Peshawar.

Nasru-minnallah  
Department of Computer Systems Engineering, University of Engineering & Technology, Peshawar.

Humrat Ali Shah  
Department of Computer Systems Engineering, University of Engineering & Technology, Peshawar.

ABSTRACT

Face detection is an important contributing factor to make computer vision applicable to problems of everyday life. Of the techniques used for face detection, two are more efficacious i.e. skin detection and viola-jones based face detection. These two techniques have limitations of their own. One of the most restricting factors to these techniques is the color cluster of the image. Face detection algorithms are trained on a set of images. Those images are sure to be occupying a particular color cluster of the color plane because it is not possible for the set to contain encompass the full color space. If an image occupying a color space other than that on which the algorithms is trained is an input to the algorithm, the result is not optimal then. This paper explores the effect of different color clusters on the performance of both techniques. Images of color clusters other than that on which the algorithms are trained are given to the algorithms and the results are analyzed to decide the optimum of the techniques in face of images on which the algorithms are not trained.

Key-words:  
Viola-jones, Face detection, Color cluster, Color spaces.

1. INTRODUCTION

Skin detection makes us able to find different human body parts and its applications is spread over a wide range of applications i.e. from face detection to human hand and other body parts detection; it is also useful in recognition of humans, stored in a database, in an image. The skin detection can also be used in filters which are used for blocking of objectionable contents. Skin detection is the first task in computer vision towards face detection [1]. For human faces the skin color is used as distinguishing feature. And in a single background image the skin detection based face detection is used [2].

The face detection task makes the area of computer vision able to implement the real world problems such as biometrics security systems [3]. It is of great interest ever years and there are different techniques that are used for skin detection. Different approaches for face detection are discussed in [4] [5]. The author in the review papers [4] [5] has divided the face detection techniques in the following four categories: (1) Feature invariant method is based on the principle to find structural features which do not vary with variations in the position, viewpoints or illumination conditions of an image and then use these feature in order to find face [6]. (2) Knowledge based approach aims to use rule-based approaches to encode knowledge of the about the typical facial structure. Normally the rules contains the relationship among the features of the face [7]. (3) Appearance based approaches: In this method the technique is trained on a set of training images, which contain faces of different kinds, from which models of faces are extracted. And the models are then used for detection [8]. (4) Template matching approaches: In this approach every standard facial patterns, which describe a whole face or various facial features separately, are stored. And for face detection the correlation between the stored template and the input image is computed [9].

In this paper the results of experiments done on two most important face detection techniques i.e. viola-jones and face detection based on skin detection, are shown. The effect of different color clusters on these two techniques is studied. It is shown here the impact that both these techniques are prone to color clusters of different kind.

The viola-jones face detection framework takes its decision on the basis of different features of the image. This technique is based on three features. The two rectangles feature whose value is the difference between pixel values in the two rectangular regions. The shape and size of the region are the same and they are horizontally and vertically adjacent. The three rectangle feature whose values are computed is, sum of the two outside rectangles and subtract it from the center rectangle. And last the four rectangle feature values are computed as the difference of the diagonal pairs of rectangle. These features result in a new image known as integral image [10]. These features may depend on the illumination, image orientation, image color spaces and saturation. The skin detection technique uses the pixel color to classify it as skin or not [3].

Various efforts are made to improve the skin detection techniques. (Haddi et al., 2002) developed an approach for detecting color images in different conditions this approach was developed using skin locus and hierarchical detector. (Viola, 2004) improved his viola-jones framework developed for detection in [19], and they extended it to the most frontal faces. For different views of faces different detectors were designed and trained a decision tree for determining the image class. (Sabbah et al., 2005) used skin color and image segmentation for face detection. (Singh, 2006) carried out an experimental work on face detection based on skin color for different color spaces.
Robust Video Transmission with High Error Correction Capable Binary LDPC Codes

Amaad Khalil, Nasruminallah, Bilal Shams
Department of Computer Systems Engineering
University of Engineering and Technology
Peshawar, Pakistan
{amaadkhalil@yahoo.com, mnaalbhattinro@gmail.com}

Bilal Shams
Institute of Information Technology
Kohat University of Science & Technology (KUST)
Kohat, Pakistan
bilal.shams@gmail.com

ABSTRACT

Recently wireless multimedia communication systems and services are getting great attention from both academia and industry because of its diverse capabilities and end-user requirements. Keeping in view the current advancements in channel coding, we are offering a robust video transmission solution with high error correction capability using Binary Low Density Parity Check (LDPC) codes. The input video sequence is Pulse Code Modulation (PCM) coded and transmitted over the wireless channel contaminated with noise. The quality of the resultant video obtained at the receiver side after LDPC decoding is computed using Peak Signal to Noise Ratio (PSNR), objective video quality evaluation metric. Furthermore, Bit Error Ratio versus PSNR curves of the advocated transmission setup was obtained and its performance is compared with a benchmarked scheme, with Binary LDPC codes having single iteration. More explicitly, video transmission over noise contaminated wireless channels with powerful channel coding such as LDPC codes and reasonable number of system iterations for secure video transmission can achieve beneficial performance gain in terms of high video quality and low BER of the resultant received video sequence.

Keywords: Component, Binary LDPC Codes, YUV video, Encoder, Decoder, Peak Signal to Noise Ratio (PSNR), Bit Error Rate (BER)

INTRODUCTION

Nowadays wireless multimedia communication devices and services are getting great attention from both academia and industry because of increase in its capabilities and end user demand of multimedia services. Provisioning of diverse multimedia services within the limited bandwidth resources necessitates the design of robust video streaming systems so that video streaming has become one of the most exciting areas of research within wireless communication research community. In mobile phones video streaming of news and entertainment clips is now widely available and enjoyment in search and rescue operations real time audiovisual communication can save lives. All these applications need reliable security in storage and transmission. Satellite television, video conferencing, medical and military imaging systems are examples of those applications where main focus is on perceived video quality. On wireless channel delivering a good video quality is difficult and challenging because of unpredictable nature of the wireless communication channel and the requirements of high data rate and low latency for good video transport.

For video transmission using wireless communication channels, our main target is high compression efficiency of our transmitting video [1] due to its low bandwidth capability. Furthermore, wireless communication imposes errors and effects video signal [2] therefore the coded video signal should be robust to channel errors. So for protection of video data channel effects we can use powerful channel encoder which can dissipate the effect of channel errors.

Forward error correction using LDPC codes is one of the exciting areas these days. Nowadays people are focusing on video communication using LDPC codes because they already demonstrated using different research works that LDPC codes give much better performance in terms of forward error correction, relative to the traditional channel coding schemes in [3]. LDPC codes are best for video transmission over noisy channels [4] against the effect of various channel impairments such as noise, interference and fading. In such circumstances the use of LDPC decreases loss of data which intern increase the quality of service (QoS). We use YUV format video for video transmission in our research paper because YUV format encodes brightness information.