

AN INNOVATION DEVELOPMENT TO ELIMINATE THE RED EYE EFFECTS IN VISUAL IMAGE PROCESSING USING COLOR SCHEME DEEP LEARNING MODEL

N. Prakash¹, Sangram Patil², Bhagatsing Jitkar³ and Suresh Kumar Sharma⁴

¹Department of Computer Science and Technology, Madanapalle Institute of Technology & Science, India

^{2,3}Department of Computer Science and Engineering, D Y Patil Agricultural and Technical University, India

⁴Department of Statistics, Mathematics and Computer Science, Sri Karan Narendra College of Agriculture, India

Abstract

Visual Image processing is seriously used to motion photograph, modeling, printed thing and placing articles on the Internet. There is a wide mass of options, methods, tools and implementing this process. The processing task of the image processing is to give them the most clearly and clearly real value or type, in which they are distorted. The preparation of the films from the image allows you to remove unwanted items brightly in the eyes. It is mainly to eliminate the effect of the red eye effect and drag the figure. In this paper an innovation model was proposed to eliminate the "Red Eye Effect (REE)". This proposed method is based on the adjustment that is raised. The visual image processing is that the clarity of the image objects has increased. The film is mostly digital cameras default or threaded transfer color. White balance adjustment sliders can be used by heat. Some image processing programs and make this separate treatment is a purpose. Setting up different digital cameras will allow you to set the best expression in shooting. However, this is always possible. So it should be adjusted by a subsequent visual image processing.

Keywords:

Visual Image Processing, Motion Photograph, Red Eye Effect, Digital Cameras

1. INTRODUCTION

First, let's find out what happens when we set the basic parameters for RAW conversion. At the same time, we try to do without the physics, mathematics and other underlying processes behind it [1]. There is no clear information about some of the capabilities of AW converters, whether they are directly related to conversion or additional functions that can be used in a normal graphics editor [2].

Therefore, within the framework of this article, the division of parameters into "substitution" and "addition" is somewhat arbitrary. RAW doesn't say much about the change [3]. Basically, articles boil down to describing the capabilities of converter programs and comparing them to each other. Most of the capabilities of most RAW converters are not directly related to conversion [4].

At the same time, when it comes to finally changing parameters, has been reduced to general concepts in a "dark / light" sense, which does not provide an understanding of the logic of using these tools. You can change the default settings so that each new RAW file opens with the profile you want [5]. To do this, click the barely visible menu icon to the right of the tab name and select Save New Camera Source Defaults. Basically, you can save yourself the hassle by defaulting any changes you normally make to all images [6].

Now find the right tab Camera calibration and in the section Camera profile select the profile responsible for basic settings

color presentation and overall contrast [7]. I usually use camera neutral because it's easier for me to work with increasing contrast and saturation as needed rather than decreasing them. You can customize any profile to your liking [8].

The tool red eye removal, as the name suggests, helps to remove the red spot in the eye, which is formed due to the illumination of the pupil of the person depicted by the "forehead" flash [9]. In the left menu, you can select pupil size and shade. The red pupil is selected with an extended frame; the program itself finds the red dot and desaturates it [10-11]. It works very efficiently. I have nothing to show. On the "forehead" I did not use "nude" flash, I do not advise you. This often happens when shooting with a smartphone or "soap box" that has a built-in flash [12].

Light enters the photosensitive sensor through the lens, which contains millions of sensitive elements [13]. Initially, a black and white image is obtained, which is then separated into color pixels using eccentric gratings called Bayer filters [14]. At the output of the matrix, we have a Raw-File ("raw" from the English), which is then compressed, corrected and converted into Jpeg, which we are familiar with using the special instructions of the camera microcomputer. At the same time, a significant part of the information is ruthlessly rejected [15-16].

If you are still shooting Jpg, know that it's a pathetic excuse for a robo-photographer based on its ability to extract useful information [17]. The RAW file is actually almost raw data that hasn't (at least shouldn't) be processed with white balance, correction, and other things [18]. The RAW file shadows are stretched better and overexposure is compensated better. That's why it's best to shoot in RAW, and not write extra zips to the memory card [19].

However raw data is raw data, it's not so easy when you open it in a RAW converter. It comes with a trailer. Distortion, vignetting and noise reduction profiles are often embedded in the file. It open a RAW file and there is no more distortion and vignetting, and often the noise is "suppressed" [20]. It is good for a beginner photographer who doesn't want to learn photography. A RAW converter is a program that correctly decrypts (in simple words) the original data and presents it to us visually, in the form of an image.

In fact, data can be decoded in different ways, so the result will be slightly different for different RAW converters. The most popular and most "advanced", it understands DCP color profiles, has many controls for perspective, distortion, vignetting, color shift and noise and sharpness [21]. Advertised by a giant of the graphics market, so what you want - you don't want, and everyone else has to be guided one way or another.

2. LITERATURE REVIEW

This Image parameter sets the brightness of the white point. In this case, the brightness of the black point practically does not change, and everything between them is “stretched” or “shrunk” to a new level of brightness [1]. It is fundamentally important that its algorithm does not stop clipping highlights as the parameter values increase. When significantly enlarged, it leads to the appearance of noise in the shadows. if it use source control for file management and settings are stored in accompanying XMP files, you will need to check in and exit the accompanying files to make changes to the source images [2]; Similarly, associated XMP files (eg, rename, move, delete) must be managed with their corresponding source snapshot files. Although settings for raw images are stored in the Camera Raw database, if you decide to move the files to another location (burn to CD or DVD, transfer to another computer, etc.), you can use the XMP command to export settings [3]. Export settings to files with XMP. 3 Select Ignore .xmp files in the TNG File Handling section of the Camera Raw Preferences dialog box if you want to save any changes made to TNG files directly to the files [4].

It can set an option to determine where the settings are saved. When you reopen a RAW snapshot image file, all settings default to the values used when the file was last opened. Image attributes. When you import a sequence of Raw snapshot files into image Effects, the settings for the first file are applied to all other files in the sequence that don't have their own XMP files [5]. Image Effects does not check the Camera Raw database. Select an option to specify where the settings are stored. Using XMP files is useful when you need to move or save an image file and need to preserve settings for a source image [6]. The Export Settings command can be used to copy settings to XMP files in the Camera Raw database or to embed settings in digital negative (DNG) files. After processing a Raw Snapshot image file with Camera Raw, image adjustments are saved to a Camera Raw database file or a companion XMP file [7]. Settings related to DNG files are usually stored directly in DNG files, similar to settings for TIFF and JPEG files. Everyone who uses a different RAW converter here (from experienced photographers) will be angry that they have “forgotten” something they didn't need [8]. Catch one or RPP, but the truth is true - ACR is more powerful, simpler and faster. However, this choice of RAW converters is not perfect. An important thing with him is that he uses all these “backgrounds” that the camera manufacturer hangs on its RAW file format, and turns them on without notifying the user and with the possibility of turning them off. To understand how this happens, you can see [9]. There is no V ACR and everything is somehow smooth. But when you open it in another RAW converter, it turns out that there is actually a lot of noise. In fact, when opening this camera's file in ACR, automatic noise reduction, distortion and vignetting correction occur [10].

3. PROPOSED MODEL

In proposed model, select where the processing parameters for each edited image should be saved - in separate .xmp files (Sidecar “.xmp” files) or in a special database (Camera Raw database). I prefer the first option, ie. After saving the results of the work, the program creates an additional settings file with the

extension .xmp next to each RAW file, writing all the changes made in it. In the case of a database, all information is stored centrally, which is inconvenient for me. In both cases, the RAW file does not undergo any changes, so you can always go back during the editing process or reset all settings and start editing again. Also, factory reset occurs when deleting the .xmp file or the ACR database. In the Default Image Settings chapter, uncheck all the boxes to prevent the program from editing images without permission. In the chapter specify the maximum temporary files acceptable for camera source caches (at least 1 GB) and the folder in which they should be stored (preferably not on the computer drive). Chapter DNG file handling You can leave it alone, but in the section JPEG and TIFF handling Disable JPEG and TIFF support (Disable JPEG support and Disable TIFF support). The proposed model consists of the following important measurements to remove red eye effects shown in fig 1.

- White balance
- Color Recovery
- Black Management
- Color depth
- Color Space

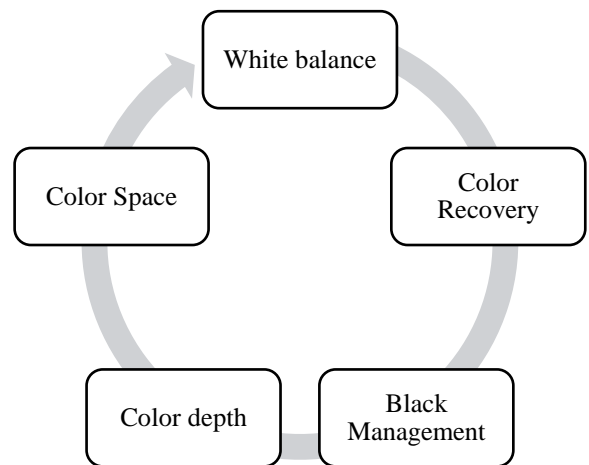


Fig.1. Proposed model

3.1 WHITE BALANCE

The temperature parameter determines the overall color balance by changing the hue of the image along the “b” (Lab) axis. And the tint parameter is in “a” (Lab) axis. Since most photographers deal with RGB images, in other words, it can be described as follows: changing the temperature and hue parameters affects the relationship between the brightness of the RGB channels, which affects the overall color balance of the final photo. Fill Light stands for “fill with light” (meaning filling shadows with light, by analogy with the terminology used when controlling light in studio photography) and is the opposite of Recovery. It was deals with the redistribution of brightness in dark areas of the image. At the same time, the brightness of the points in the rest of the tonal range remains practically unchanged. Unlike recovery, dropped (disconnected) shadows do not have the ability to recover information.

3.2 COLOR RECOVERY

The recovery parameter is responsible for redistributing the brightness information in the lightest part of the image - usually reducing the brightness of the light points and, if possible, restoring the information in the excess areas. The brightness of the points in the rest of the tonal range remains practically unchanged. With a significant increase, this leads to a decrease in the overall variance. It can be offset by augmentation with other instruments.

3.3 BLACK MANAGEMENT

This parameter is the opposite of exposure and controls the brightness of the black point, adjusting the white color as much as possible. Doesn't care if shadow clipping occurs or not. Unlike expression, it can only change in one direction.

3.4 COLOR DEPTH

In theory, the more bits, the better the quality, but in practice the difference between 8 and 16 bits is only noticeable with very serious editing, so in most cases I use 8 bits/channel, switching to 16 bits when really needed. If you do not want to save space on your hard drive, you can immediately select 16 bits / channel, but do not forget that when saving an image in JPEG format, the color depth is still converted to 8 bits. The choice of color depth is important only for post-processing. I advise you to do basic manipulations with camera raw, brightness and contrast; either way will work with your camera's own color depth ie 12 or 14 bit. You can leave the image size and resolution unchanged, and in the Sharpen for item, selects none

3.5 COLOR SPACE

If you don't know what this is, you should select sRGB. However, even if you're familiar with the concept of color space, I wouldn't advise you to switch to Adobe RGB, much less ProPhoto RGB, without good reason. The end result of your work, whether for printing or publishing on the web, will be converted to the commonly used sRGB, and if you change the color space too often, the quality of your photos will decrease.

4. ORDER OF SETTING THE PARAMETERS

We start from "zeros" values - that is, we set all parameters to zero and the tone curve to a linear value. This will allow you to see an image that roughly matches the image in the RAW file. In this case, the image will be faded and half gray - this is normal. At this point the white balance can be set either shot (it often becomes normal to start working), or roughly by eye (if you can immediately see that the color has been changed too much) shown in Fig.2.

- Set the white and black point using the exposures and blacks.
- If necessary, use small overexposures to recover and lighten shadows and fill light.
- If you want to get a finished or more or less finished photo after the RAW converter, set the contrast and brightness. I recommend doing this with the Curves tool whenever possible, as it's more flexible than parameters. Brightness and contrast, although they can be used together.

- Setting the overall white balance using the parameters Temperature and Hue.
- Vibrance and Saturation to reduce or increase the saturation of the photo, if necessary.
- If necessary, you can use other additional tools - adjusting subtle color nuances with HSL grayscale color balance, combating chromatic aberration and vignetting in the Lens Correction tab, cropping, aligning the horizon, checking camera profiles in the Camera Calibration tab, etc.

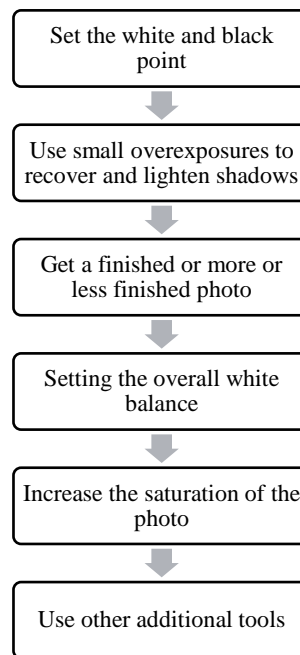


Fig.2. Color balancing technique

Now let's try to create some methods for setting parameters in RAW converter. The truth is, generally speaking, it really depends on whether you're trying to get the final result in the converter or getting the best working material for subsequent processing in Photoshop. At the same time, some general logic can be suggested. It is important to understand that the perception of color depends on its brightness.

In addition, the composite RGB curve and other brightness-contrast parameters affect the color characteristics of the image. Therefore, it would be logical to first set the cut points, brightness, contrast, then color balance and other color settings (if necessary). This does not mean that you cannot go back to some steps and make changes in the process, however, I recommend following the sequence of actions:

5. RESULTS AND DISCUSSION

The proposed color scheme deep learning model (CSDLM) was compared with the existing Deaf and Dumb Gesture Recognition System (DDGRS), Piston Surface Defect Recognition Method (PSDRM), Real-time medical image denoising (RTMID) and A remote sensing image processing method (RSIPM)

5.1 CAMERA RAW DATABASE

Saves settings to a Camera Raw database file located in Documents and Settings Preferences. This database is indexed by file content, allowing you to keep the source snapshot’s image settings even if the image file is moved or renamed. This shows in the following Table.1.

Table.1. Comparison of Camera Raw Database

Images	DDGRS	PSDRM	RTMID	RSIPM	CSDLM
100	69.28	83.05	81.55	85.40	89.97
200	70.77	85.02	83.97	87.60	91.96
300	71.57	86.15	84.38	88.40	93.16
400	73.90	87.36	85.98	89.07	93.64
500	74.91	87.73	88.30	90.50	95.07
600	75.55	89.26	89.55	91.59	95.23
700	76.21	89.76	92.28	92.07	96.00

5.2 SNAPSHOT VIA XMP FILES

Allows you to save settings to a separate file with the same base name and .xmp extension in the same folder as the file is saved. This security option can be used for long-term archiving of source files with relevant parameters and for sharing source snapshot files with relevant parameters across multi-user workflows. The same XMP subfiles can store IPTC (International Press Telecommunications Council) data or other metadata associated with the source snapshot image file. This shows in the following table 2

Table.2. Comparison of snapshot via xml file

Images	DDGRS	PSDRM	RTMID	RSIPM	CSDLM
100	59.28	73.05	71.55	75.40	89.97
200	60.77	75.02	73.97	77.60	91.96
300	61.57	76.15	74.38	78.40	93.16
400	63.90	77.36	75.98	79.07	93.64
500	64.91	77.73	78.30	80.50	95.07
600	65.55	79.26	79.55	81.59	95.23
700	66.21	79.76	82.28	82.07	97.00

Be sure to copy files to your hard drive before opening them on read-only CD or DVD media. The Camera Raw plug-in cannot write an XMP file to read-only media, and instead writes settings to a Camera Raw database file

5.3 IMAGE CONCENTRATION

In this group of parameters, Clarity is, in fact, a more complex analogue of the HiRaloAm special effect (lowness of the Hi radius with respect to unsharp mask parameters). Vibrance and Saturate work like the corresponding tools in Adobe Photoshop. All other tools of RAW Converter are more “add-ons” than listed.

However, of course, they are intended to make life easier for photographers. You should be aware that these are additional, sometimes severely limited, features that can be implemented in

Adobe Photoshop (and, as a rule, at better quality). This shows in the Table.3

Table.3. Comparison of Image concentration

Images	DDGRS	PSDRM	RTMID	RSIPM	CSDLM
100	73.32	84.24	76.07	83.98	99.90
200	72.82	84.24	74.98	83.72	99.79
300	72.07	83.41	73.84	83.15	99.73
400	72.07	84.14	74.20	84.29	99.68
500	73.12	85.25	75.73	85.31	99.64
600	73.40	85.65	76.37	85.55	99.61
700	72.68	85.08	75.79	84.90	99.59

5.4 IMAGE CURVES

Curves are available in most RAW converters. It’s a powerful tool to help you decide what your future photo will look like. Whether or not to use it in a RAW converter depends on whether you want to get the final result after conversion or a template for further work in a graphics editor. Some of the brightness-variation operations described above can be performed using a tonal curve, and the redistribution of brightness can be controlled more flexibly. This shows in the Table.4.

Table.4. Comparison of Image curves

Images	DDGRS	PSDRM	RTMID	RSIPM	CSDLM
100	81.61	75.71	80.58	83.03	99.90
200	83.27	81.57	82.74	89.00	99.81
300	83.72	80.43	84.45	90.49	99.73
400	79.50	81.57	87.31	93.73	99.68
500	78.64	82.45	88.88	93.01	99.64
600	78.80	83.65	90.52	92.88	99.61
700	79.54	85.30	92.59	94.15	99.66

For example, the contrast parameter looks like this curve shape. And in the case of working directly with the curve, it can be set more precisely, taking into account the individual characteristics of each particular photo.

5.5 VARIATION OF CONTRAST

The contrast parameter simultaneously redistributes the brightness in the penumbra and three-quarters of the highlights, without changing the brightness of the midtones. With positive values, the penumbra becomes darker, and three-quarters of the light is lighter. Negative penumbra glows, darkening three-quarters of the light. Increasing the contrast too much can lead to clipping of information in highlights and shadows. This shows in the Table.5.

Table.5. Comparison of contrast variation

Images	DDGRS	PSDRM	RTMID	RSIPM	CSDLM
100	67.48	76.94	85.66	80.61	98.98
200	65.81	75.81	82.73	79.35	96.51

300	63.86	75.46	81.19	77.46	95.71
400	61.87	73.51	79.16	76.26	94.51
500	59.29	72.74	78.26	74.70	93.87
600	57.30	72.36	76.29	72.95	92.61
700	55.28	71.23	74.82	72.02	91.61

5.6 BRIGHTNESS MANAGEMENT

This parameter is responsible for the overall brightness of the image. Increasing/decreasing increases/decreases the brightness of all points of the final tonal range. Brightness increases/decreases out of proportion - most in midtones and least in light and dark tones. Even a significant change in brightness will result in practically no clipping of highlights or shadows. At high magnification, it can cause noise in the shadow areas of the image. This shows in the following table 6

Table.6. Comparison of brightness management

Images	DDGRS	PSDRM	RTMID	RSIPM	CSDLM
100	65.89	83.01	84.41	81.25	97.81
200	64.26	81.27	82.83	79.83	96.52
300	63.78	78.93	80.63	78.57	95.51
400	62.49	78.12	79.00	76.58	94.62
500	60.38	75.83	77.86	74.11	94.25
600	58.89	73.90	75.66	72.67	92.61
700	57.08	72.17	74.51	70.95	92.24

6. CONCLUSION

It can adjust the curve by using sliders (parametric curve) or by setting and moving control points. In the third tab, you can adjust the sharpness of the image, and also reduce color and monochromatic noise. It is necessary to increase the size to 100% to notice the changes in the image. Tab offers better opportunities for color management; adjustments are more accurate and contrastier than in photo. It can change the saturation, brightness, color scale of some colors. And, if you want, you can achieve a variety of wonderful effects, cross-processing effects. Here you can mix color elements in grayscale, i.e., convert the image to black and white. If the shooting was done in difficult lighting conditions, it will help to eliminate extraneous shadows in the shadows or highlights, and the color balance in the highlights and shadows is different. Here you can also achieve some effects. It eliminates chromatic aberration (the appearance of colored halos around bright objects) and the vignetting effect when shooting with flash. You can create your own camera profiles for different shooting conditions. It can select a created profile whose settings will be applied to the image

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