Comparison of two digital Enhancements of sub-quality Different light Bite-marks, overwriting, five fluids images of different light photography

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ABSTRACT

It has been evident that software can enhance the digital photographs. No, particular guideline or directions were published to enhance the ALI, UV and infrared image by Adobe CS3. Adobe CS3 was a software program utilized in this study for enhancement of ALI, UV and infrared images of bite marks, overwriting and five fluids by two methods. There were significantly enhancement of bite- marks, overwriting and fluids images and standard ways were proposed to enhancement of different light images. On comparison, digital enhanced photographs by method II were found good as compared to method 1. This software proved to be valuable tool for bite marks, overwriting, distinguished fluid examination and likely a good resource for enhancing different lights images.

Key words: Adobe phtoshop CS3, Different light photography, Images enhancement.

INTRODUCTION

Digital enhancement software was used to enhance bite-marks photographs. The enhancement technique improved the resolution of bite-mark images. Previously, this technique was used in fingerprinting images, such as bloody fingerprints on pillowcase [1]. Recently, it is used in forensic fields such as tire mark, shoe prints, pattern evidences, bite marks etc. It has been reported that computerized technique was used for production of life –sized bite mark comparison overlays [2]. The no interactive method of comparison using a digital image correction technique has been proposed [3]. It has been conducted a comparison of five common methods to records characteristics of teeth and to generate overlays and found that computer based method was superior and more accurate [4].Lucis programme has been proved to be enhanced the sub-quality image of bite-marks [5].Recently, guideline for digital comparison of bite marks with Adobe photoshops was proposed [6]. There was no research published on enhancement of ALI, UV, and IR bitemarks image with Adobe Photoshop CS3 in standardized way. Hence, this study was planned to digital enhancement of different light sub-quality bite-marks, overwriting, different fluid images with Adobe CS3.

MATERIALS AND METHODS

One volunteer with bite marks on dorsal surface of hand, overwriting with different ink marker on cloth, five fluids such as milk, saliva, urine, semen, water on green clothes were selected .The bite marks hand was placed properly in Dental stone no-2 model which was fixed on the photographic stand. ABFO-2 ruler was placed at the same level as the

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tattoo marks. -The camera were mounted on stand at 90° angle to the surface of the hand .On white clothe piece written parameters of photography were used to integrated in the photographs. Light source such as battery was mounted on wooden box at angle of 45° from object surface at a certain distance depend upon type of photography except the Infrared photography , the light source were mounted on photographic camera itself i.e. at 90° angle from the object surface. Lens was mark for different types of photographies, to put it sharp.

For normal light photography, the Nikon D 50 camera (Nikon Corporation, Tokyo {Japan}) mounted with Quartz lens (UV lens, 105 mm, F/40, Universe Kogaku America, NY {U.S.A}) by 12 F adopter was used .The Normal photographs were taken under normal day light. For other types of photography, such as the Nikon D 200 camera (Nikon Corporation, Tokyo { Japan}) mounted with Quartz lens (UV lens ,105 mm, F/40, Universe Kogaku America, NY{U.S.A}) by 12 F adopter were used. Specially for ALI photography, 15 A yellow filter (Tiffen, Hauppauge,N.Y. {U.S.A}) were mounted over the lens with filter holder (Cokin Series A) connecting by adaptor ring. ALI sources 450nm (Polilight –flare PLUS,Rofin Australia Pty Ltd {Australia}) were used . UV light photography, Wratten 18 A (Kodax, NY { U.S.A}) & BP-1 (LDP LL, NY {U.S.A}) mounted the Quartz lens UV1054B (Universe Kogaku America, NY {U.S.A}) with Cokin Series A filter holder (Cokin, Maidenhead {U.K}) mounted over the lens to filter holder by adaptor ring (Cokin series A 49 with 0.75mm thread). Polilight with 5° filter –flare PLUS, {Rofin Australia Pty Ltd, Australia) were used as light source. Barrier filter googles and dark room were used in all types of photography except normal light photography. Specifically for IR light photography, Kodax Wratten 87 B filter (Kodax, NY { U.S.A}) mounted over lens with Cokin Series A filter holder (Cokin ,Maidenhead {U.K}) and Normal flash light with diffuser used as the source of a infrared light. One parameters of photography were changed while other parameters kept constant. Parameters such as ISO (100-1600), exposure time (3 -1/60 sec),diaphragm (f/4-f/22), distance between camera to object surface (90-102cm), distance between light source (11-13cm in ALI,UV and 90- 106 cm in IR) and object surface and angle between surface of object to light source (30-90°) were changed . The photograph was imported into Adobe photoshop CS3 and modified with standardized ways.

TECHNIQUE

Method-1) Imported the image into Adobe photoshop CS3 ––––– go to image––––––– calculations–––change the channel 1&11 and opacity according to different light photography and other parameters of photography–– select––––– copy––––––– New layer––––––– paste––– save

Method –II) Imported the image into Adobe photoshop CS3 ––––– go to image––––––Image adjustments-change in hue and brightness and contrast to see optimum

The comparison of two methods digital enhanced modified photographs were performed by ten experts.

RESULTS

For method I, The photographs were imported in Adobe Photoshop CS3. The image was clicked and calculations appeared & showed to channel 1 and 2.For infrared, channel 1 was Red &channel 11 was green and blending was on Hard light (Fig- 1 (A), 1 (B)) while ALI and UV channel I & channel 11 were Red and blending was on Hard light. For normal light, both channels were on Red and blending was not changed. If ISO and overexposed of ALI and UV light photographs were high than, channel 11 was green and other steps remained same. If photographs were dark than, decreased the opacity and other steps remained same. If normal light photograph was not sharp, than channel 1 &11 remain red and blending was on normal.

For method 11, change in hue and brightness and contrast to make the image good quality were not fixed. On comparison, Digital enhanced photographs by method II were found good as compared to method[1].

DISCUSSION

This technique has advantages that make it an acceptable digital enhancement technique which may be used in forensic photography. It is very easy to use and no need any training. The evidences can be determined from overexposed or underexposed, blurred images, without proper parameters of camera of different light photography. The images are easy to duplicate and record, therefore, the actual image enhancement process can be repeated in the courtroom or for opposite party. Some bite marks photographs which were taken by non expert photographer, from abusive children photographs submitted to forensic odontologist for examination do not reveal sufficient characteristics or points of identification for a conclusive determination. In many cases there was sufficient detail in original bite-marks for comparison, however, the bite-mark was not properly photographed due to improper parameters of camera, movements of abusive children, no expert in photographer. Digital imaging gives the forensic odontologist an important tool that may improve the percentage of photographs that are of suitable quality for finding the evidences.

This software proved to be valuable tool for bite marks, overwriting, distinguished fluid examination and likely a good resource for enhancing different lights images by two methods . On comparison, Digital enhanced photographs by method II were found good as compared to method 1.Also, method II have standardized guideline , so,it is easy to reproducible as compared to method 1. The entire enhancement process took approximately 5-10 minutes as compared one hour in Lucis programme [5].The image colour became black after enhancing the image in Adobe photoshop CS3 which were remained coloured in Lucis programme [5].Hence, this technique may not be useful age estimation of bruise marks. Further, study will required on enhancing image quality of different light sources by Adobe photoshop CS3 and Lucis programme.

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