# A STUDY ON APPLICATION OF IMAGE DATABASE PROCESSING IN FORENSIC SCIENCE

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## ABSTRACT

The present study aims to know the application of image database processing in forensic science. Since the apparatus can have a wide range of points to the surface, and for every edge an alternate striation check is framed, the inspector should use wax or some material which is lighter than the device to create test striation marks with different corners of device. In this venture the condition of image database (IDB) systems which have been created in the previous couple of years is audited. Scientist bring up the basic issues in IDB outline as opposed to arrange the current or proposed systems into an un established system. In the wake of giving a general outline, the ways to deal with IDB and the components of IDB systems are talked about. At long last, a few agent IDB systems are introduced.

**Keywords:** Images, Database, Processing, Forensic science.

## INTRODUCTION

In our examination depicted in this section, we concentrate on striation marks, since they are most tedious for an inspector making correlations. Since the apparatus can have a wide range of points to the surface, and for every edge an alternate striation check is framed, the inspector should use wax or some material which is lighter than the device to create test striation marks with different corners of device. On account of a screwdriver, the analyst will make no less than three test striation stamps in wax under various plots for every side of the screwdriver (Figure 4-3). These test marks must be contrasted and the striation marks. By throwing Silmark, a dim silicon material on the striation mark a standard state of the surface is obtained. To examine the device a full scale scope correlation is important and the other examination is conceivable of the cast of place of the crime and the cast of test stamp.

Striation imprints are formed when a screwdriver is scratched in a material which is milder than the device. In this scenarios if there is damage in upper part of the screw driver, these can distinguish attributes. Contingent upon these harms and crushing imprints, and the nature of the apparatus stamp itself, a qualified inspector can presume that the cutting edge of the screwdriver has brought about the striation stamp under scrutiny.

A multifaceted nature with device stamp exploration is that the device check seen at the scene of crime may be fractional. For this situation, the striation stamp ought to be coordinated to the test striation check by moving the device stamp. While using the screw driver, if it is damaged then there is contrast in its striation imprints. Similarly the striation marks can be zoomed in light in which the instrument check has been performed At long last, the point as appeared in Figure 4-4 may likewise give a slope in the device stamp.

Striation imprints are exceptionally tedious for the inspector to contrast and the database physically. The test mark and the striation mark which is found in the place of crime can be compared with one another. There is a minimum of 6 striation marks found in a screw driver , when there is one striation check found at the place of crime will show a minimum of 12 examination, as (the striation stamp can likewise be topsy turvy). On the off chance that a database contains fifty striation marks from the scene of crime, the analyst makes no less than six hundred examinations. This will take no less than five hours (30 seconds for each correlation) for the inspector without resting.

Keeping in mind the end goal to decrease the examination's count, a correlation calculation for striation marks conducted. In this study, two strategies to obtain information are used; i.e 2D-securing by side light and 3D-procurement by coded light approach.

**Figure 4-2: Leica Comparison Macroscope UFM4**

## REVIEW OF LITERATURE

**Minakshi Kumar (2009)** concentrated on the fundamental mechanical parts of Digital Image Processing with unique reference to satellite image processing. Essentially, all satellite image preparing operations can be assembled into three classifications: Image Rectification and Restoration, Enhancement and Information Extraction. The previous manages beginning processing of crude image information to redress for geometric contortion, to adjust the information radio metrically and to wipe out commotion display in the information. The improvement methods are connected to image information keeping in mind the end goal to viably show the information for resulting visual translation. It includes systems for expanding the visual refinement between elements in a scene. The goal of the data extraction operations is to supplant visual examination of the image information with quantitative strategies for robotizing the distinguishing proof of components in a scene. This includes the examination of multispectral image information and the utilization of measurably based choice guidelines for deciding the land cover personality of every pixel in a image. The purpose of characterization process is to arrange all pixels in an advanced image into one of a few land cover classes or subjects. This characterized information might be utilized to deliver topical maps of the land cover display in a image.

**Ashraf A. Aly (2011)** assessing the past work is a critical piece of creating division strategies for the image examination systems. The point of this article is to give a survey of advanced image division systems. The issues of advanced image division speak to incredible difficulties for PC vision. The extensive variety of the issues of PC vision may

make great utilization of image division. This paper thinks about and assesses the diverse strategies for division methods. We talk about the fundamental propensity of every calculation with their applications, focal points and hindrances. This study is helpful for deciding the proper utilization of the image division techniques and for enhancing their precision and execution furthermore for the primary target, which outlining new calculations.

**Jai Prakash (2014)** image processing is a type of flag preparing in which the info is a image, for instance, a photo or video and as yield we get either a image or an arrangement of qualities comparing to the image. Image preparing can likewise be characterized as a method for transformation between the human visual system and computerized imaging gadgets. A legitimate investigation of run of the mill Image preparing systems is finished. All parts of Image preparing, their application and interrelations between them are altogether analyzed i.e., input gadgets, yield gadgets and programming, its application, the ebb and flow inquire about going on Image Processing and its need later on.

## Forensic Examination

A gun which is used can be easily found as the instruments present in the cartridge case create impressions while the gun is shot.. The abnormalities in the gun barrel show the striation markts on projectiles. Usually cartridge cases are taken as the valid proof for the usage of the gun as the slug is usually disfigured. Also the analyst can find the model and make of the gun used by testing its class qualities. The sustaining, **extraction** and launch systems of the gun will likewise show trademark marks.

The gun is fired number of times for the crime test. The cartridge case imprints and the projectile are tested in the Crime Research Centres and both are contrasted against one another. A certified inspector can find that a particular shot or cartridge case has been used by the respective gun or not.

## Shoe Investigation by Forensic Department

➢ The shoe imprints taken from the place of crime used to undergo investigation by Forensic department.

➢ If there is some person who has similar shoe exterior, then it ought to be contrasted and the shoe stamp and a criminological distinguishing proof (contingent upon the attributes) is conceivable.

➢ On the off chance that the shoe check is two-dimensional, test prints must be made of the shoe of the suspect. In the event that they are three-dimensional, the shoe can be contrasted with the cast straight forwardly.

➢ In the first place the different shapes (triangles, rectangles and so forth.) of the shoe profile must be looked at and measured. In the event that the area and the sizes of the profiles are roughly equivalent, the criminological researcher can verify that shoes with comparative shoe profiles have been utilized.

## Result and Discussion

This research has used to create a system to store the hardware imprints and its text descriptors. For programmed coordinating of striation stamp another calculation, the versatile zoom-calculation, has been produced for making the mark of the striation check and additionally coordinating too. With the versatile zoom calculation it is conceivable to choose a mark of a territory of a striation check, regardless of the possibility that there are little contortions in the apparatus stamp or if the check of the striation is not accurately correct. The pilot test set with 6 screw drivers, striations for test are performed. The coordinating calculation recovered the applicable striation denote that were made with similar screwdrivers. Results of calculations of techniques which use the coded and side light have been analyzed. From this we could see that similarity check for coded light methods are fairly better.

For the coordinating of hardware denote a few strategies have been portrayed in writing 52 53 54 55 that did not consider neighborhood varieties in striation marks. Business systems exist available for programmed apparatus stamp examination 56 and IBIS57 for projectiles. The system for slugs will extricate a mark of the striation check and look at these.

For shots it is prescribed to utilize pre-resolution of projectiles with a similar structure, since generally contrasts in the striation imprints may come about contingent upon contrasts in hardness of the material. One favorable position with projectiles contrasted with marks by screwdrivers can be regenerated often , as the slug can just leave the gun in one heading.

Previously, we have inspected if the yield created by a human inspector could be utilized as a part of a neural system. However, for the cases that were not in the database is not working. The prepared system just worked effectively for the information set. In view of exploration portrayed in it, creates the impression to utilize 3D data

striation check is helpful contrasted with the images of 2D side light on the grounds that the profundity data show the technique less vulnerable to the impact of surface lighting. Further studies shall, try zoom technique on bigger databases of striation imprints. Contrasting striation marks and the present set-up of the OMECA gear is not suggested on the grounds that the range of examining is constrained to 6 mm. The gear ought to be altered before proceeding with huge scale tests.

An alternate approach that may lessen the season of tests are recording the state of screw drivers, and afterward contrasting the 3D representation of its edges and the real striation marks. There is no need to make more tests, as striation check status can be known from the cutting edge state. So, the time required to do correlation is less with the database (if a proper method for recording the database in digital method is used). Figure 3-15 shows the screw drivers edge used for instrument check. By this method, a quick pre-resolution is conceivable in light of a smoothed bend with a minimized mark of the shape.

The pragmatic utilization of these databases is still restricted. In The Country, there exist a few databases of hardware imprints; in any case, programmed examination has not been actualized. Some steps have been taken towards recovery of striation imprints. The aftereffects of these calculations will be better if adequate time is given for research.

**Conclusions**

The present study concluded that such database retrieval systems were often developed by government forensic laboratories for their own use. Automatic classification and comparison are possible for good-quality shoe marks. In practice, the problem with shoe marks is that they are often of poor quality, and for that reason automatic classification is not feasible. Shoe marks are valuable in forensic science, although they are time-consuming for collection and comparison. In regions with many violent crimes, we see that this kind of evidence is less common. For a criminal, shoe marks in blood are important parts of evidence that are sometimes skipped due to time limitations. For this reason the use of shoe mark, databases should be promoted, since more crimes can be solved. Statistics with shoe mark databases and shoes that are on sale are possible; it is very difficult, however, to draw strong conclusions from these databases if the information of the distribution channels is not known. If a certain sole pattern seems to be unique and not seen before, it could be that the shoe is not in the database yet. In

addition, in some cases shoe profiles are copied by other manufacturers, and this could result in wrong conclusions. If higher-resolution images are used, it is possible to store the identifying characteristics. If large databases of these characteristics exist, it is theoretically possible to draw conclusions from the shapes of damages and wear.

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