

Application of Image Processing Analysis by Histogram and Cantor Methods with Origin Pro 9.0 Program

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Abstract: *The main objective of this study was use origin pro 9.0 program to analysis image processing by (histogram and cantor) methods in order to extract information content needed to matching the image. Recently available high-resolution satellite imagery attracted mapping communities to shift their focus from aerial photographs to satellite imagery. Obviously, this new source of information requires different methods to extract needed information for map revision. The purpose of this paper, therefore, is to examine reliability analysis of fingernail image for the one person that capture, monitored, and photographed for 90 days. Data used include standard deviation for the first day matching with 8 day by rat 97.81 %, and however, for the histogram of 90 days in fig by matching by rat 22.54% , this mention was respectively the support our hypothesis which said that the fingernail is transient biometric trait that is change during three months.*

Keywords: *Origin pro 9.0, Image Analysis Processing, Histogram, Cantor, Fingernail, biometric.*

1. Introduction

Modern digital technology has made it possible to manipulate multi-dimensional signals with systems that range from simple digital circuits to advanced parallel computers. The goal of this manipulation can be divided into three categories: Image Processing image in \rightarrow image out, Image Analysis image in \rightarrow measurements out, Image Understanding image in \rightarrow high-level description out. We will focus on the fundamental concepts of image processing. Space does not permit us to make more than a few introductory remarks about image analysis. Further, we will restrict ourselves to two-dimensional (2D) image processing although most of the concepts and techniques that are to be described can be extended easily to three or more dimensions. Readers interested in either detail than presented here or in other aspects of image processing are referred to [1-10]. The Origin project file (.OPJ) combines data, notes, graphs, and analysis results in one flexibly structured document. All components of an Origin project can be interactively accessed when the project file is opened in Origin. Origin project files can also contain attachments of internally saved Microsoft Excel files or links to external Excel files, Lab Talk script and Origin C code files, and third-party files. Combined with the ability to recalculate results on a change of input data or a change of analysis parameter settings, the Origin project can function as an Analysis Template for performing repeat analysis on multiple sets of similar data .The dock able Project Explorer window in the Origin Interface helps you organize and interact with various components of an Origin project. Components such as workbooks, matrix books, graph pages, and notes windows can be organized in a user-defined folder structure with the flexibility of adding subfolders to any desired level. With a good understanding of the features of Origins Project Explorer, combined with the features of workbooks and matrix books, you can efficiently organize all your data, graphs, notes, and analysis results in a single project file. Origin provides a large number of tools useful in processing, analysis of raster images .The routines underlying Origin's entire new image processing, and analysis tools have been implemented using X-Functions. This provides several advantages to the user. First, analysis dialog box settings are stored in the X-Function and are remembered when the tool is reused. Secondly, a menu item is dynamically added to the menu each time an X-Function-based tool is used, giving you quick menu access to your tool along with your saved dialog box options. Thirdly, since dialog box options are saved in the X-Function itself, you can opt to run your custom routine at the command line or from script. This paper covers basic information on Origin's image processing and analysis tools. For more detailed information on each of these routines, please refer to the Image section of the X-Function Reference chapter of this Help file. Topics in this Help file are classified by application and are named with the X-Function name. Histogram: To detect whether your image has been exposed properly or not, and to decide which adjustment will work best, it is useful to make a histogram graph. An RGB histogram reflects the number of the pixel at each level in your image. In Origin 9, the image Histogram function creates an array that charts how many times each intensity level occurs in a bitmap. To use this function, select Analysis: Histogram from the Origin menu. For more specific information on this function, see documentation provided for the X-Function image Histogram in the Origin X-Function reference file [11, 12]. Image acquisition procedure transforms the visual image of a physical object and its intrinsic characteristics into a set of numeric data that can be processed and analyzed by the processing unit of the system. The acquisition consists of five steps: Illumination, Image formation and focusing, Image detection or sensing, Formatting camera analog electric signal and Digitalization or transformation of analog electric signal into a set of numeric data suitable for processing in digital computer. The block diagram of the image acquisition system is shown in Fig.1. Illumination is a key parameter affecting the quality of digital

image formation. The object whose image has to be analyzed has to be illuminated by its own source of illumination without influence of environmental illumination, which mostly manifests as noise into the image data. When using with macro zoom lenses or light microscopes a stable source of cold halogen light is essential. Sometimes for some digital image applications in industry automation special methods of lighting are used, for example backlighting which enhances the object boundaries, strobe lighting that eliminates influence of ambient light, or structure lighting with a special pattern or grid used to facilitate object recognition. In this paper analysis fingernail image for one person that capture, monitored, and photographed for 90 days, and processing by (histogram and cantor and calculated stander deviation)

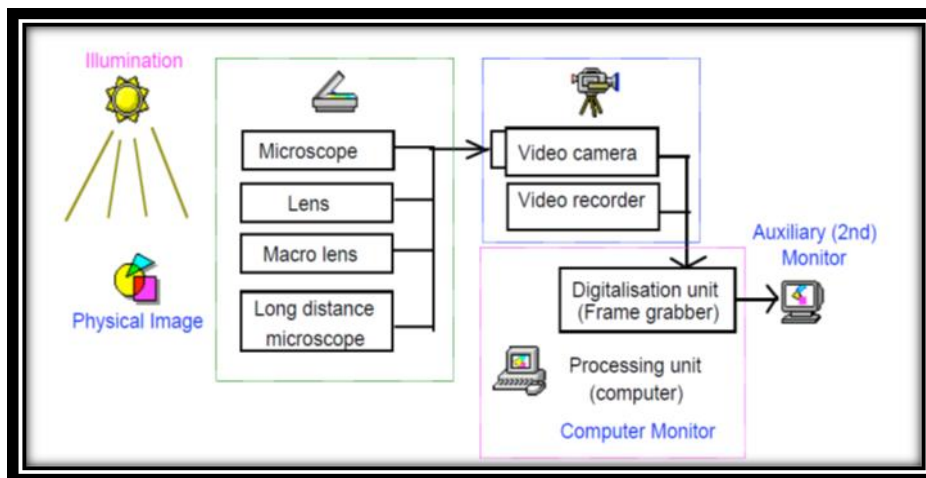


Fig.2. Block Diagram of the image acquisition system

2. Experimental

The object of this study including the results of fingernail image for one person that capture, monitored, and photographed for 90 days .And used Organ software programmer to analysis samples by (histogram and cantor) after that calculated stander deviation of the fingernail image analysis processing. The object was chosen from AL -Neelain University. The images were next introduced to the origin lab program. And, then finally was analyzed with histogram according to the area under the curve and the shape of the curve and when to use the cantor method according to the cod color of image to chive that fine accuracy details of clear image and deviation of image analysis with other.

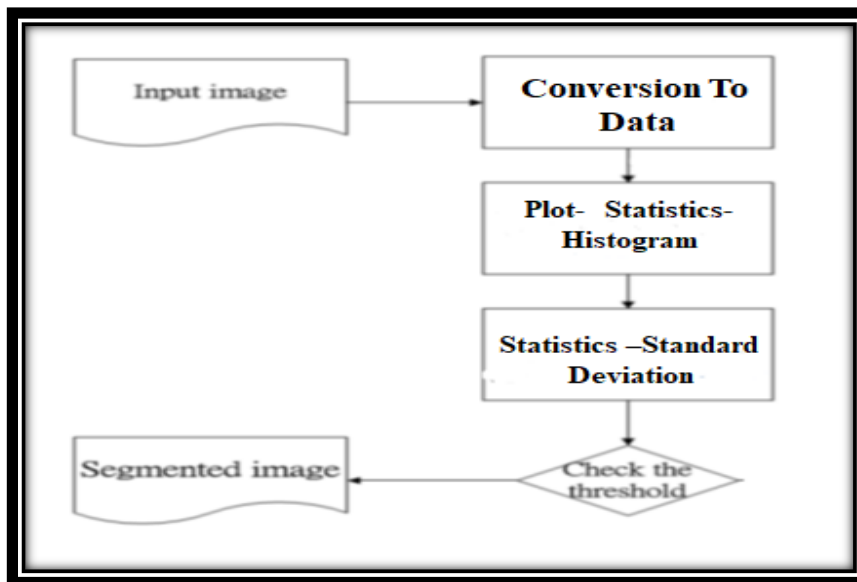


Fig (2) the steps process for creation of a digital image

3. Results

The imaged of fingernail image for the one person that capture, monitored, and photographed for 90 days and analysis by software programmer organ 9.0 to can be shown at results blow.

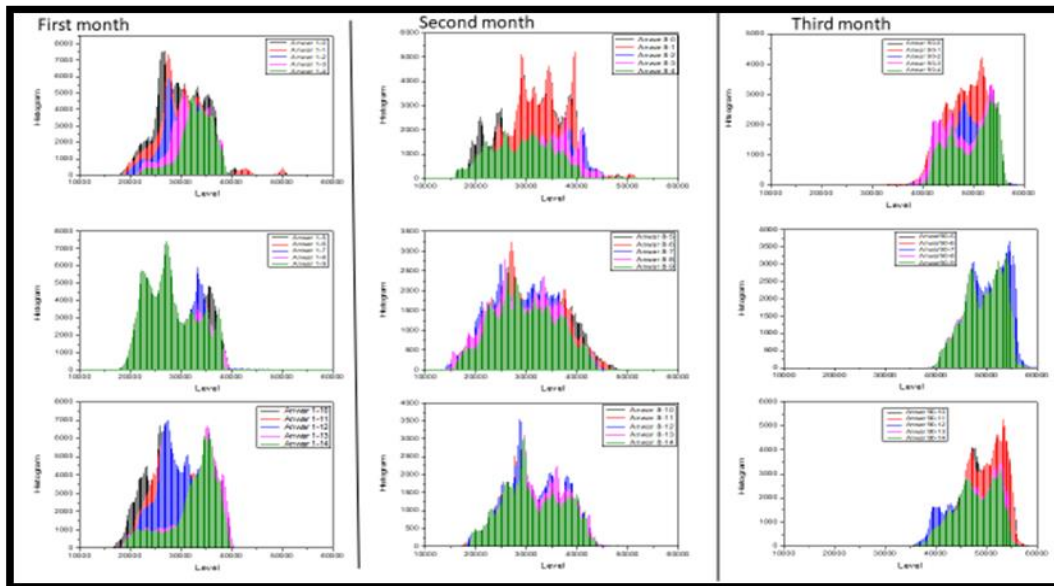


Figure (3) Histogram possessing Image for the person fingernail image that capture, monitored, and photographed for 90 days

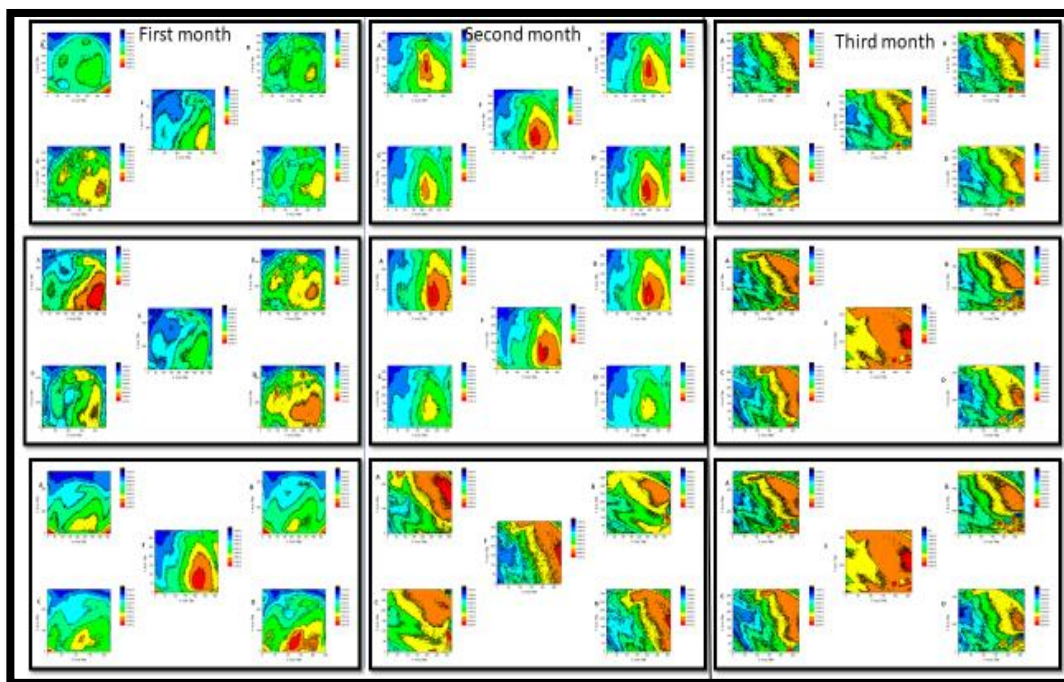


Fig (4) Cantor possessing Image for the person fingernail image that capture, monitored, and photographed for 90 days

Table (1) standard deviation, (s_a) of image processing system for the person fingernail image that capture, monitored, and photographed for 90 days

Index of capture Image before 2 dyes	First month	Second month	Third month
0	18.245	46.843	78.843
1	18.244	47.949	78.949
2	18.243	47.687	79.487
3	18.242	56.505	79.505
4	18.241	57.949	79.549
5	26.843	57.687	79.687
6	27.949	68.843	79.843
7	27.687	68.247	79.847
8	36.505	71.695	79.895
9	37.949	72.119	79.999
10	37.687	73.843	80.043
11	36.843	74.949	80.049
12	38.247	75.687	80.187
13	41.695	76.505	80.505
14	42.119	77.949	80.949

4. Discussion the Histogram and Cantor Results sample

The samples fingernail image that capture, monitored, and photographed for 90 days by analyses methods (Histogram and Cantor), all results processing by using Origin program in fig(3) by histogram and fig(4) by cantor. The histogram results showing in fig (3) in this method analyses show that images (A 1-0) and sample (C 1-7) are the same, because the area under the curve, and shape of curve was so nearing the sharpening, as the same (high accuracy). However, for the histogram of the image at 90 days images (D 90-14) the area under the curve was smaller, and shape of curve not sharpening, than images (A 1-0) and images (C 1-7), for all above details the result was respectively the study, this result were agree for the cantor method. Moreover, for accuracy of this results calculated the standard deviation. The area under the curve and the shape of the curve to know the fine accuracy and details of clear image, and calculated the Standard deviation (SD) of images. The unbiased estimate of the standard deviation, s_a , of the brightness's within a region (\mathcal{R}) with Λ pixels is called the sample standard deviation and is given by

$$S_a = \sqrt{\frac{1}{\Lambda - 1} \sum_{m,n \in \mathcal{R}} (a[m,n] - m_a)^2} = \sqrt{\frac{\sum_{m,n \in \mathcal{R}} a^2[m,n] - \Lambda m_a^2}{\Lambda - 1}}$$

Using the histogram formulation gives:

$$S_a = \sqrt{\frac{\sum_a a^2 \cdot h[a] - \Lambda m_a^2}{\Lambda - 1}}$$

The standard deviation, s_a , is an estimate of σ_a of the underlying brightness probability distribution. For all this information the discussion of the first person are. By the standard deviation show that images (A 0-1) at first day equal 18.245 and images (C 1-7) at 8 day equal 18.241 by matching 97.81 %,but for the histogram of images (D 90-15) image at 90 days equal 80.949 by matching 22.54%, this are smaller than images (A 0-1) and images (D 90-14), for all above mention the result was respectively the support our hypothesis which said that the fingernail is transient biometric trait that is change during three months.

5. Conclusions

It can be concluded that a set of 45 fingernail images were taken by CCD camera for the 90 days. All images captured were analyses by (Histogram and Cantor) methods, compared with conventional image by the area under the curve and the shape of the curve, and calculated the standard deviation. The matching images (A 0-1) at first day and images (C 1-7) at 8 day equal 97.81 %,but for images (D 90-15) image at 90 days the matching equal 22.54% , .

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