

Image Processing using Web 2.0

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Abstract

In imaging science, Image processing usually refers to digital image processing, but their may be possibility of optical and analog image processing. This paper is about general techniques that apply to all of them. The Image Processing using Web 2.0 is a web based application that provides user with processing of images with the social networking features such as sharing and messages sending option. Using this we can edit, resize, and process our images using different filters and user can apply different image related processes on it using tools provided in it. The java interface along with JavaScript user interface provides a good cross platform and security and also it is a best select to build a good client application of a strong image processing logic. Consider based on the above, the paper proposes a software architecture based on java, detailed description and analysis of image processing programming development methodology.

Keywords

Rich Site Summary (RSS), Extensible Markup Language (XML), Hyper Text Markup Language (HTML)

1.0 Introduction

A digital image may be defined as a two-dimensional function $f(x, y)$ where x and y are spatial (plane) co-ordinates, and the amplitude of f at any pair of coordinates (x, y) called the intensity or gray level of the image at that point. When x , y and the amplitude values of f are all finite, discrete quantities, we call the image a digital image.

We can describe the pattern by a function $f(x, y)$. For monochrome images, the value of the function at any pair of coordinates, x and y , is the intensity of the light detected at that point. In the case of color images $f(x, y)$ is a vector valued function. [1]



Coordinate System for an image

2.0 Digital Image Processing

Processing of digital images by means of digital computer refers to digital image processing. Digital images are composed of finite number of element of which has a particular location value. Picture elements, image elements, and pixels are used as elements used for digital image processing. Digital Image Processing is concerned with processing of an image. In simple words an image is a representation of a real scene, either in black and white or in color, and either in print form or in a digital form i.e., technically an image is a two-dimensional light intensity function. In other words it is a data intensity values arranged in a two dimensional form, the required property of an image can be extracted from processing an image.

2.1 Image Editing

2.1.1 Brightness and Contrast Brightness and contrast affects the overall tone of the photo. Changing the brightness will make an image lighter or darker while adjusting contrast makes the image more flat. Contrast is the difference in color that makes an object or its representation in an image or display distinguishable.

2.1.2 Sharpen Sharpening filters really only do one thing. They make edges appear more defined by darkening the darker pixels and brightening the brighter pixels. The main reason anyone applies a little extra sharpening to their images is to improve contrast.

2.1.3 Rotate The rotate clockwise command rotates your image around the center of the layer in clockwise direction; without any loss of pixel data. The Rotate Anticlockwise command rotates your image around the center in anticlockwise direction, with no loss of pixel data.

2.1.4 Blur In general, blur effects sample the area around a pixel and assign to the pixel a new value that is the average of the sampled values. Increased blurriness is the result of increasing the size of the sample, whether the size is expressed as a radius or a length.

2.1.5 Grayscale Grayscale digital image is an image in which the value of each pixel is a single sample, that is, it carries only intensity information. Images of this sort, also known as black-and-white, are composed exclusively of shades of gray, varying from black at the weakest intensity to white at the strongest. Grayscale images are distinct from one-bit bi-tonal black-and-white images, which in the context of computer imaging are images with only the two colors, black, and white also called bi-level or binary images. Grayscale images have many shades of gray in between.

2.1.6 Darken This Effect darkens the pixels of the images, making the light in the images dim. As you see in the Figure below, the focus is on the background instead of the subject because this effect will only be used to darken the background.

2.1.7 Invert This filter will invert the alpha channel of an image. There are no parameters to this filter. This filter will invert all the pixels in an image, converting it into its photographic negative. It's pretty much the simplest possible filter: To invert a pixel we, simply subtract each color component from 255. There are no parameters to this filter. The invert filter is also quite simple. It takes apart the red, green, and blue channels and then inverts them by subtracting them from 255. These inverted values are packed back into a pixel value and returned.

3.0 Concept of Web 2.0

3.1 Web 2.0

The term web 2.0 is used to refer to a new generation of websites that are supposed to let people collaborate and share information online in ways that was not possible before. With web 1.0, most websites consisted of static HTML pages. Later on, developers began to create web pages dynamically by retrieving information from a database and using a programming language to

build pages from this information on the fly. With web 2.0 websites are not only dynamic, but also highly interactive. A lot of the interactivity of web 2.0 websites is made possible by a new programming technique called AJAX (Asynchronous JavaScript and XML). AJAX makes it possible for the web browser to connect to the web server and download small amounts of information in the background. This method is used to download only the parts of a web page that changes as a result of user interaction. That way the entire page does not have to be reloaded each time a change is made, resulting in a more responsive website and a more interactive experience for the person visiting the website [8].

3.2 Web 2.0 Services

- Blogs
- Wikis
- Tagging and social bookmarking:
- Multimedia sharing
- Audio blogging and podcasting
- RSS and syndication [9]

4.0 Problem Definition

As we all know, Images and digital photographs are now very popular and are easily obtained through the internet and digital equipment. However, most commercial image processing software and websites are still too expensive for most users and highly resource-consuming and those which are available free doesn't include the option of sharing the images that means they do not provides us the option of cloud sharing of images. We are making a try with our project Image Processing using web 2.0 to recover the tedious task of processing image and sharing .The Image Processing using Web 2.0 is a website that provides user with processing of images with the social networking features such as sharing and messages sending option. Thus in this project we are implementing image processing using web 2.0 that is used as a network for information sharing. Using this we can edit, resize, and process our image using different filters. In addition to that the user can apply different image related processes on it using tools provided in it.

Being a web based application, Web ImgePro can be accessed from anywhere in the world at no cost or subscription expenses. This website can be

accessed from mobile devices also. Desktop application doesn't give freedom of accessing them from anywhere and on any device as this site gives, another problem with desktop applications is that they come with specific configuration requirements, but WebImgPro can be accessed from any multimedia device or computer. Also most of the application offering image Processing needs to be subscribed by paying large expenses, whereas WebImgPro needs only active internet connection under the name of expenses. WebImgPro is based on the Web 2.0 concept of Social Networking. There are many desktop and web-based applications that support Image Processing but none of them offers sharing photos, making groups and messaging. This application can be used by professional and amateur photographers to share their creativity with the world.

5.0 Working

5.1 Modules

- **User Registration Module:** This part contains registration procedures for user with details required for registration i.e. personal details for making the user authenticate.
- **Login Module:** This module contains the field's username and password for authentication. Thus the details are recorded with the help of this module and are saved into the database.
- **Home page:** This contains all the links that navigates to our whole websites including upload the image for enhancement, profile management, group management, file management, etc.
- **Profile Management:** The profile management keeps the account settings for user along with details that user has provided. It also keeps the function for updating those details according to user satisfaction.
- **Group Management:** This keeps the group related settings for user. The user can manage the people belong to in his group also he can add new persons in his group. The group in which the images of user can be shared if he wants to share them.
- **File Management:** This part contains file upload as well as the file download section. The previous images uploaded can also be maintained through it. Folders along with images can be renamed also in this module.

6.0 Advantages

- Provides online image processing along with sharing function too and comments feature like social networking also.
- As it is web application so it can be accessed from anywhere.
- File management of images so it can acts like cloud for files of a particular user.
- By using online image processing one can save his money by not having to purchase the costly software for image editing.
- Because your software resides on the Web, you have immediate access to the latest versions when your online processing service upgrades its software. You no longer have to install security patches or download upgrades to access newer software features.
- Mac, PC and Linux users can access the same programs because web-based online processing applications run inside a web browser. This makes them platform independent and eliminates the need for businesses to create and maintain applications that support multiple operating systems.
- Being web application support and maintenance are easier.

7.0 Disadvantages

- If the network connectivity is down so the whole application is down and network connectivity is essential all the time.
- Does not give the smoother experience like desktop application.
- As it is network oriented application so the network expert is needed to fix things if any problem occurs.

8.0 Application

1. This website can be used by people whom want to share the image.
2. Useful for group of Photographers whom wants to share the image with processing too.

- It can be used by Doctors too for discussing the X-Ray of any patient or any accidental case image.

9.0 Result

Figure 1, 2 and 3 shown below are the Data flow diagram of the web application. Figure 1 contains the modules information of the website. Figure 2 shows the different activities user can perform while Figure 3 has the various filters that are going to be presented under image processing section.

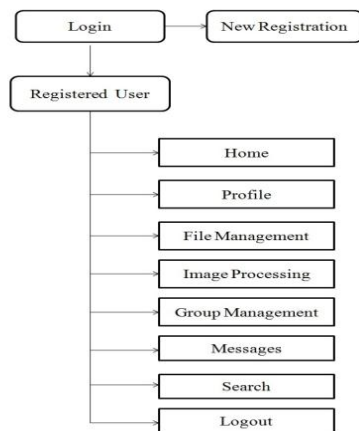


Fig.1- Data Flow Diagram

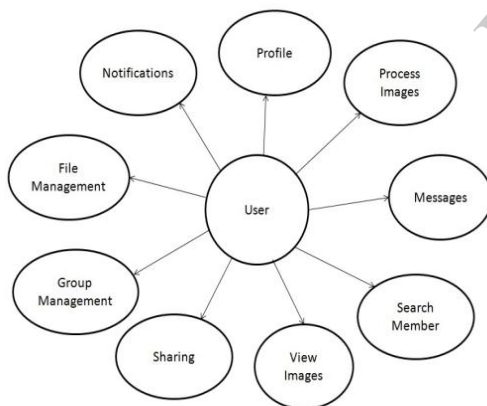


Fig. 2- Fields under User Module

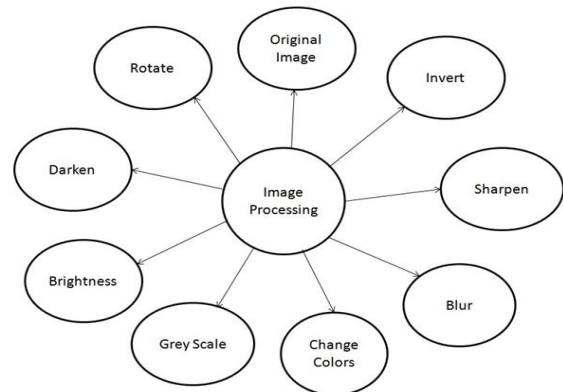


Fig. 3- Fields under Image Processing Module

10.0 Conclusion

Our objective is to provide image processing along with the features of social networking. As social networking is going to be everywhere over internet in future, so this project will lead us to that next step for our future advancement. The future of web based image processing is going to be very vast as the advances in technology have created tremendous opportunities for Image Processing. There is no doubt that the trend will continue into the future. From the above discussion we can conclude that this field has relatively more advantages than disadvantages and hence image processing is very useful in varied branches along with new technologies.

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