Nadia Arif
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Prof. Tracie Schaeffer

Bitmap Images vs. Vector Images

The two main essential types of graphic files in the digital world are bitmapped images and vector images. The formats for both of these vary and there are other components within them that make them complete. Bitmap images are made up of individual pixels that show spatial samples of an image or a scene. Vector images are made up of lines, points, shapes and curves, which are image elements of mathematical descriptions. Bitmap and vector images both have advantages and disadvantages.

Bitmapped images are composed of pixels that are tiny dots in which images are stored as a series. The term pixel is an abbreviation of the words picture and element. An Individual pixel is a very small square of assigned color, which is later, put together in a pattern to form an image that you see on a computer screen. An individual pixel can be seen when a bitmap image is zoomed in. In order to edit a bitmap image one can alter or erase the color of each pixels through the use of a program called Adobe Photoshop. Bitmap images are a standard format for Internet graphics, backgrounds, scanners, Windows icons, and pictures taken by digital cameras. Some of the file that are extensions of pixel-based files are BMP, JPEG, PNG, JPG, GIF, PSD, TIFF, these are some of the files we see used on the computers.

On the other hand vector images use mathematical formulas in order to draw lines and curves which are put together creating images that are formed by geometric objects like circles and polygons. In order to edit a vector image one can by control and alter the lines and curves that create the image through the use of a program called Adobe Illustrator. Some of the file that are extensions of vector images files are JPG, EPS, WMF, SWF, AI, FLA, these are some of the vector files we see used in the digital world.

There are comparisons between bitmap and vector images. For example, Bitmap image shows a realistic view of an image compared with vector. This is because bitmap image are made up of small pixels and it is the most perfect format for photorealism and for images that have high amounts of details. An individual pixel can depict any one of the 16,000 or more different colors that most of the computer monitors can display. Bitmap image are also able to copy the exact color variations of a photograph. On the other hand vector images does not have the perfect format for photorealism because it is made up of large objects, therefore it cannot attain the fine

details needed for photorealism. Vector images have more of a nonrealistic and cartoonist appearance. Since Photorealism is not achievable by using vector images, which makes bitmap being the standard format while working with digital or scanned photographs.

One of the most important determinants for bitmap images file size is the size of the image itself. The larger the image is the more pixels it will contain and it will do that if the file size is larger. The size is also affected by the format of file types. Formats have different proportions and the information is saved in different ways. An example would be a GIF file type. A GIF allows about 250 or so colors to be shown within an image and which helps to reduce the overall size of the file. On the other hand a file like the JPEG, uses all 16 million available colors in order to reduce the overall size of the file. The size of the file doubles, when the file when the pixels of an image is doubled. The size of the file increases by four times when the number of pixels of both the width and height of an image are doubled. The size of vector image file is not very much dependent on the size of the image. Rather, the size is dependent on its complexity. If there are more objects in a vector image there will be more algorithms that are needed to contain to render the objects, which she makes the file size to become larger. So if a small image is comprised, few of the objects will have a larger file size than a large image comprised of less objects.

Vector images are better when it comes to making the size or the image large are small without altering the quality. This is true because vector images are made up of mathematical defined objects and not by a coexisting pattern of pixels. Therefore making it easy to alter the size with little or no loss or quality. The objects in the image are just rearranged at a large or small scale, giving the image smooth edges at any size. On the other hand bitmap images become blurry when one makes the image large or small. This occurs because in order to change the size of the bitmap image pixels are being rearranged, thus resulting in the loss of quality.

Vector images differ from bitmap images in a basic and a fundamental level. They aren't made up of pixels rather the vector images use mathematical algorithms and formulas that create lines and curves to form images. Bitmapped images are static and vector images are dynamic. Bitmap images are restricted by shape or size whereas vector images aren't. Therefore making it easy to enlarge, shrink, widen, or narrow the original image without altering it much. However, there is an ease of editing in bitmap images because one can edit a images content pixel by pixel. In the case of vector images there are advantages, for example, more compact file size when compared to bitmap images. Another being the ability of being able to change in size or scale and it is resolution independent when it comes to images.