RASTER V/S VECTOR GRAPHICS

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Abstract- **All electronic art images are divided into either vector graphics or raster graphics. Vector graphics is the use of geometrical points such as lines, curves and shapes all of which are based on expressions which are mathematical and are used to represent images in computer graphics whereas raster graphics are dot matrix data structure representing generally a rectangular grid of pixels, they are generally larger files than vector images. In our research paper we are going to focus on both these graphic techniques.We will also study about the common image types used in both and also how are they different but yet complement each other.**

I. INTRODUCTION

Graphics are produced by using small square grids known as pixels. Each pixel is given a location and a color value. Raster graphics are generally larger files than vector graphics and we edit them by actually editing pixels rather than objects.

Vector graphics on the other hand are made up of line and curves which are defined by vectors. It can be easily moved as well as resized without losing quality. Shapes can be easily edited by moving nodes. There are various common image types

II. COMMON IMAGE TYPE

- BMP - It is known as bitmap and it is the standard window image format
- GIF- It is known as graphics interchange format and it is designed to minimize file size and download time
- JPEG- It is known as joint photographic experts group ,it is used to select discarded data so that files can be compressed easily
- TIFF- It is known as tagged image file format, it is used to exchange data between applications and computer platform

III. DIFFERENCE BETWEEN RASTER AND VECTOR GRAPHICS

Raster graphics are larger than vector graphics and they lose their image quality very easily as compared to vector graphics, raster graphics lose their image quality if they are enlarged more than 20% of their original size. Raster graphics is made up of pixels whereas vector graphics are made up of path. Raster images become blocky when their size is increased.

IV. ADVANTAGES AND DISADVANTAGES

Raster images are capable of displaying a variety of colors in a single image and allow color editing beyond that of a vector image whereas Vector images are scalable, so that the same image can be used once and resized infinite times for any size application ie from business card to billboard. It is difficult to make raster images larger without sacrificing quality. Vector images cannot display the natural qualities of photographs. Raster images are often larger files than vector images which are relatively lightweight. Raster images are used in web and print whereas vector images cannot be used in electronic format as they must be converted to a raster first. Vectors display at the highest resolution allowed by the output device, while raster images blur when blown up.

V. WHEN TO USE VECTOR OR RASTER

Raster images are mainly used with photos, which is why Photoshop is a raster editing program whereas Adobe Illustrator is a vector drawing program that automatically creates your vector formulas as we draw. Logos, letterhead, and other graphic elements are typically best created as vectors; while photographs are best created for raster. For web use all vectors must be converted to raster graphics. Text is typically made in vector format.

If we are not sure whether we should create a raster or vector file, we should follow this simple rule of thumb: If we are drawing something from scratch with only a few colors then we should go with vector and if we are editing a photo with multiple colors then we should go with raster. Many projects use vector drawings and vector images together for example a brochure

VI. RESOLUTION

It refers to the number of pixels in an image and it is usually stated as dpi (dots per inch) or ppi (pixels per inch). Bitmap images are displayed on your computer screen at screen resolution ie approximately 100 ppi.

VII. METAFILES

Metafiles are graphics that contain both raster and vector data. For example, a vector image that contains an object which has as a fill in a bitmap pattern that would be a metafile. The object is still a vector, but the fill attribute consists of bitmap data.

Common meta file formats -

- EPS (Encapsulated PostScript)
- PDF (Portable Document Format)
- PICT (Macintosh)