COMD 1112, HD05 and COMD OL07

Digital Media Foundations

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Midterm definitions for questions to review.

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|  | 1. **What is Additive Color?** Additive colors are created by mixing spectral light in varying combinations. The most common examples of this are television screens and Computer monitors, which produce colored pixels by firing red, green, and blue electron guns at phosphors on the television or monitor screen.   More precisely, additive color is produced by any combination of solid spectral colors that are optically mixed by being placed closely together, or by being presented in very rapid succession. Under these circumstances, two or more colors may be perceived as  one color. This can be illustrated by a technique used in the earliest experiments with additive colors: color wheels. These are disks  whose surface is divided into areas of solid color. When attached to a motor and spun at high speed, the human eye cannot distinguish  between the separate colors and sees them instead as a composite of the colors on the disk: |
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1. What is subtractive color?

Subtractive colors are seen when pigments in an object absorb certain wavelengths of white light while reflecting the rest. If you shine white light on them, they absorb certain frequencies of light and the reflective frequencies create color. Examples: A red object subtracts green and blue (cyan) light. A green object subtracts red and blue (magenta) light. We see examples of this all around us. Any colored object, whether natural or man-made, absorbs some wavelengths of light and reflects or transmits others; the wavelengths left in the reflected/transmitted light make up the color we see.

This is the nature of color print production and cyan, magenta, and yellow, as used in four-color process printing, are considered to be the subtractive primaries. The subtractive color model in printing operates not only with CMY(K), but also with spot colors, that is, pre-mixed inks. Cyan, magenta, and yellow correspond roughly to the primary colors in art production: red, blue, and yellow.

What is CMYK Model?

CMY cannot reproduce the brightness of RGB colors. In addition, the CMY gamut is much smaller than the RGB gamut. The CMY model used in printing lays down overlapping layers of varying percentages of transparent cyan, magenta, and yellow inks. Light is transmitted through the inks and reflects off the surface below them (called the substrate). The percentages of CMY ink (which are applied as screens of halftone dots), subtract inverse percentages of RGB from the reflected light so that we see a particular color: CMYK is four color printing.

1. What is a Vector graphic?

Besides using pixels to describe digital images, there is another way to create imagery—it is to describe the graphic mathematically. This type of digital image is called a vector graphic. Similarly, vector graphics are generally more concise descriptions of digital images than bitmaps are. But the most distinct advantage of vector graphics is that they are resolution independent. Let’s explain what resolution independence means and what characteristic of vector graphics makes them resolution independent. In contrast to bitmapped images that already have the number of pixels or resolution specified when they are stored, vector graphics do not use pixels but equations. The images of vector graphics are produced for output or display by calculating the points, according to the equations that make up the graphics. The coordinate system for the equations is arbitrary. That is, its scale can be set to any level. Vector graphics are resolution independent because they can be scaled to any size and printed on any output device at any resolution, without losing detail or clarity in the picture. One program that uses vector graphics is Adobe Illustrator.

1. What is bitmap graphic?

Digital images described by pixel values are called bitmapped images. The term bitmapping refers to how these bits representing the image are stored in computer memory. Bitmapped images also are called raster graphics. The term rastering refers to the way most video displays translate the images into a series of horizontal lines on the screen. Bitmapped images commonly are used in image editing applications. Because they are composed of pixels, the image content can be edited pixel by pixel easily. However, their size and appearance depend on their output resolution to the device, for example, dots per inch for a monitor and pixels per inch for a printer. Bitmapped images can appear jagged when they’re scaled up onscreen or printed at a low resolution. They are resolution dependent. One program that displays for editing is PhotoShop.

What does resolution mean?

Higher resolutions mean that there are more pixels per inch (PPI), resulting in more pixel information and creating a high-quality, crisp image. Images with lower resolutions have fewer pixels, and if those few pixels are too large (usually when an image is stretched), they will pixelate.

What is sampling?

It is the first step of the digitization process. A process by which you record points i.e. in a natural image, at discrete, evenly spaced points.

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| What are the three strategies to reduce the size of a digital image?   1. Reduce the bit depth 2. Reduce the sample rate 3. Apply compression |
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