



Color Perception

Color is the visual perceptual property that humans and animals use to identify and describe an object. Color enables us to perceive and understand objects, whether they are present in the visual field or just stored in the memory centers of the brain.

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Functions of Color

Color influences human perception [1], particularly object recognition, of various stimuli in the environment. For instance, a person can identify an orange fruit from a banana due to their difference in colors that are not only sensed by the eye but also stored in his memory. The palatability of food is also affected by color. One may perceive that the spaghetti with red sauce on one plate is more inviting than the spaghetti with white sauce on another plate because the red color of the sauce tends to stimulate appetite.

Perceptual Mechanism

How does the process of color perception work? For color to be sensed, a property called illumination should be present. Illumination is defined as a property that involves the supplication of light. An illuminant is a source of light. Meanwhile, a set of illuminated objects is known as a scene. In a scene, illuminants may vary as they fall in different objects. Thus, illumination generally has a complex spatial distribution, and sometimes even a complicated one. When the illumination falls across a scene in a uniform fashion, its spectral power distribution can be recognized. Spectral power distribution is a pictorial representation that is used to measure the amount of power of an illuminant at each wavelength .

When the illuminant falls on an object, it causes reflection to the eye. Color signal is the term used to refer to the light that is reflected to the eye. When a color signal is reflected to the eye, the sensory information about the object is collected. The process of collection of sensory information occurs from the cornea to the lens. These two parts focus the light to the photoreceptors in the retina. When the sensory information arrives at the retina, retinal image is formed, which is in an inverted position as seen in the photo below.

PHOTO

Absorption and Reflection

The colors of objects vary depending on how the objects reflect or absorb light based on their surfaces. Reflection and absorption of light depend on three factors: wavelength, angle of reflected light, and angle of incident length. These factors and properties of light are discussed here.

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hyperphysics.phy-astr.gsu.edu ^[1]

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[1] <http://hyperphysics.phy-astr.gsu.edu/hbase/vision/colper.html>, [2] <https://explorable.com/users/sarah>, [3] <https://explorable.com/color-perception>