

Visual Perception

Visual perception is the ability to perceive our surroundings through the light that enters our eyes. The visual perception of colors, patterns, and structures has been of particular interest in relation to graphical user interfaces (GUIs) because these are perceived exclusively through vision. An understanding of visual perception therefore enables designers to create more effective user interfaces.

Physiologically, visual perception happens when the eye focuses light on the retina. Within the retina, there is a layer of photoreceptor (light-receiving) cells which are designed to change light into a series of electrochemical signals to be transmitted to the brain. Visual perception occurs in the brain's cerebral cortex; the electrochemical signals get there by traveling through the optic nerve and the thalamus. The process can take a mere 13 milliseconds, according to a 2017 study at MIT in the United States.

Different attributes of visual perception are widely used in GUI design. Many designers apply Gestalt principles (i.e., how humans structure visual stimuli) to the design of GUIs so as to create interfaces that are easy for users to perceive and understand. The visual perception of affordances (action possibilities in the environment) is another example of how the understanding of visual perception is a critical item in any designer's toolkit.

Visual Perception Challenges

It sounds so simple; take some light and turn it into an understanding of the world around you – we all do it every day; yet, there isn't a single computer on earth, no matter how powerful, that can mimic the feat of vision to any real extent.

Vision requires us to separate the foreground from the background, recognize objects viewed from an incredible range of spatial orientations, and accurately interpret spatial cues (or risk walking into doors rather than through them).

The Process of Visual Perception?

Visual perception begins when light hits your retina. Your eye is able to distinguish between colors, patterns, structures, or shapes. When the light hits the retina, this sends an electrical signal to the brain, specifically to the cerebral cortex. This signal travels through from the rods and cones in your eye to the optic nerve and the thalamus.

Visual perception not only needs eye development but cognitive development to build visual connections from memories.