

Autostereogram

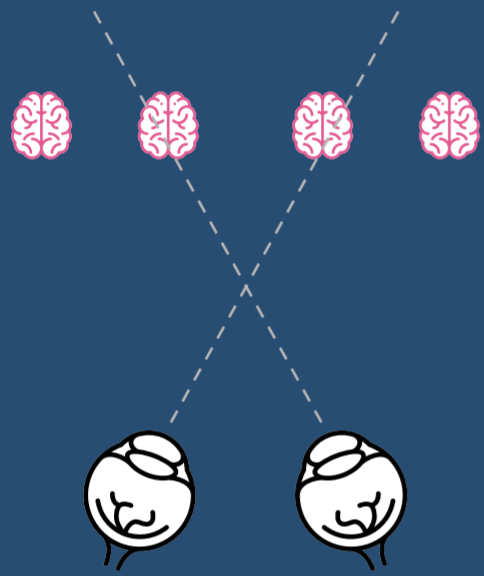
Autostereogram creates 3D perception from horizontally repeating pattern if the distance between two repeating objects are slightly different. These differences are known as binocular disparities. Disparities are processed in the visual cortex of the brain to yield depth perception. To perceive 3D from repeating pattern one must overcome normal convergence. There are two methods to see the stereograms.

Cross-eyed

In cross-eyed stereo, the left eye's image is located on the right side of the display, and the right eye's image is on the left, and hence the name cross-eyed.

Cutout of the image appears from the background.

This method is used in **Random-dot autostereogram**.

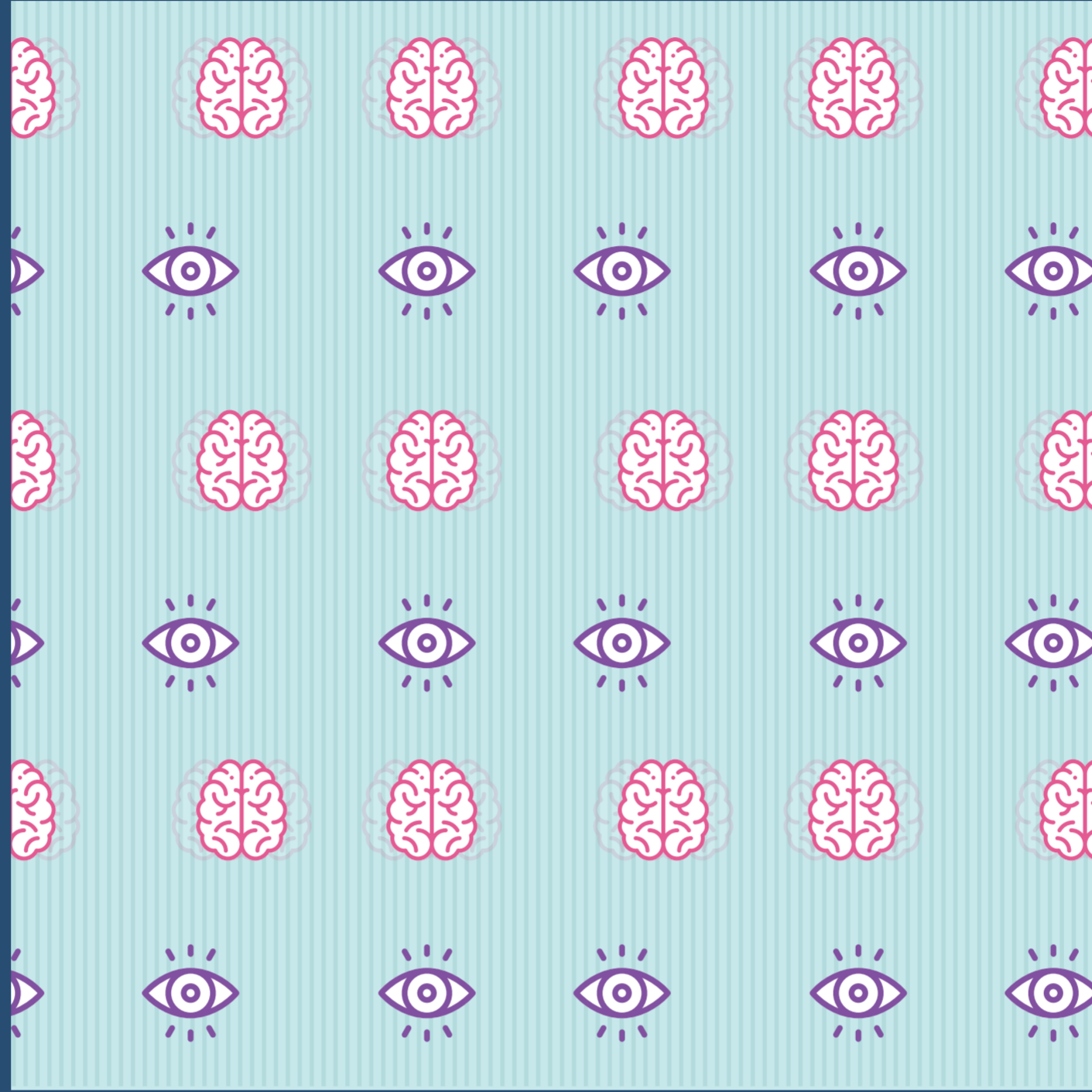
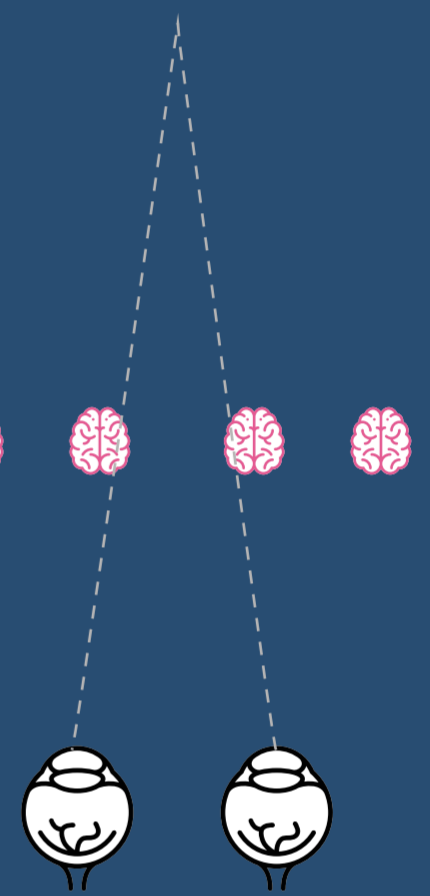


Wall-eyed

In wall-eyed stereo, the left eye's image is located on the left side of the display, and the right eye's images on the right.

Patterns appear as if it is floating above from the background.

This method is used in **wallpaper autostereogram**.



This stereogram can be seen using the wall-eyed method

History

1838



Stereopsis was first described by Charles Wheatstone in 1838

1849



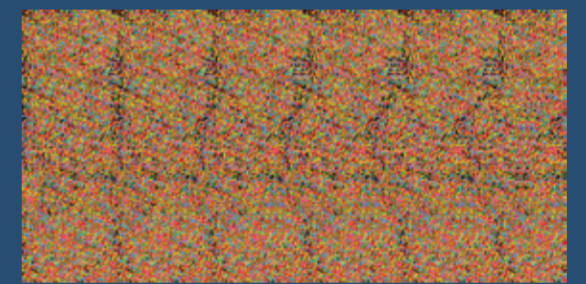
Stereoscopy became popular during Victorian times with the invention of the prism stereoscope by David Brewster.

1960



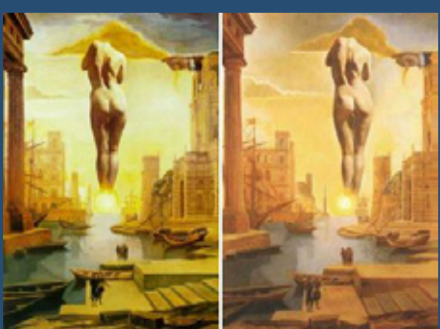
Bela Julesz invented random-dot stereograms. Which could be seen through stereoscope or focusing on point in-front or behind of the images

1970



Christopher Tyler invented autostereograms, random-dot stereograms that can be viewed without a stereoscope.

Applications



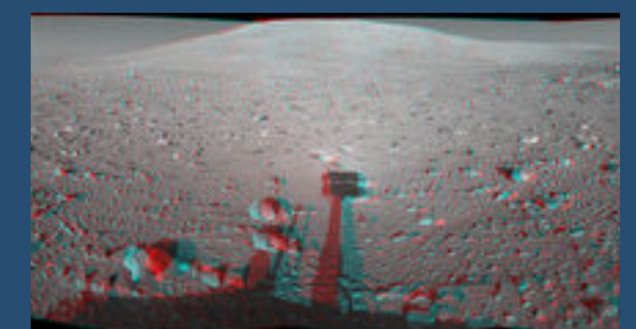
Salvador Dalí created some impressive stereograms in his exploration in a variety of optical illusions



Military used pocket stereoscope to examine stereoscopic pairs of aerial photographs.



Stereoscopy is the most widely accepted method for capturing and delivering 3D video with the help of 3D camera.



The Mars Exploration Rovers, launched by NASA to explore the surface of Mars, are equipped with unique cameras that allow researchers to view stereoscopic images of the surface of Mars.

