Autostereograms

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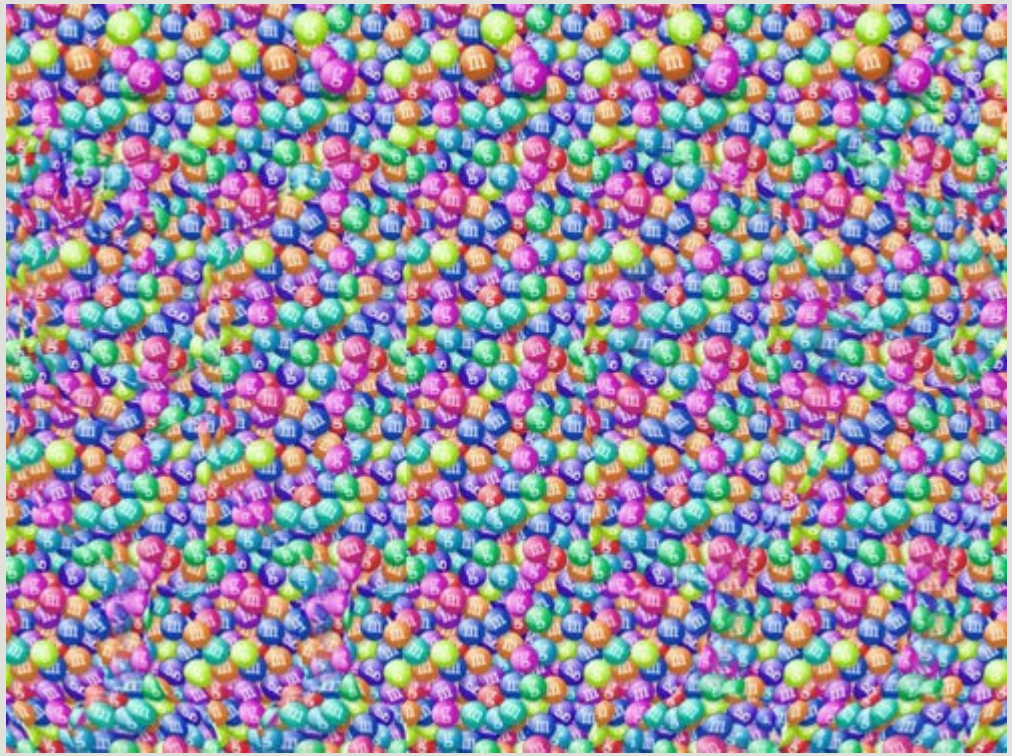
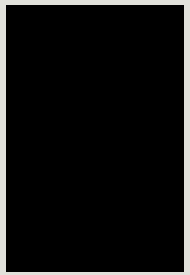
What is an stereogram?

It’s an image created to see the visual illusion of a 3D scene with out the using glasses or other physical devices.

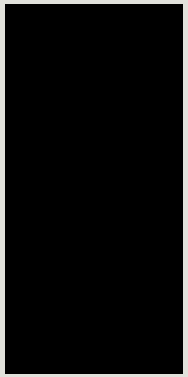


How it Works?

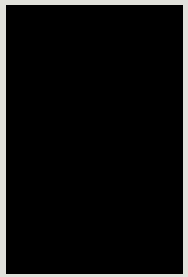
This effect is created when both eyes see the blending of two similar images by focusing different parts of the image. The brain uses the binocular disparity (create a 3D image by seeing and object from different angles with each eye) to recreate the 3D image.



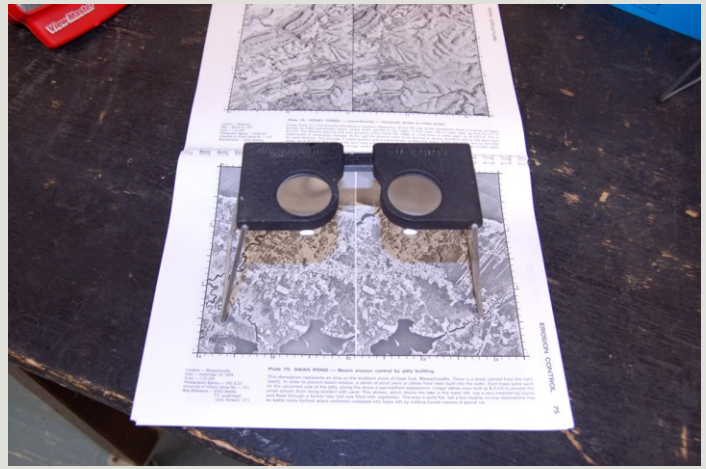
Normal view of an object.
(each eye focus the same point)



Parallel convergence (each eye focus on different parallel points)

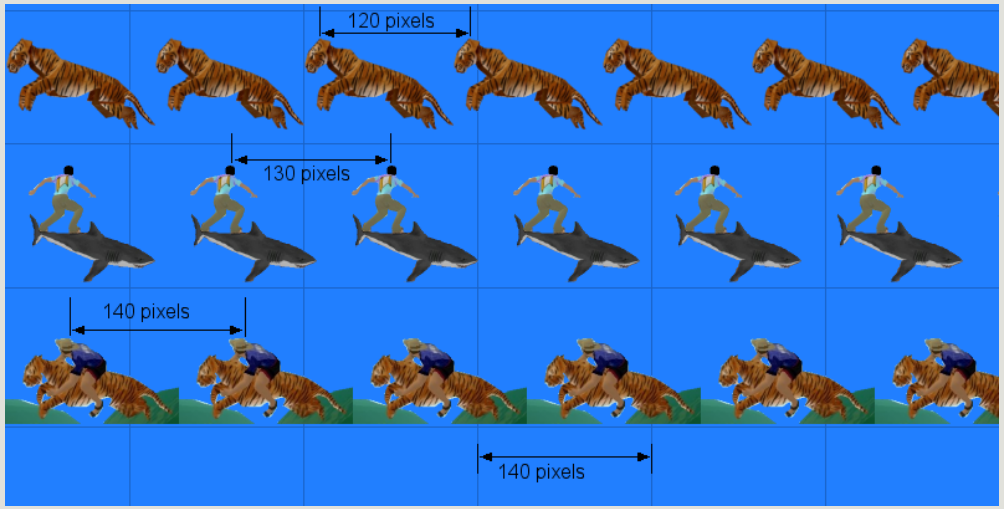


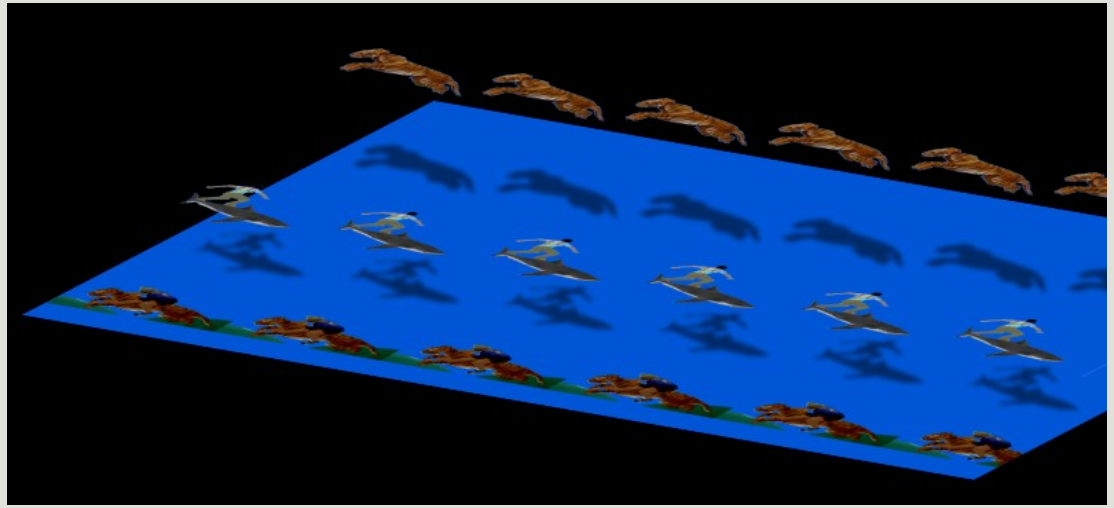
Cross convergence (each eye focus on different opposite points)



How to make an stereogram?

The 3D effect is created by repeating a pattern, the closer is the distance between the pattern the nearest you see the image.





The algorithm to generate an stereogram

To generate the stereogram is used a disparity map (gray scale image with the information of the depth). The shifting of the selected pixels on the pattern generates the 3D effect.

The algorithm to generate an stereogram

The algorithm generates a random dots pattern an repeats it five times, the uses the disparity map image to shift the pixels in the sections that have to be seen in 3D. The change of distance between the pixels of the pattern generates the 3D effect.