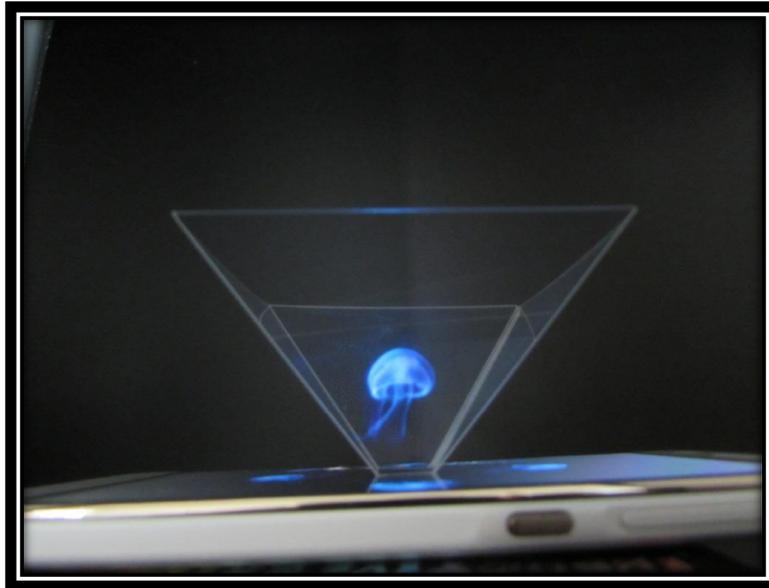




Pyramid Hologram Projector



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Description

Use transparent film and tape to assemble a tool that will generate a hologram from a 4-sided video on your smart phone or tablet.

Background

The type of image you see when you look into a mirror is known as a *virtual image*. Virtual images seem to appear in a location other than where the light rays that form them actually intersect. This is why your reflection in the mirror seems to appear deep within the surface of the mirror, even though the light rays that form your image cannot travel past the surface of the mirror before they are reflected.

The 3-D hologram generated by the transparency is known as a *real image*. A real image appears in the same place that light rays intersect.

Light rays from each image in the 4-sided video travel through the angled panel of the pyramid sitting on top of your screen. The light rays are bent such that they intersect where you see a complete 3-D image in the center of the pyramid.

Before you Begin

Print out the projector template found here:

http://cafundo.tv/diyhologram/diyhologram_sheet_cafundo.pdf

Materials

- 1 acetate sheet (overhead projector transparency sheet)
- Scissors
- Transparent Tape
- Wet-erase marker
- Projector template (below)

Procedure

1. Use the template for the size of your choice (either mobile version or tablet version) to trace your projector on the acetate sheet. Be sure to trace all the lines on the template with the wet-erase marker.
2. Carefully cut along the traced lines.
3. Fold along the dotted lines.
4. Use a damp paper towel to erase all markings from your projector.
5. Use a very small piece of tape to connect the small tab with the open edge of the projector. (Try not to use excess tape.) There should be a square hole in the bottom of the pyramid. You may need to re-create some of the folds and work with the finished product until it can stand/balance on a flat surface.
6. Pull up a 4-sided video of images on your smart phone or tablet. (Search YouTube for “4-sided videos”)
7. Center the pyramid projector (end with small hole down, touching screen) on the display of the smartphone or tablet.
8. Turn off the lights and look through the side of the projector, just above the screen.
What do you see?!

Questions

- In which direction does each side of the projector refract (bend) the light in order to form a *real image*?
- Can you think of any interesting uses for this type of hologram generator?