DRONER 2.0

A TECH. STUDIO PROJECT BY NICO ABAIS & VLADAN MUTABDZIJA

TUTORIALS ON OUR TECH STUDIO PROJECT: DRONER (INTERACTIVE HOLOGRAM)

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HOW TO CREATE / SETUP AN INTERACTIVE HOLOGRAM MACHINE

FIGURE 1

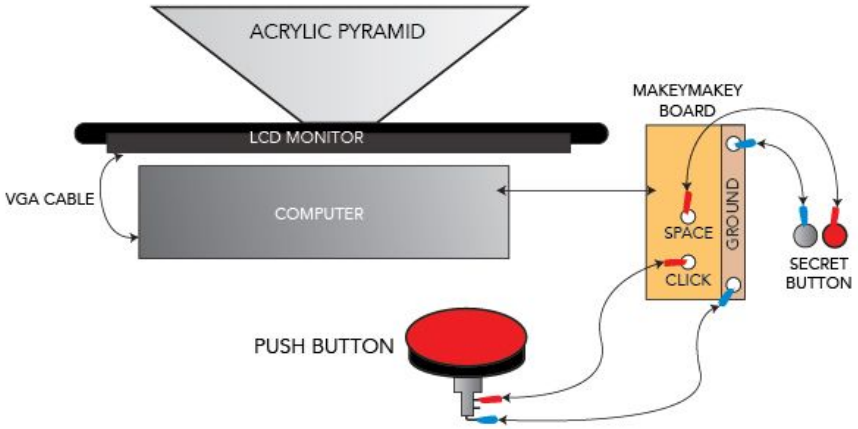
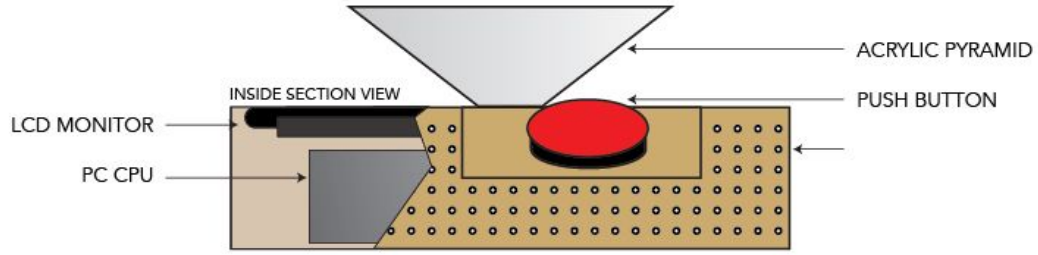


FIGURE 2



Materials Needed:

PC setup w/ Windows OS and Chrome browser
MakeyMakey Board with 2 pairs of alligator clips
LCD monitor (our setup used a 26” Lenovo)
Pyramid acrylic
Website with the interactive hologram code
Push button switch
Box / Housing (Steampunk theme for this project)

STEP 1: Place the computer inside the box / housing.
STEP 2: Attach the MakeyMakey board to one of the USB hubs.
STEP 3: Clip the wires from the Makey's click slot and ground slot towards the push button. (see Fig.1)
STEP 4: Clip the wires from the Makey's spacebar slot and ground slot towards the secret button. (see Fig.1)
STEP 5: Attach the monitor cables and place the monitor on top of its position as shown.
STEP 6: Position the acrylic pyramid on the center of the screen.
STEP 7: Turn-on the PC and load the website in the Chrome browser and press F11 for fullscreen. Push the button to test the videos working.

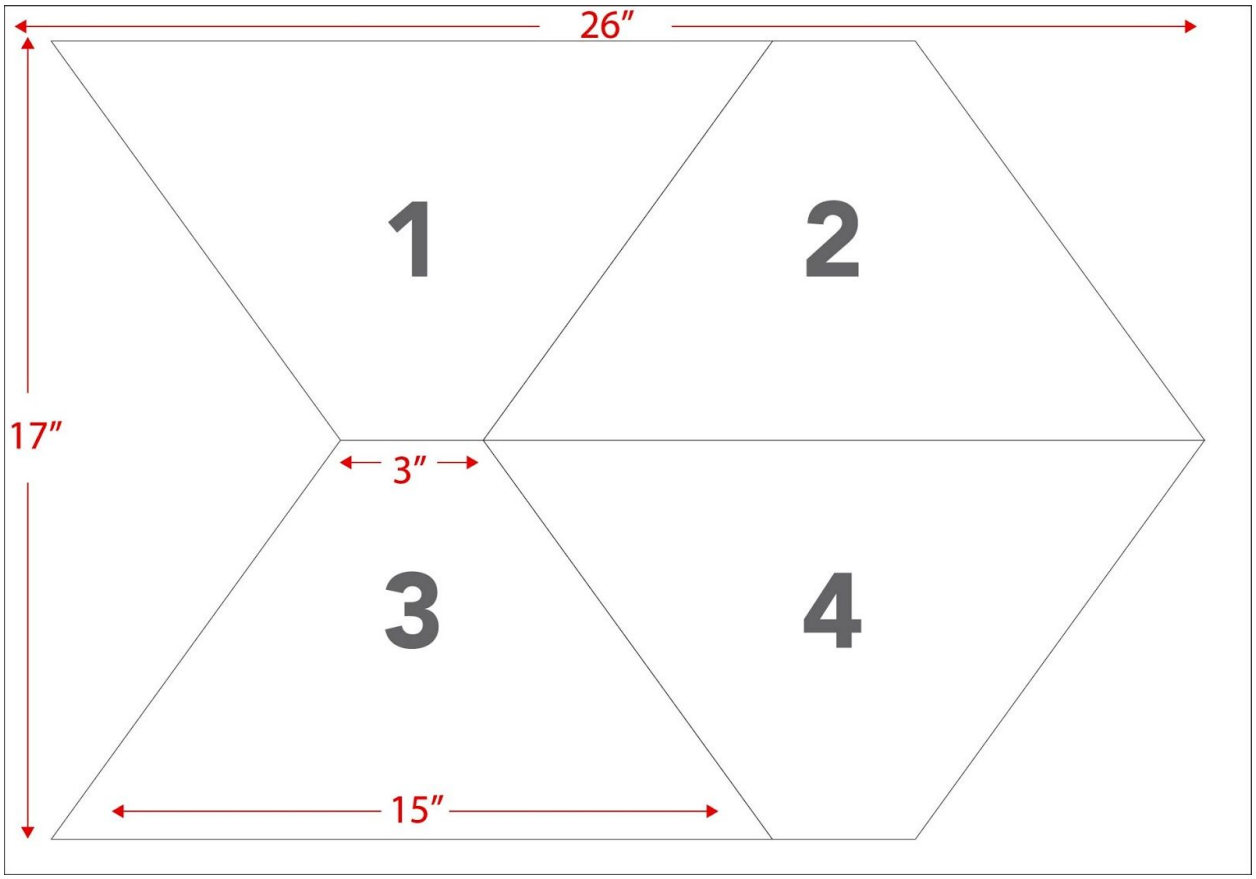
HOW TO MAKE THE HOLOGRAM PYRAMID

Materials Needed:
1 pc. - 3mm Acrylic Sheet (smoke gray color but clear can also be used)
1 pc. - small bottle of Acetone (nail polish remover)
1 pc. - small disposable syringe w/ needle
1 roll - scotch tape
1 roll - Masking tape (black color)
1pc. - sandpaper 100
1pc. - Acrylic cutter
1pc. - Metal ruler or any straight edge
1pc. - DecoArt metallic luster (copper color from Michaels)

STEP 1: CUTTING

- Tape the pattern guide of the pyramid on the backside of the acrylic.
- Using the acrylic cutter tool, score the sheet 5 to 6 times with firm even strokes (a good stroke produces a strip of the sheet being torn away each time)
- Position the scored portion of the sheet to a straight edge of a table or counter and apply a slow but steady bending force to snap it apart. (Refer to the video documentation)

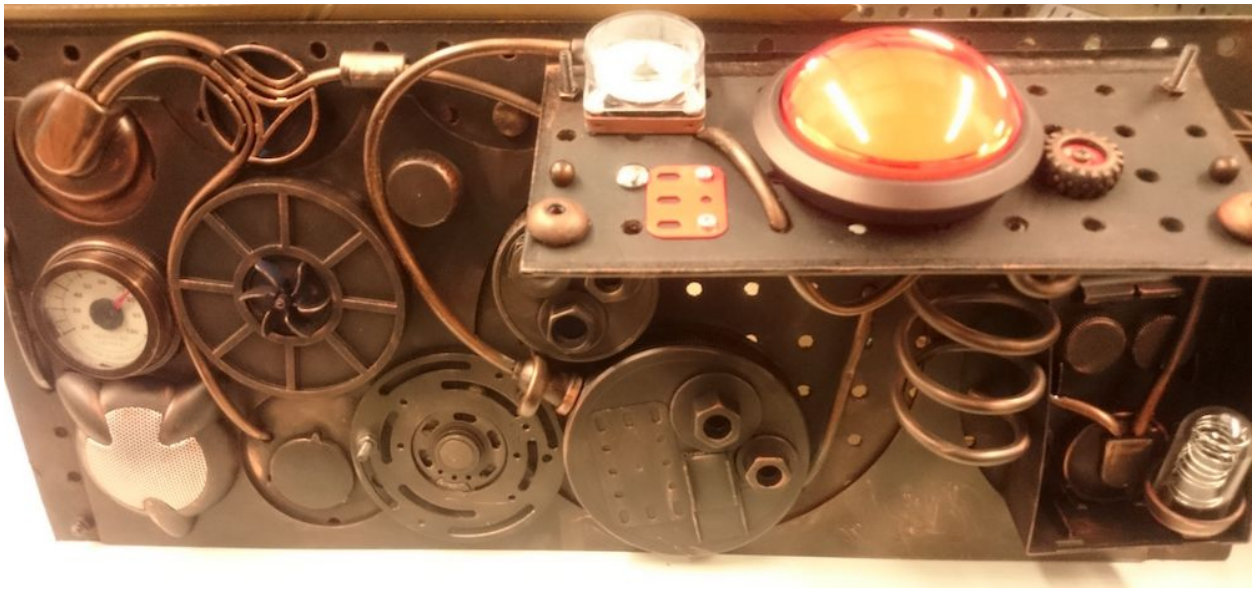
*Below is our actual acrylic sheet layout fit to maximize in a 17” x 26” sheet that we purchased:



STEP 2: GLUING THE PIECES TOGETHER

- Acrylic works great with Acetone in terms of mending them together. Technically, the Acetone is a solvent that somehow melts the acrylic sheet and fuses the sheets together instead of sticking them. The challenge is that the pyramid sheets meet at an awkward angle which can be resolved if you use scotch tape to position them in place first.
- Once positioned, use a syringe w/ needle to squirt just enough amount of Acetone to the edges and let the solvent glide evenly. Let the whole setup set overnight to obtain best bond.
- Apply a finishing of black masking tape where the edges meet, and smudge the tape with the copper wax to complete the pyramid setup.

HOW TO MAKE THE STEAMPUNK BOX



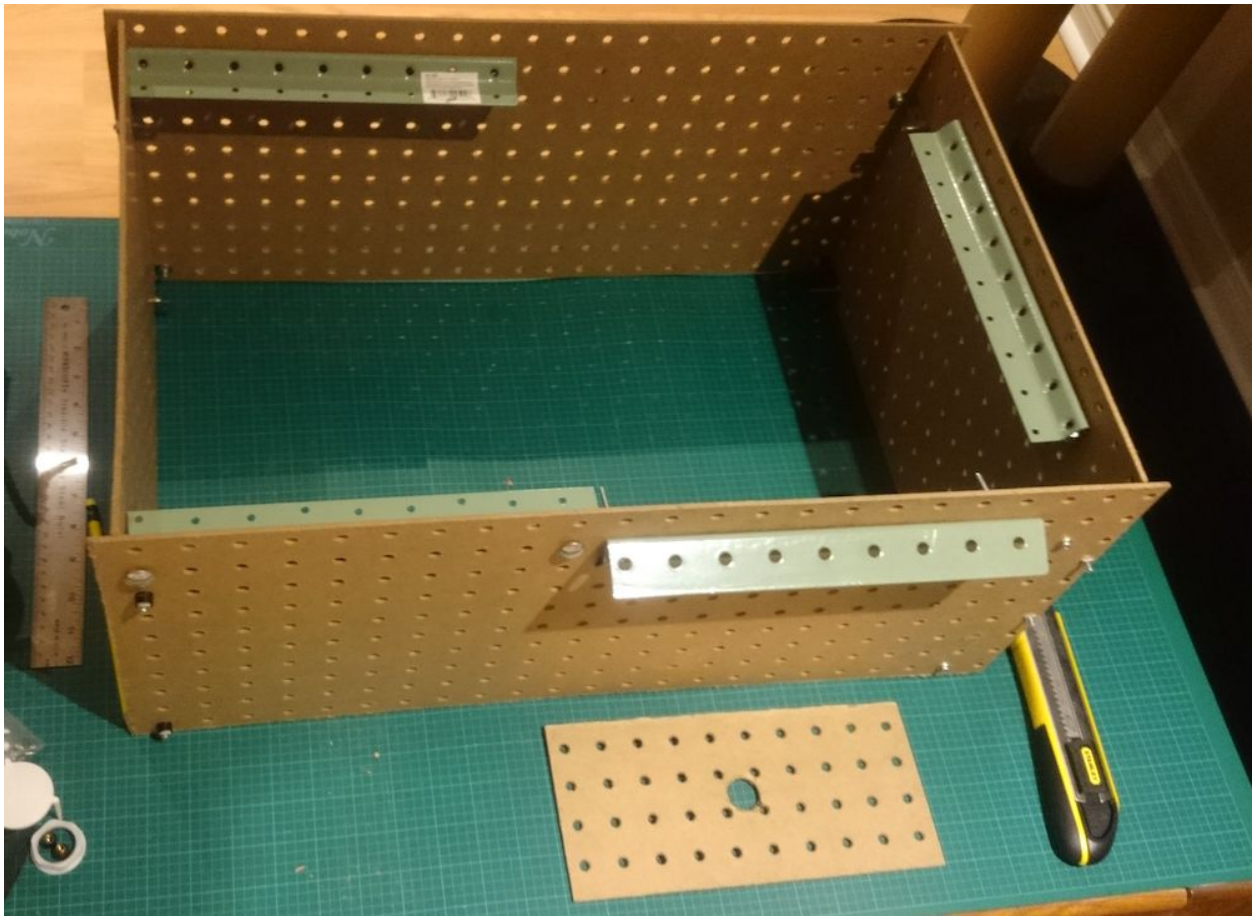
Materials Needed:

For the main box (most items can be bought in HomeDepot or any hardware)
1pc. - 4x8 Pegboard 3mm
1pc. - 4ft. metal rod used for floor plank support
1pc. - solid recycled board 3mm
Metal screws, nuts and bolts, and small metal angles
1pc. - Super glue
1pc. - aerosol spray paint can (flat black color)
1pc. - DecoArt metallic luster (copper color from Michaels)
1pc. - Masking tape (black color)
For embellishments (use scrap plastic caps, etc that have a lot of grooves)

- Water bottle and soda caps
- Coffee and Whey Protein jar caps
- Old plastic toys, speakers from Value Village (doctor kit, construction kit)
- Scrap acrylic sheets
- Anything that can be recycled such as old metal parts, plastic parts, toys, etc.

STEP 1: BOX ASSEMBLY

- Cut the peg boards according to the length and width of your LCD monitor allowing just enough allowance for the monitor to slide-in place and flushed with the box.
- Assemble the four sides of the peg boards using metal angles and bolt and nuts.
- Cut a smaller piece of pegboard to act as a dashboard for the push button.
- Cut a solid recycled board to fit the inside space to act as the base and screw-in.
- After completing assembly, spray paint the exterior box with flat black paint and let dry.



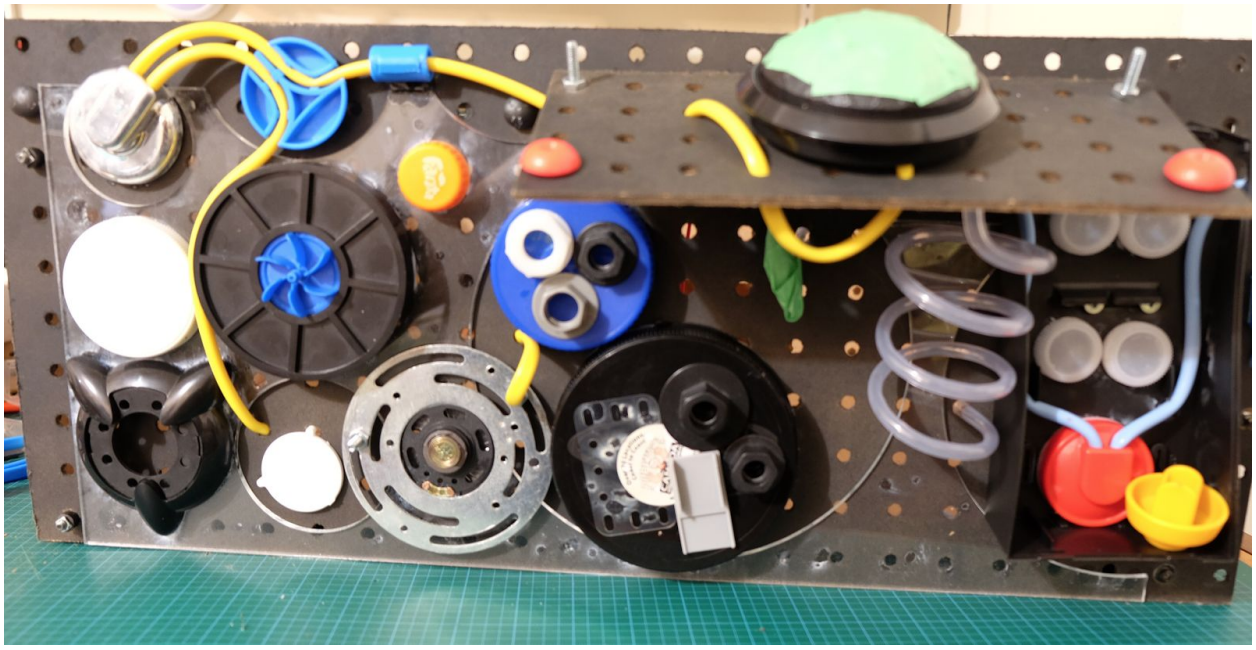
STEP 2: EMBELLISHMENTS

- Glue a base acrylic sheet with random holes (this was a free scrap acrylic sheet we got from a laser cutting service)
- Glue the other plastic parts as shown in the photo, creating a certain flow of the tubes, circles and gauges.
- Assemble and paint the gauges separately, you can download our gauge vector files here and adjust it according to your diameter. We printed out our gauge designs from a black laser printer and dipped it in black coffee to stain and age it.
- Paint the entire embellished setup with the flat black aerosol paint and let dry completely.

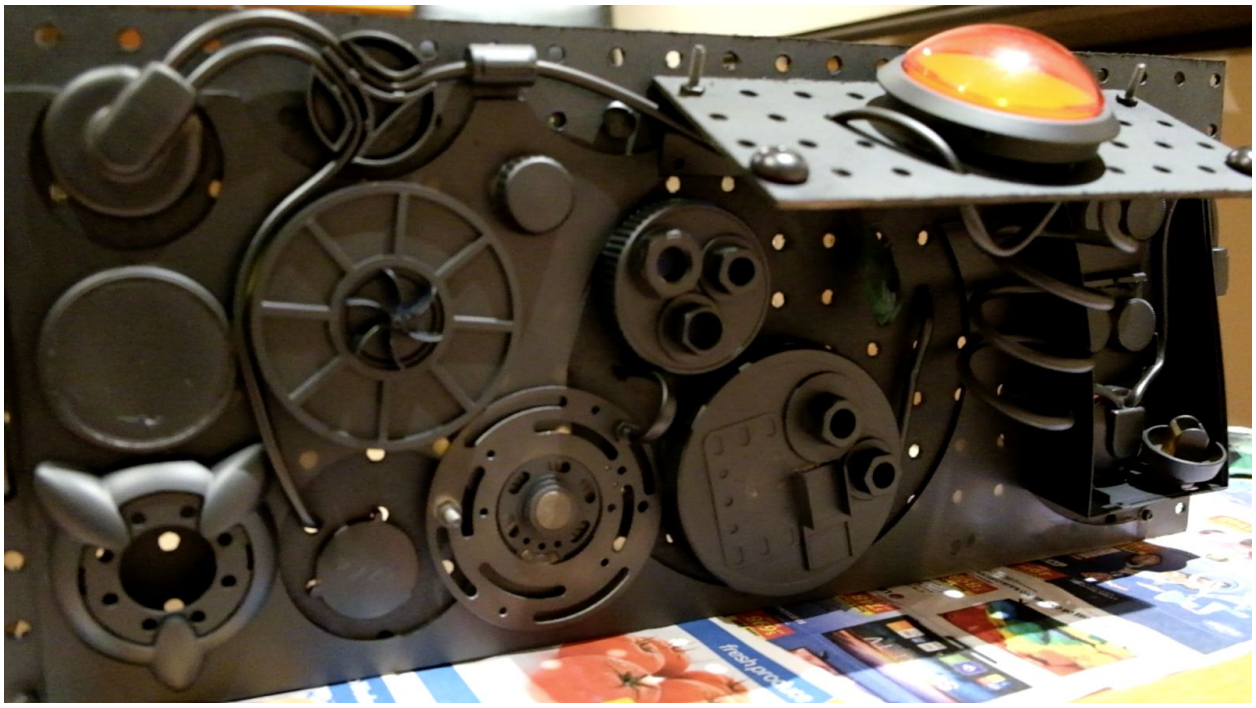
- Start dabbing with the DecoArt copper wax on the edges, nooks, grooves and you will notice that these work better rather than smudging a wide flat surface. Use your fingers for complete control or use sponges for hard to reach areas.
- Glue the finished gauges last in order to preserve the “transparent plastic glass” parts from getting smudged with any paint. View the last part of the tutorial to download a template of the gauge design we used.
- Put black masking tape on the edges of the pegboards and smudge with the copper wax as well.

Below is a photo of the various scrap parts used for embellishments:

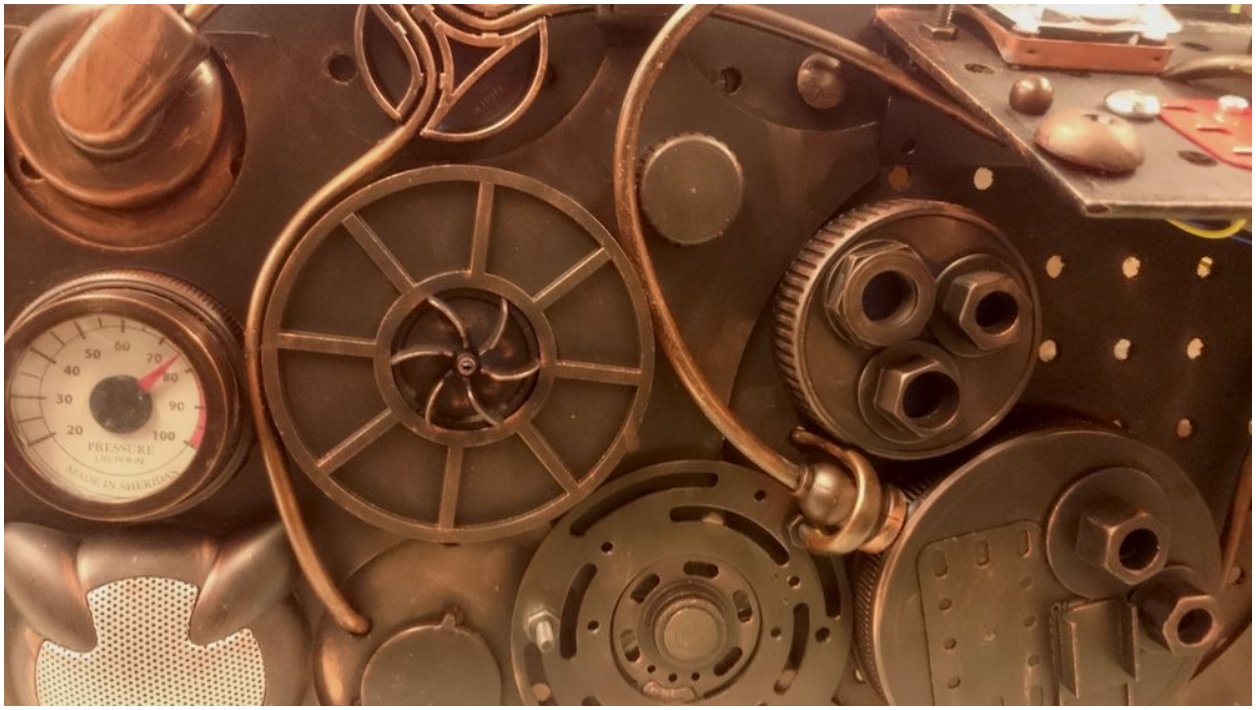
Below is a photo of the embellished box before painting:



Below is a photo of the embellished box after painting flat black:



Below is a photo of the embellished box after dabbing copper wax details:



CODING THE INTERACTIVE HOLOGRAM EXPERIENCE

Actions are triggered by pushing the button which runs the following code:

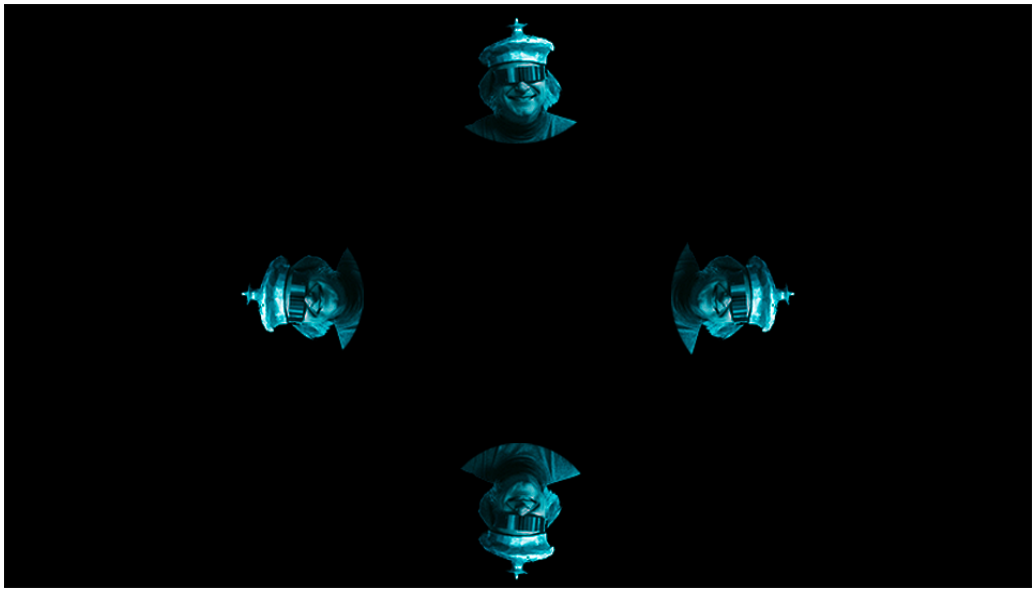
```
// all the assets
var videos = [
"https://media.giphy.com/media/3o85xt08p2Y0hanhwQ/giphy.gif", // default state
"https://media.giphy.com/media/l2SqcWByj8h7w0TEk/source.gif", // glitch
"https://media.giphy.com/media/sIfLhexLUqwik/giphy.gif",      // vid 1
"https://media.giphy.com/media/l396Uasr95XqhSFJm/giphy.gif",  // vid 2
];

var playlist = [
    videos[0] // default state
];

// flag for sequence
var playingSequence = false;

// main animation loop to call the main function
```

```
// video.addEventListener( 'ended', playVideo );
var mainAnimInterval = setInterval( playVideo, 5000 ); // on ended for video

// loop default state until mouse clicks
// plays videos from the playlist aray
function playVideo() {
        // play the first video in the playlist array
  document.querySelector('#main').src = playlist[0];
        // if playing sequence, remove items from array
        if( playingSequence ) {
    console.log('playing sequence');
    playlist.shift();
    // once removed all videos, set back to default
    if( playlist.length == 0 ) {
        playlist = [ videos[0] ];
      playingSequence = false;
    }
  } else {
                console.log('playing default');
  }
}

// on click
document.addEventListener('click',mouseClicked);
function mouseClicked() {
  // then generate random sequence
  // (vid1, vid2)
  var say = [videos[3], videos[2]];
  playlist = [ videos[1] ].concat( say ).concat( [ videos[1] ] );
  // playlist = [ videos[1], videos[3], videos[2], videos[1] ];
  //          glitch      random videos (1,2)    glitch
  playingSequence = true;
  // send a fake event as if the current video is done playing
  var fakeEvent = new Event("ended");
  document.querySelector('#main').dispatch( fakeEvent );
}

// after sequence go back to default
```

HOW TO MAKE / EDIT HOLOGRAM VIDEOS

- Videos were shot using the green screen backdrop which was later imported to Adobe Premiere Pro for color corrections (the camera we used shoots flat looking footage, hence the need for color correction; using black backdrop and properly lighting the scene would eliminate this step).

Setting up the scene *(Thanks Ben, for helping with audio equipment!)*



After the footage was color corrected, it was imported to Adobe After Effects for further processing (keying out green screen, cropping and applying fx for achieving the look).

Dan Zen being happy about becoming a hologram

Video is then duplicated, mirrored and laid out around the center square which will align with the edges of the acrylic prism. After rendering and exporting from AE, the next steps are importing the treated video footage into Adobe Premiere Pro, isolating individual clips and exporting.

Finally, using basic HTML, video is displayed in browser (full screen) and the game is ready to go.

```
<!DOCTYPE html>
<html>
<head>
   <title>DRONER</title>
</head>
<script type="text/javascript" src=”droner.js></script>
<meta name="viewport" content="width=device-width, initial-scale=1">
<body bgcolor="black" onclick="loadVideo()" value="Load Video">
   <video id="video" width="100%" autoplay>
      <source type="video/mp4">
         Your browser does not support HTML5 video.
   </video>
</body>

</html>
```

REFERENCES AND LINKS:

Short video of “the making” of the hologram machine:
https://www.youtube.com/watch?v=jrQoTqlHaaQ

Download a PDF of the acrylic pyramid pattern we used for this project (you can also scale this up or down proportionately according to your needs):
https://dl.dropboxusercontent.com/u/12875476/pyramid-pattern.pdf

Download a PDF of the gauge design we used for this project:
https://dl.dropboxusercontent.com/u/12875476/gauges.pdf