Living Ventriloquist Dummy with MONSTER M4SK Eyes

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https://learn.adafruit.com/living-ventriloquist-dummy-with-monster-m4sk-eyes

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Overview

Ventriloquist dummies can be charming, hilarious, spunky sidekicks! But sometimes, they'd like to really come alive and be the start of the show. No better way to bring extra pizazz to your dummy than to add a set of realistic eyes that look around as they perform!

You can use your Adafruit MONSTER M4SK board to add windows into the soul of your ventriloquist dummy. Then, take them to the open mic night at your local cafe, or even just give it the opportunity to watch over people who come to your house for trick or treats on Halloween!

Find other interesting dummies in the Vintage Ventriloquism group on Flickr (https://adafru.it/FRE).

Ventriloquist Dummy

There are a number of resources for acquiring a dummy. There are relatively inexpensive, entry level dummies, such as our friend Slappy used in this guide, available at online retailers and auction sites, made by the Goldberger company.

HAUNTING EYES GLOW IN THE DARK
FEATURES
MOVEABLE MOUTH
Pull String On Side
R.L. STINE'S
Goosebumps
SLAPPY
THE DUMMY 30" (76cm)
"How To Be A Ventriloquist" Booklet Enclosed
WARNING:
CHOKING HAZARD - Small parts.

Willie Tyler's
26" (66cm) LESTER
Put On A Show With Your Own
Celebrity Ventriloquist Doll
It's Easy! Pull The String On Side of Case.
Watch The Mouth Move!
"How To Be A Ventriloquist" Instructions Enclosed
WARNING:
CHOKING HAZARD

These basic dummies have a soft body and a fixed head position. They use a string pull from the neck to articulate the jaw, which is on a rubber band return.

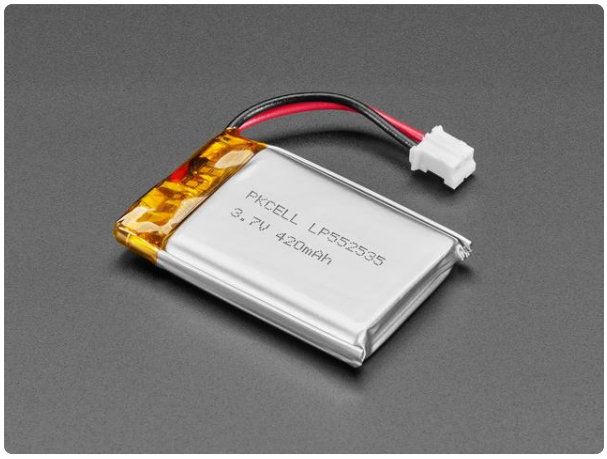
You can also upgrade to a modified Goldberger dummy, which has a rigid hollow body and a stick for controlling head motion, as well as a finger pull for the jaw.

Then, there are higher quality dummies made for all levels from amateur to professional. Check out Throw Things (https://adafru.it/FRF), and Braylu (https://adafru.it/FRG), which is the company that made my upgraded Slappy.

Parts

Adafruit MONSTER M4SK - DIY Electronic Eyes Mask

Peep dis! Have you always wanted to have another pair of eyes on the back of your head? Or outfit your costume with big beautiful orbs? The MONSTER M4SK https://www.adafruit.com/product/4343



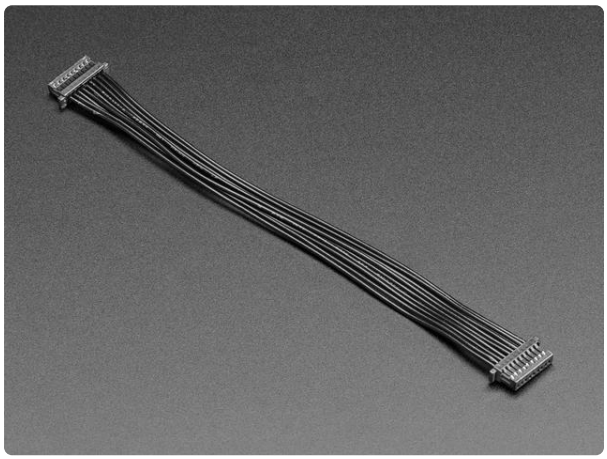
Lithium Ion Polymer Battery with Short Cable - 3.7V 420mAh

Lithium-ion polymer (also known as 'lipo' or 'lipoly') batteries are thin, light, and powerful. The output ranges from 4.2V when completely charged to 3.7V. This...

https://www.adafruit.com/product/4236

Optional

Depending on the dummy you use, and how you choose to incorporate the M4SK eyes, you may also want the following:



JST SH 9-Pin Cable - 100mm long

This 9-pin cable is just about 100mm / 4" long and fitted with JST-SH female connectors on both ends. Compared with chunkier JST-PH these are 1mm pitch instead of 2mm,...

https://www.adafruit.com/product/4350

Convex Plastic Lens with Edge

The eyes have it! Add this little lens to make a big expression with our Spooky Eyes demo for microcontrollers or Raspberry Pi. These are plastic lenses, with brilliant clarity and a...

https://www.adafruit.com/product/3917

Clear Acrylics and Hardware Kit for Monster M4sk

Here is the perfect kit for mounting convex lenses (glass or plastic) to your https://www.adafruit.com/product/4330

Tools & Materials

Some additional tools and materials may be required depending on the style of build:

- Hobby knife
- Hot melt glue gun and glue
- Zip ties
- Black card stock
- Black marker
- Pencil
- Velcro strips

Adding Eyes to your Dummy

Quickstart

You should be familiar with the basic setup of the M4 Eyes project based on the most excellent Adafruit MONSTER M4SK Guide Quickstart (https://adafru.it/FDD). Before you proceed with making your own eye pattern texture maps, be sure you've got the M4Eyes.UF2 (https://adafru.it/FDD) working properly using the default Hazel eyes graphics (https://adafru.it/FDD).

Dummy Eyes

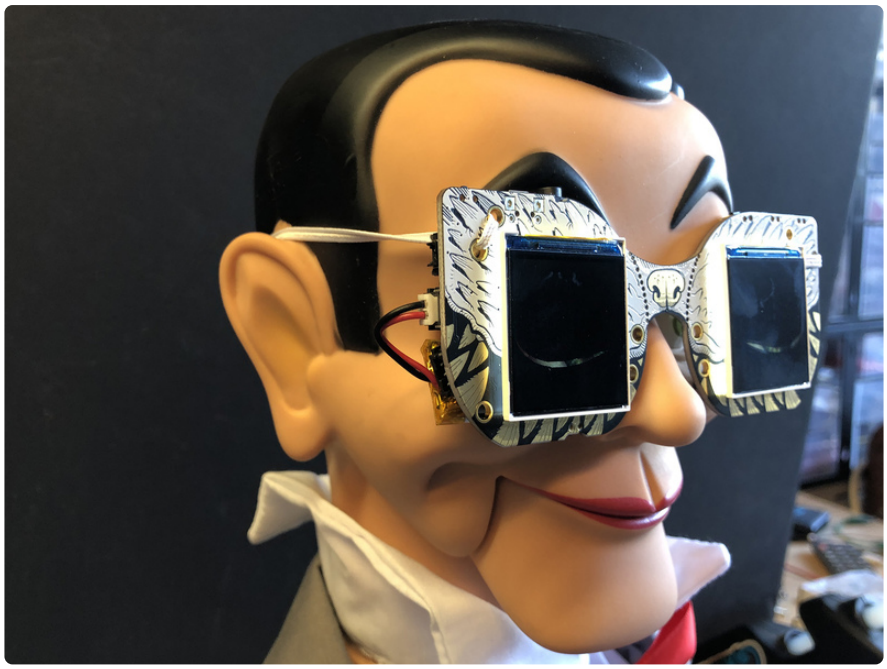
There are a few different ways to add eyes to your dummy. Depending on the dummy you're using, and the size of their head, there may be more or less space for adding the eyes internally to the head. This is probably the best looking, most convincing approach, but not always possible.

You may also not be prepared to cut out the eyes and open the skull of your dummy, which is totally understandable! In these cases, there are a couple of ways to add the MONSTER M4SK externally like a mask or comically oversized glasses.

Let's take a look at these different techniques.

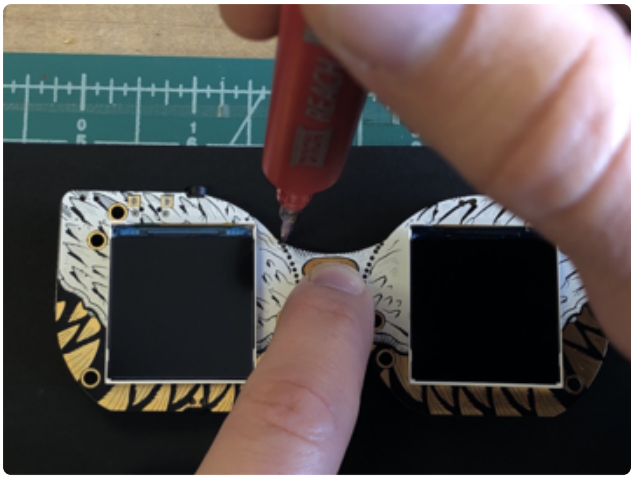
Mask Method

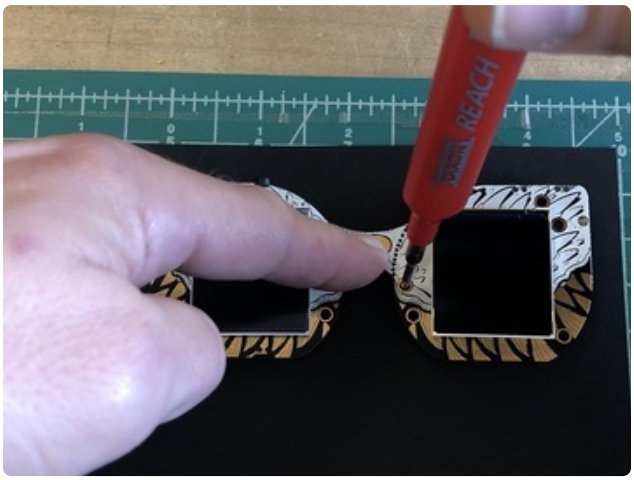
The most straightforward way to add eyes to your dummy is to add an elastic band to the unaltered M4SK.



Glasses Method

This approach can look more comical, with the eye size exaggeration provided by the convex lenses. We'll use the frames from an old pair of glasses to bring it all together and to mount it on the dummy's head.





Frame Prep

Starting with an old pair of glasses (check a thrift shop if you don't have any laying around), pop out the original lenses, we won't be using them.

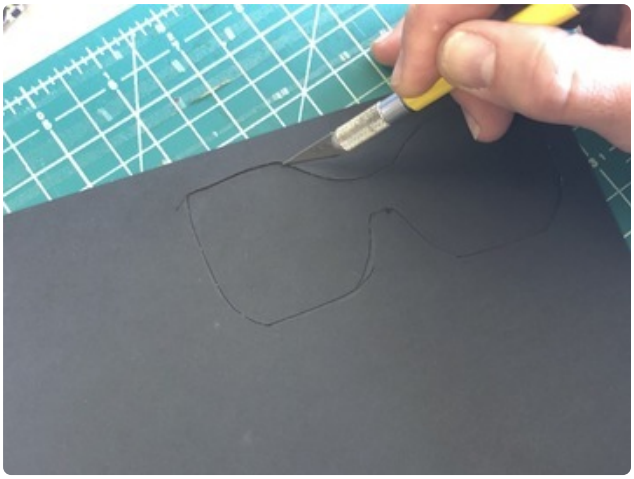
Next, trace the M4SK shape onto a piece of black cardstock. We'll use this to cover the glossy acrylic lens holders and the M4SK board graphics.

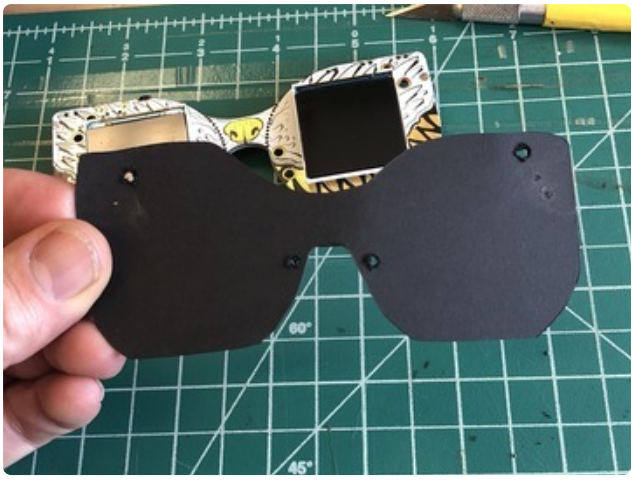
Also mark the mounting hole locations -- this is easier done with a thin tipped, long reach marker, or simply poke holes using an awl or thin screwdriver.

Cut out the cardstock using a hobby knife or scissors.

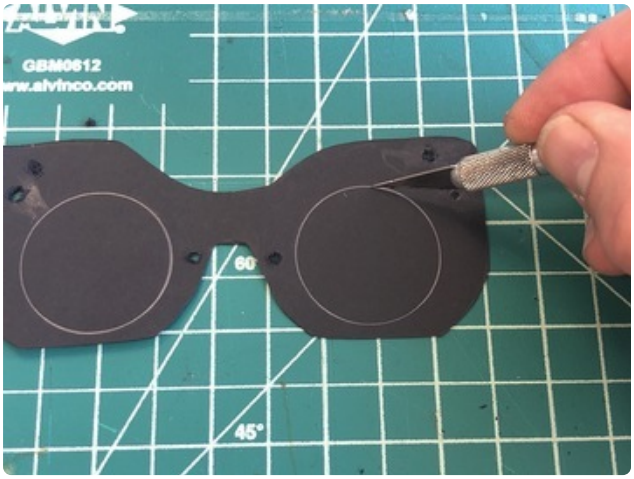
Next, we will mark the lens cutouts. The easiest way to get this alignment correct is to lay the cardstock onto the M4SK and then place the two acrylic lens holders on top, pushing the mounting screws all the way through.

Mark the two circles for the lens cutouts, and then disassemble it all to cut out the circles.




60°
45°

GBM0612
45°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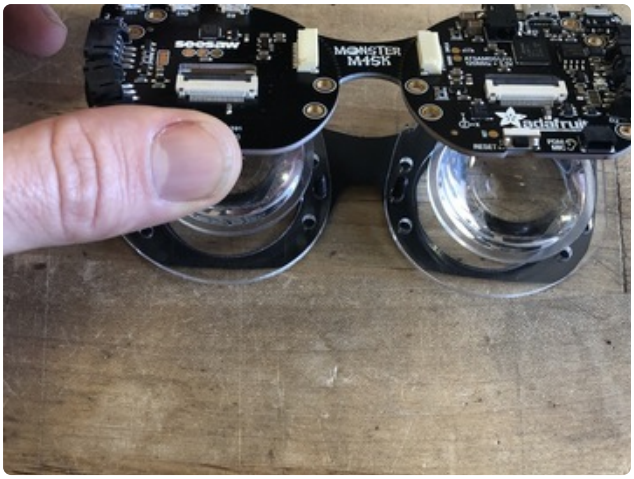
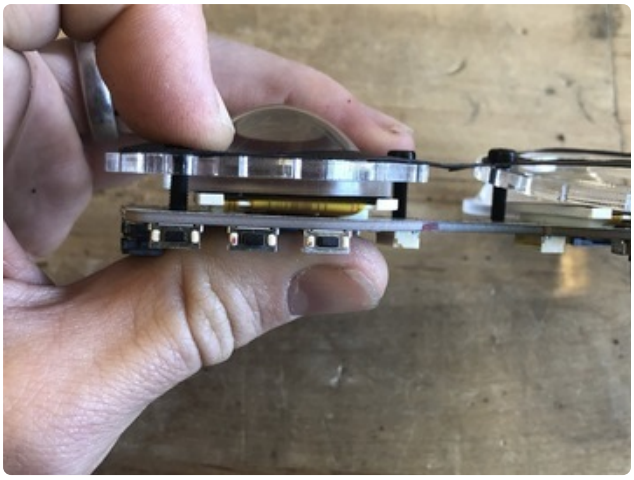
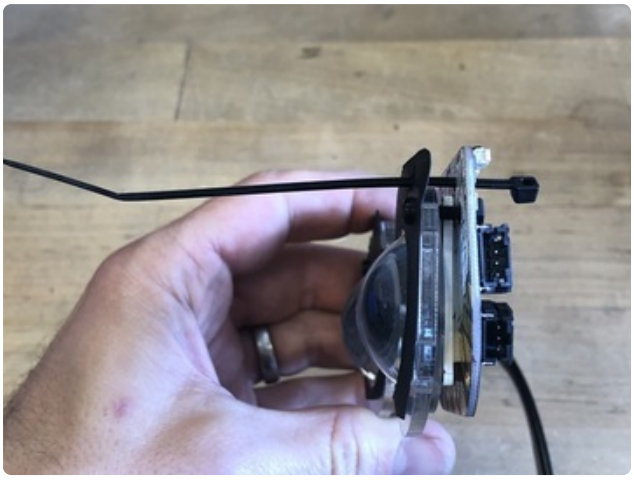
M4SK Sandwich Assembly

I found the easiest way to assemble the sandwich is upside down on the worktop in this order:

nylon screws
cardstock
acrylic lens holders
convex lenses
MONSTER M4SK
nylon nuts


MONSTER
M4SK
adafruit

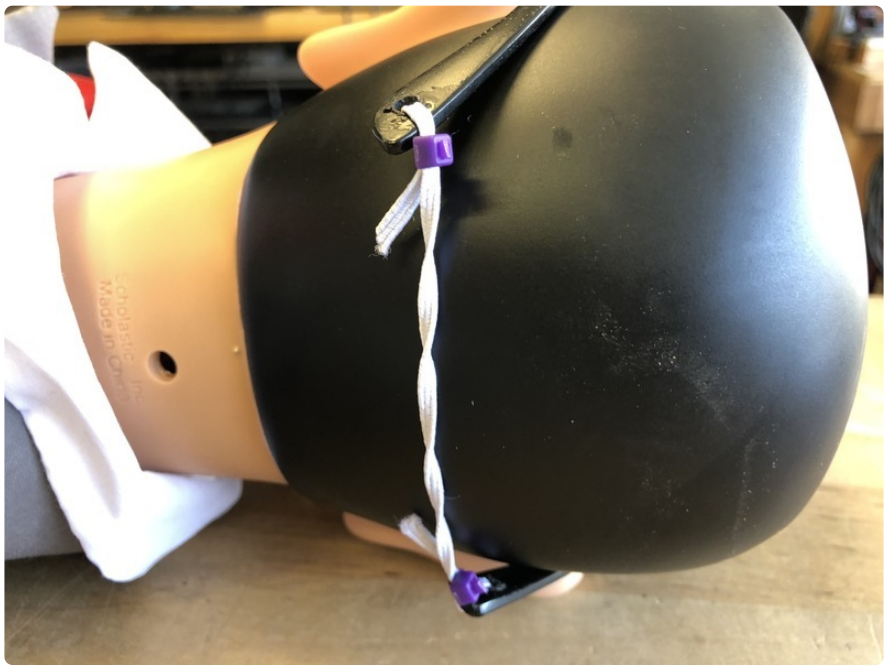




Frame Connection

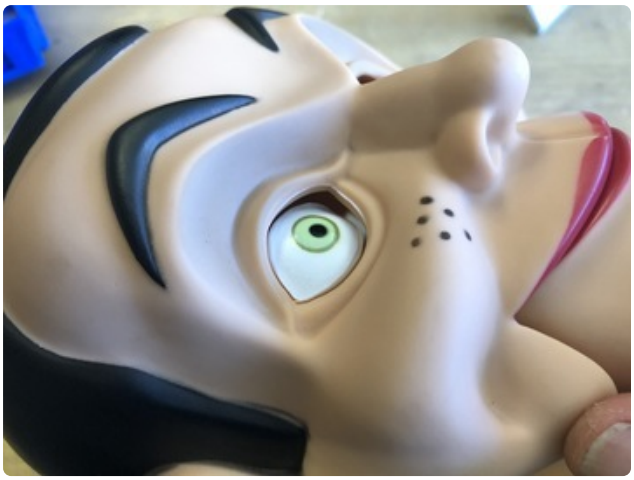
Connect the M4SK assembly to the glasses frames using four small zip ties as shown here.

If necessary, add some elastic to the arms of the glasses as shown.



Internal Eyes Method

Time for surgery, Slappy. Sorry! This is the most invasive method of adding eyes to your dummy, but it also looks the most natural. You may want to practice on a thrift store doll first!



Original Eye Removal

If your dummy has static, molded and painted eyes, you can remove them with a sharp hobby knife. Just go slowly and carefully.

Remember, it's easier to remove material than to add it back, so start small if you're unsure how large to make the holes. Here I started with just the eyes and left the lids alone.

Skull Entry

Some ventriloquist dummies have easy access to the skull interior from inside the chest cavity. If not, you may need to either remove the head from the body and access it from the neck, or create an opening in the back of the skull in order to mount the M4SK.

Surgery

Carefully create an incision in the base of the hairline using a sharp hobby knife. I sliced along the hairline and up above the ears, heading toward the center, but leaving a flap attached to form a kind of hinge.

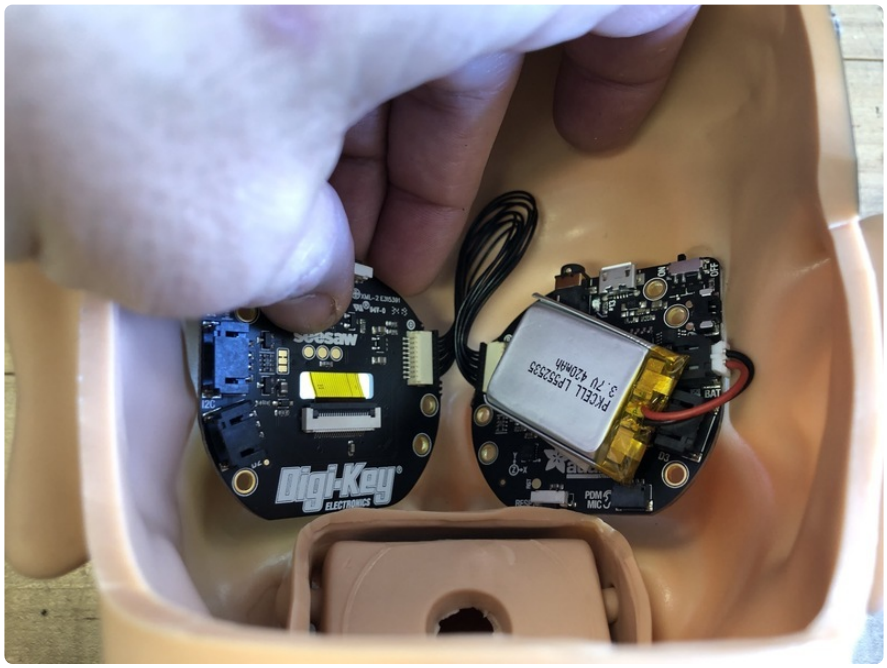
If your dummy's head is large enough, you may be able to mount the MONSTER M4SK as is inside of the head now! A few spots of high temperature hot glue work very well

-- just align the screens with the centers of the eyes and hold in place while the glue cools.

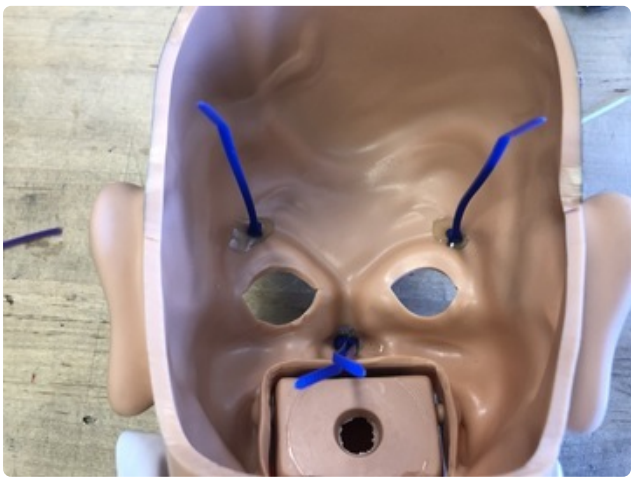
If the spacing isn't right for this, you can now separate the M4SK in to two halves.

Follow the instructions in this guide (https://adafru.it/FRH) to separate the MONSTER M4SK halves and join them with the 9-pin JST SH cable.

Now, you can fit the eyes closer together, which works well for the average ventriloquist dummy.



The trickiest part can be mounting the two halves to they are centered and secured. You can try different things, including Velcro, hot glue, and gaffer's tape. For Slappy, I decided to create four attachment "posts" using zip ties and hot glue.

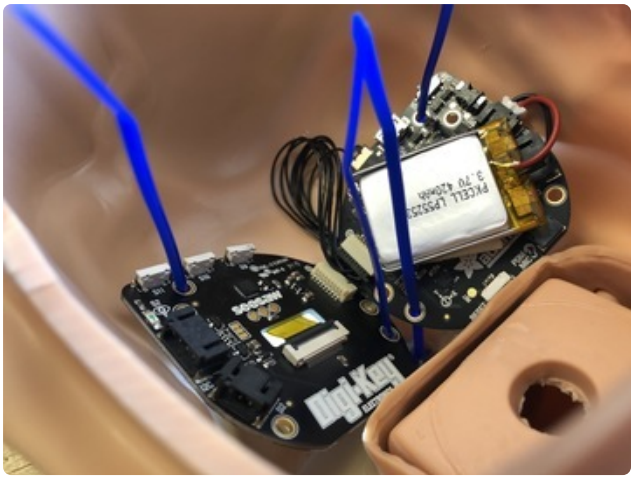


Ziptie Mounts

Using hot glue, attach four zip ties inside the mask like four posts. You can experiment with position based on the M4SK halves.

Slide each M4SK half down two of the zip ties, threaded through two mounting holes until they're properly positioned.

DigiKey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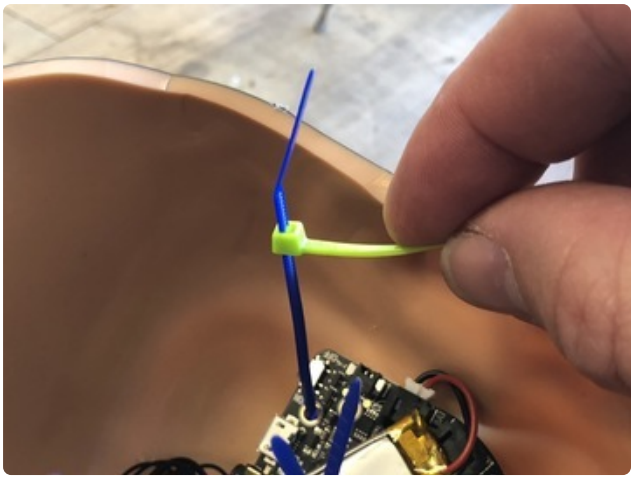
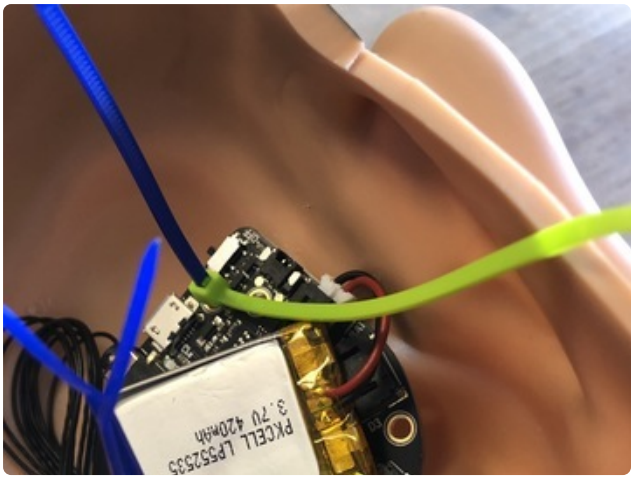
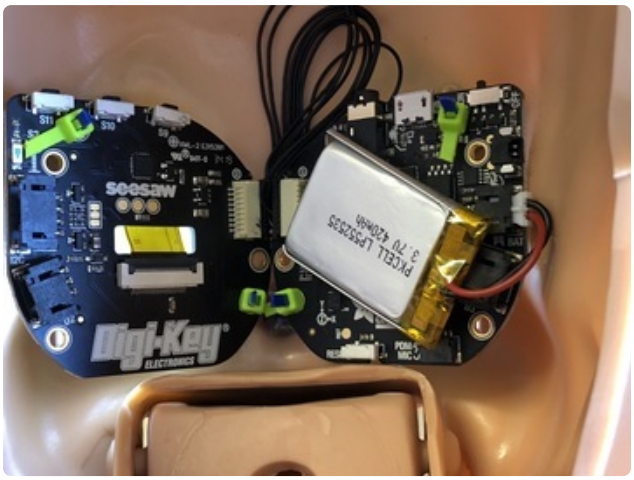


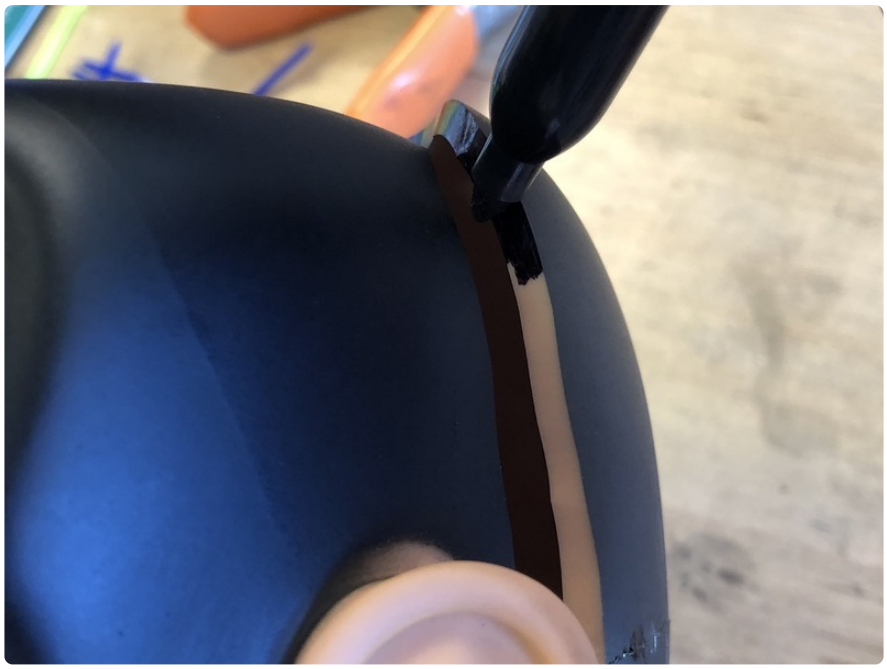




You can now secure the boards using four more zip ties, slid over the existing ones as shown.

Once you've tightened them down you can snip off the excess lengths with diagonal cutters or scissors.

Your dummy has now come to life! You'll want to keep the board accessible for charging the battery and uploading new code to the M4SK, as well as using the on-off switch.

You can use adhesive Velcro to make a small latch for opening and closing the skull flap for this purpose.

To better blend the seam, you can use a black permanent marker to color in the edge of the skull flap.