

Maker Camp

Making in the News

Technology is changing the way we do things every day. And as technology advances, more things become possible to change. Researchers in California are developing an arm band that detects the electrical signals our brain sends when we make a movement.

For example, when you want to raise your hand or give a thumbs up, your brain sends specific signals to your hand muscles to do that task. As the signals travel through neurons in your arm, the device can detect the patterns and mimic the motion on a screen or with a robotic arm. This technology could be used to help people with limb loss better control a prosthetic or to interact inside a video game. Another new advance that relies on electronics and circuitry is artificial skin for robots. As robots are taking on more tasks, and sometimes working alongside humans, it's important that they have more abilities beyond just grabbing, holding, or carrying.



Creating a "skin" for robots allows them to sense temperature, pressure, or even pain. Without such sensors, robots could bump into human co-workers and cause accidents. And although the robots could have more sensitivity with their touch and feel, designing robots with feelings and emotion is a potentially harmful idea.



Questions:

What kinds of ways would you use a wearable armband?

How would you improve robots?

Would you want to work with a robot at your job?

Learn more about these technologies: [Here](#) & [here](#)

Cool Career: Audio Engineer

Did you ever watch a video or listen to a song and think about being that person? Yes, being a singer or actor can be exciting, but they need people with serious skills to make them sound good. That's the role of an Audio Engineer. They're the people who make

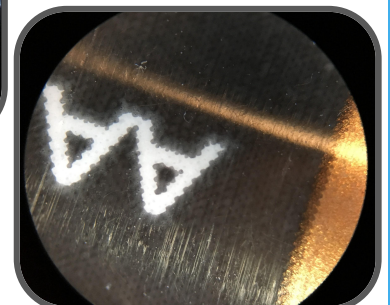
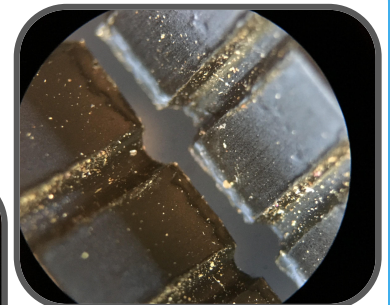
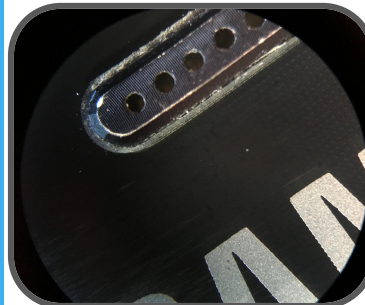
everything sound natural and exciting, whether you're in the front row at a concert, listening on



headphones, or in your living room watching a movie. A lot of science and math are involved to engineer and use the hi-tech devices needed for recording the sound or improving the live experience. If you think a job like this "sounds" fun, start learning more about careers in [Audio Engineering](#)

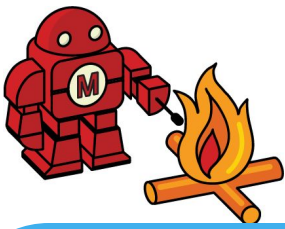
Mystery Photos

Can you identify the mystery electronics items under the microscope?

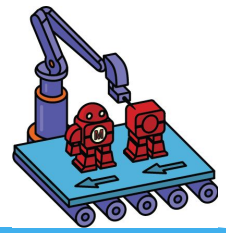


Decode the answers using a [Pigpen Cipher](#)...

V F R O V > F R F R O
F V U J > > O F < F R
E O O O J F F R O L O



Maker Camp



How Things Get Made

Did you know you have a gold mine in your home? Not a literal gold mine, with shovels and gold nuggets. Every tech device, like phones, computers, and other electronics, use precious metals in the circuitry, and that can add up. Since old technology, or e-waste, is more common as people upgrade their devices, recycling and reclaiming those tiny bits of gold and other precious metals can be profitable. In a typical gold mine, there are about 5 grams of gold in 1 ton of dirt. But in 1 ton of e-waste there's about 350 grams of gold! How do companies do it? Watch [the process](#)



Maker Camp Events

Ask your Maker Camp leader for the links to attend!

CodeJoy Daily Live Virtual Sessions

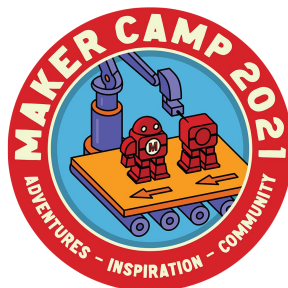
August 9-12 at 4 pm ET / 1 pm PT and
August 9 at 2 pm ET / 11 am PT.

During this [live coding session](#), the Little Bots are feeling nervous about taking a test today. They could use some support from their friends! CodeJoy participants will learn the basics of coding position servo motors and creating sequences and algorithms. Participants will learn the basics of coding the micro:bit LED array and using pause blocks while programming in Makecode.

Coming Soon! Mario the Maker Magician Wrap Party,
August 13 at 10 am PT / 1 pm ET.

Maker Challenge

Have you tried all of the challenges for this Adventure? If not, ask your Maker Camp leader for info about these fun projects: [Paper Clip Circuit](#)
[Your First Scrappy Circuit](#)
[Easy No Sew Light Up Cuff](#)



Q & A with a Maker

Kelsey Derringer: Filmmaker/Tinkerer at [CodeJoy](#)

1) *When did you start making?*

In a broad sense, I have always loved making things! I was a really artsy kid, mostly focused on dance & music - I've been on stage since I was three! But I also always loved tinkering with things as a kid. As an adult, I joined the STEM & Maker movements when I moved to Pittsburgh in 2014 and started teaching for a girls-only after-school STEM club. That's how I discovered robotics, and I fell in love with how ENGAGED the girls were with designing and creating their own robots!



2) *What is your favorite part of making?*

I love most the feeling of real accomplishment and ownership after I finish a project. I've usually gone through a number of ideas before I settle on one, a couple of drawings, a few versions of the thing. And when I get the thing to work, it's not unusual to hear me letting out a big "Whoop!" from the studio when I finally get something working just right.

3) *What was your biggest "fail" when making something?*

In the first version of Robot Mini Golf, I built a big purple version of the Crocodile at the second hole (you can see it in the Sneak Peek video [here](#)). While I did get the mechanism to work, it was not very durable. The first time we took it down, the poor croc fell apart completely. The version of the croc we use now is pared down and uses a completely different mechanism. It's funny - I was so proud when I got that croc working! But also, I'm humble enough to admit that it wasn't quite the right look and feel for our show, and it didn't stand the test of time.

4) *What do you want to learn about next?*

I want to learn so many things! In coding, I want to learn Python. In making, I want to learn more about cam mechanisms. In education, I'm currently reading more about researched-backed strategies to engage more girls & racial minorities in coding & robotics.