Electro-Graf

by Q-Branch on February 23, 2006

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Intro: Electro-Graf

Dossier #2 from the Graffiti Research Lab : the Electro-Graf. An electro-graf is a graffiti piece or throw-up that uses conductive spray-paint and magnet paint to embed movable LED display electronics. The following pages describe the materials and processes used to create the prototype indoor and outdoor interactive electro-grafs created in the lab at Eyebeam .

Check out the Graffiti Research Lab site and watch the DIY Electro-Graf Vid or the G.R.L. flickr group for more on the elctro-graf.

Image Notes
1. fi5e throw-up w/ resistor and twin A

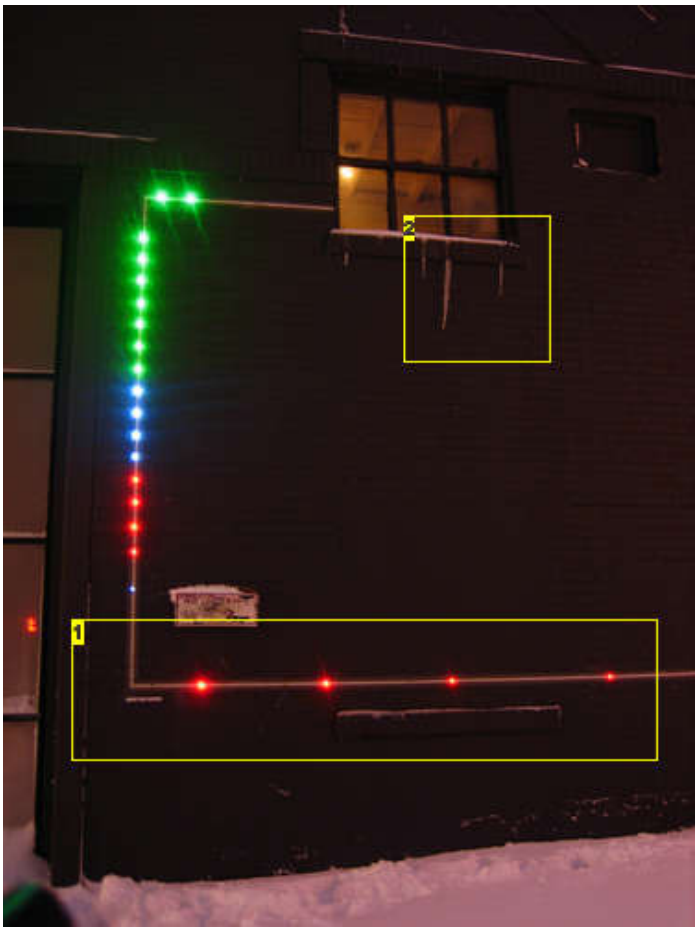

Image Notes
1. You can move the LEDs by hand. They are adhered to the wall with magnets.
2. Blizzard-Proof.NYC, Feb 12th, 2006


"IT'S FUN
TO SHOOT
SOME PEOPLE"


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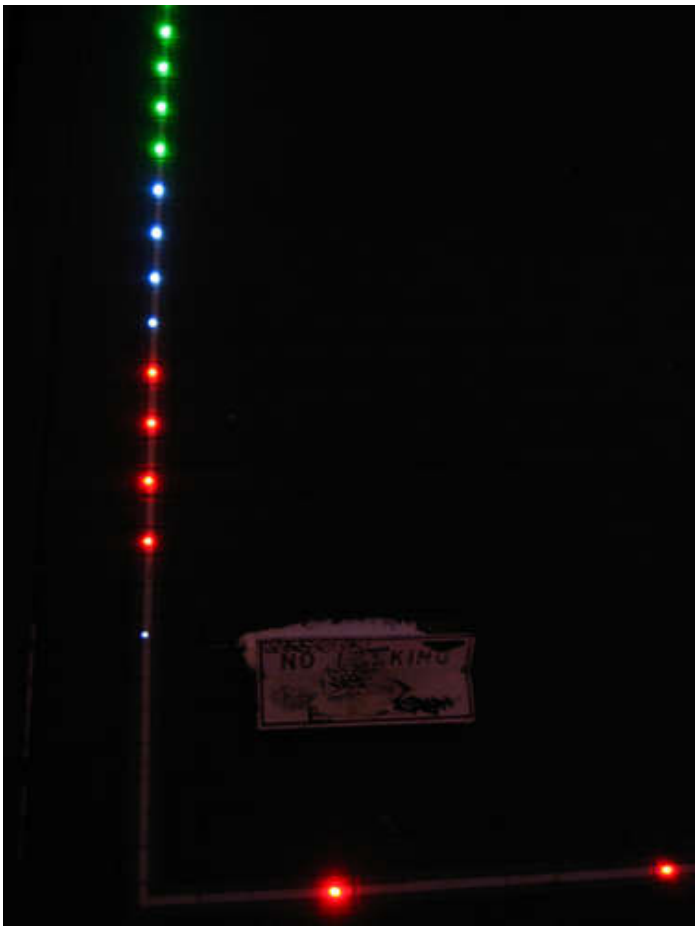
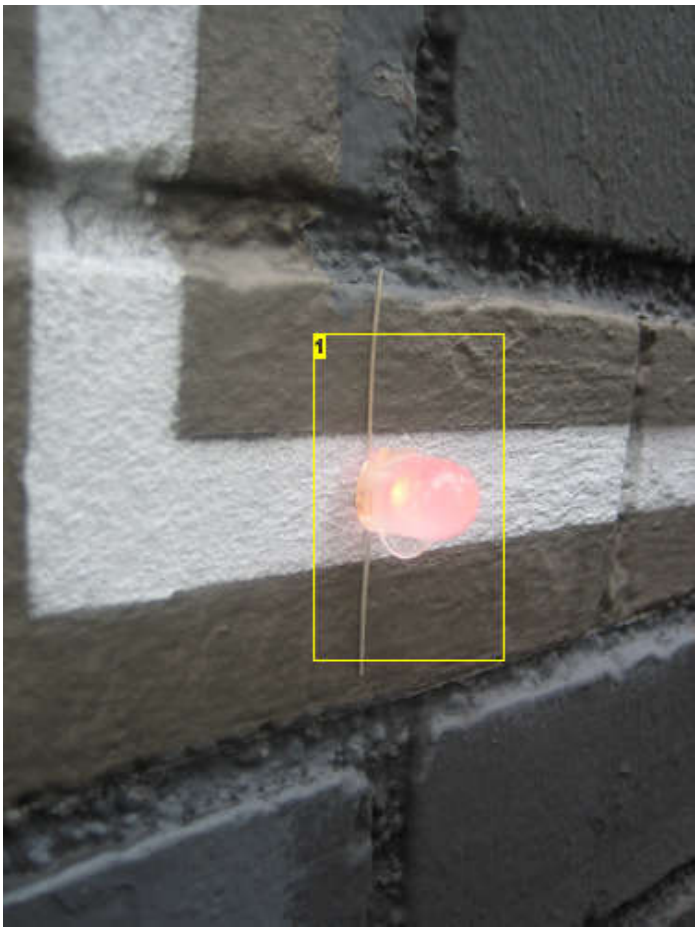




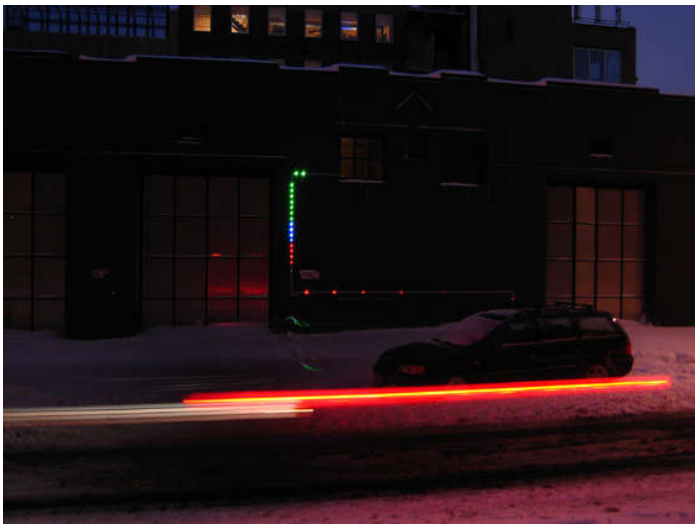


Image Notes
1. tested in the rain, over ten days of continuous operation

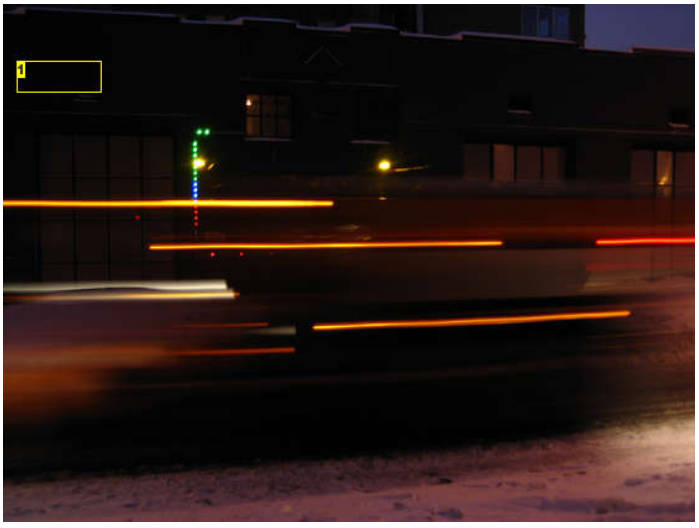
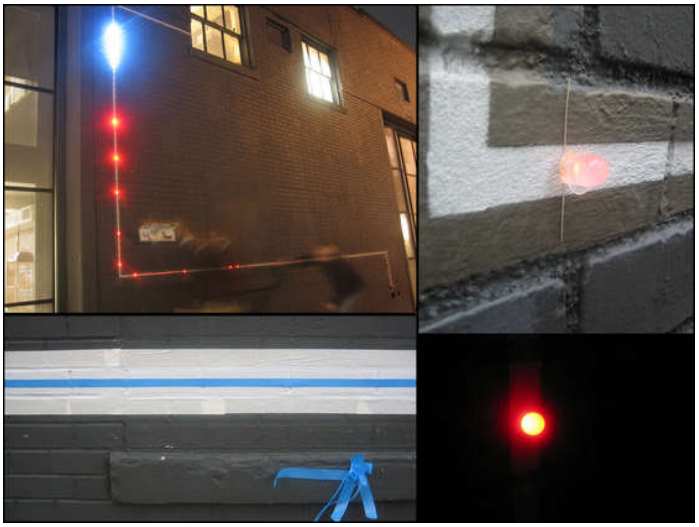


Image Notes
1. VOLTRON!!!


GRAFFITI
RESEARCH




"IT'S FUN
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step 1: Materials/Parts List

The basic materials for building an electro-graf can be purchased using a combination of online vendors and local hardware stores. A small (100 LED, 4' x 4 ') electro-graf could run ~$100. A large piece could cost as much as $2000 dollars, but thats just a WAG .

PARTS

Part: Super Shield conductive spray-paint
Vendor: Less EMF
Average cost: $22 per can
Notes: this is the secret weapon.

Part: spray-paint, color your choice
Vendor: I use Krylon from the local hardware store
Average cost: $22.50 for 6 cans
Notes: use what you like.

Part: Magnet paint
Vendor(s): Less EMF for premixed indoor paint called Magic Wall or Magically Magnetic, Inc. for paint additive. This additive can be mixed with indoor or outdoor primer sealer.
Average cost: Magic Wall @ $29.95/quart; Magnet paint additive @ $15/quart and primer sealer @ $8.50/quart
Notes: I used Zinnser BULLS-EYE primer 1-2-3 primer sealer for the base paint on the outdoor electro-graf proto. It's the good stuff. Your local hardware store is sure to have a thick outdoor primer that will work. You can get worse paint for less money. Note: Don't believe the hype. The paint itself is not magnetic. It is just metallic and magnets adhere to it.

Part: 10mm LEDs. The color choice is yours.
Vendor: Again, it's my crew Denny, Ann, et al. @ HB Electronic Components.
Avg. Cost: $0.20 per LED
Notes: you can use smaller LEDs, but it's just not my taste.

Part: 1/8" Dia. x 1/16" Thick NdFeB Disc Magnet, Ni-Cu-Ni plated
Vendor: Amazing Magnets
Cost: $9.00 per 100 magnets
Notes: Cost reductions for larger quantities

Part: Power supply.
This will vary based on number and types of LEDs, circuit design and environment. You must supply the LEDs with >= 3 volts DC power. Depending primarily on the number of LEDs, you can use anything from a $2 9 Volt to a $50 dollar car battery to a regulated 500 Watt power supply if the proper current limiting components are used. In the lab I use a regulated DC power supply. We will discuss this more in the following steps.

Parts: Tape
Vendor: your local hardware store should have painter's tape and masking tape. Get both.
Cost: $2-$5/ per 60 yard roll
Notes: 3M painter's tape is blue and has less adhesion than masking tape. Both tapes are useful in different situations.

Parts: 5 minute epoxy
Vendor: your local hardware store should have 5 minute epoxy
Cost: $5 dollars for one tube
Notes: This is some delightful shit. Get the kind in the two part dispenser.

Part: Stencil materials -- Acetate, Manila Folders.
Vendor: Your local art store or office store should have acetate, cardboard and file folders.
Avg. Cost: $10 for a 25' x 12 ft. roll of acetate, folders and cardboard vary in price and is often found for free.

Part: Stranded wire
Vendor: Jameco
Cost: $3 per roll
Notes: any 18-24 AWG stranded hook-up wire will work. Solid core wire is too brittle.

OPTIONAL

Part: 1/4 or 1/2 Watt resistors, the choice of value is yours
Vendor: Jameco
Avg. Cost: $1 for 100 pieces

Part: 3/4" Foil Tape
Vendor: Newark In One
Avg. Cost: $18 per roll

Part: Conductive Epoxy
Vendor: Newark In One
Cost: $32.00
Notes: The epoxy is optional. It is used to attach magnets to electronic components and wire.

Part: you can add electronic components to create LED sequences, animation, solar power, etc. You may need stranded wire for connecting your LED traces to various power sources.

TOOLS :

a respirator, a mutimeter, paint brushes, containers for mixing paints, exacto blades, clay

Image Notes
1. Primer gets thicker and more granular when you add the magnet paint additive

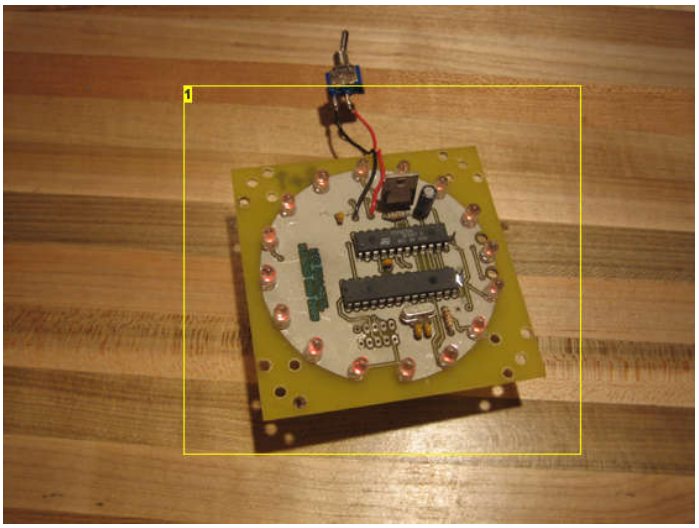
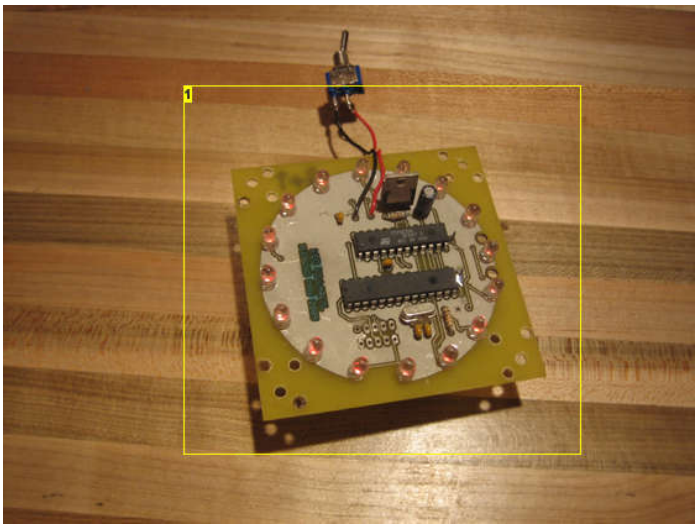


Image Notes
1. Twin A's board designed for Leo Vilareal and borrowed by me



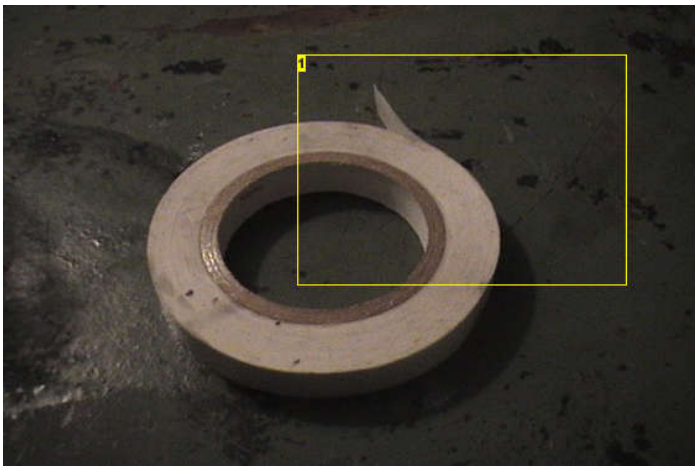


Image Notes
1. The blue maksing tape is for painters and will be less likely to pull off paint

Image Notes
1. rare-earth magnets fasten the LEDs to the wall, but allow you to remove them and reposition them very easily.

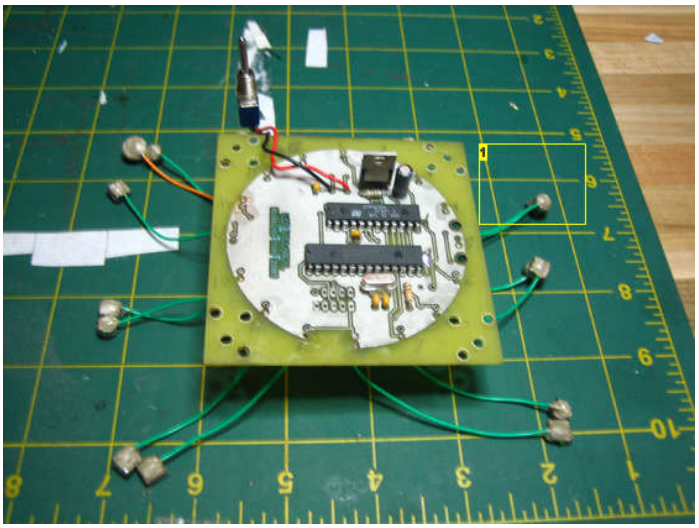


Image Notes
1. magnets epoxied to wires that interface the pcb to the traces on the wall

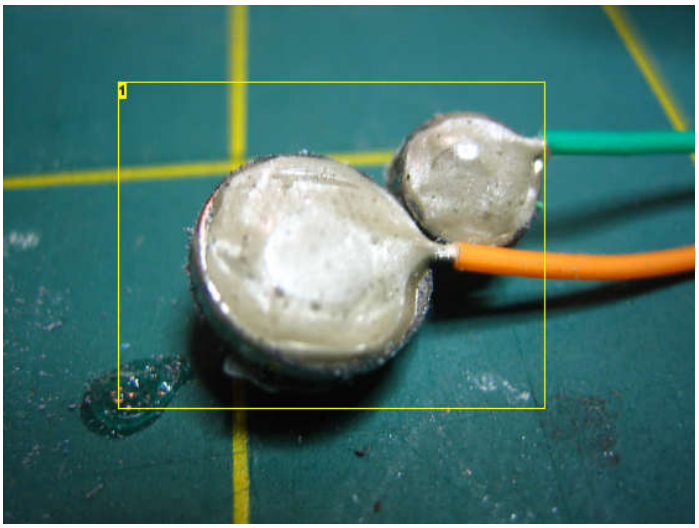


Image Notes
1. Conductive epoxy is used to attach magnets to wires for interfacing with the wall

step 2: Design your piece

I won't get into any depth regarding designing stencils or graffiti pieces. I will also not go into detail on designing circuits for driving and sequencing LEDs. I will direct you to online and print resources where this information can be gleaned from reputable sources. I will also explain the specific design we implemented with the first two prototype electro-grafs.

Links to stencil design examples and tutorials:
Stencil Revolution
Visual Resistance
Wooster Collective
Street Crimes
Banksy

Links for basic electronics for non-experts:
Tom Igoe's Physical computing online resources
Physical computing in print by O'Sullivan and Igoe.

Electro-Graf V1

The first prototype electro-graf, executed in the lab at Eyebeam is a mash-up of images of the state-of-the-art in military robots combined with quotes from soldiers, officers and military bloggers. Marine General, James Mattis, said," It's fun to shoot some people," when discussing his service in Afghanistan where US forces have killed over 3500 civilians. That's a lot of fun. More fun that even Bin Laden had on September 11th I bet. The image in this design was taken from promotional material about Foster-Miller's robot TALON. The weaponized configuration is called SWORDS. SWORDS was developed, in part, in a suburb in New Jersey at a place called Picatinny Arsenal.

"The TALON robot is the only mobile platform currently certified by the Department of Defense for remotely controlled live firing of lethal weapons." Read: the first robot licensed to kill.

For this piece we used a Stencil Revolution tutorial to create the stencil in Illustrator CS1 and cut them on a laser cutter. The control electronics were designed, built and programmed by Twin A in collaboration with a very good and up<a/> LED and video artist named <a href="http://www.villareal.net/">Leo Villareal . It is currently on loan from A for our experiments in the lab.

Electro-Graf V2

The first prototype outdoor electro-graf is currently up on the facade of Eyebeam . The design was intended to be minimal and entirely functional: to test the electro-graf capabilities in terms of size, weather-proofing, theft patterns, and public feedback.

Both electro-grafs are just technology demonstrations. I do not claim to be a writer, a bomber or an artist. I am a graffiti engineer. My intention is to develop and demonstrate tools that enable parity between the establishment and the graffiti writer w/r/t the ability to garner and direct attention.

Image Notes
1. James Mattis holding back laughter while thinking about killing some people.
2. He had fun getting these!

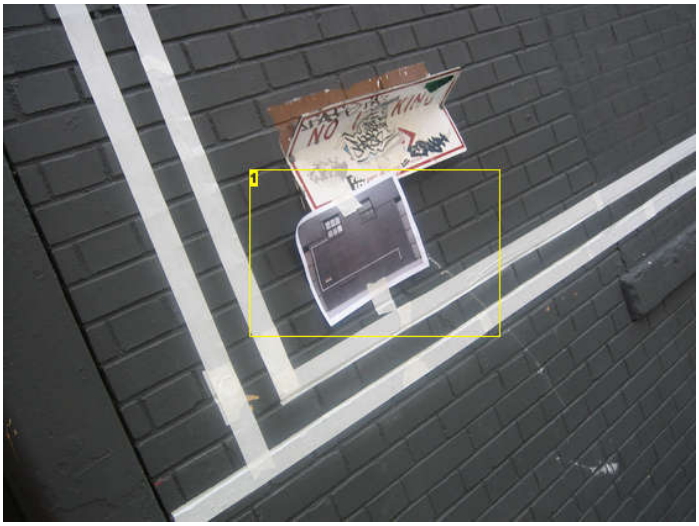


Image Notes
1. the outdoor electrograf design

Image Notes
1. simple design, two traces, one power the other ground

step 3: Apply magnetic coat

After you have chosen a location and time to execute your piece, you need to apply the magnet paint. If you are using the Magic Wall paint indoors, you can just apply the paint with a brush or roller. You need to paint on 2-4 coats for a reliable, robust magnetic attraction.

If you are using the paint additive and a primer sealer, you need to mix the powder additive to thick, primer/sealer paint. Follow the instructions on this site to properly make the magnetic paint. Add 1 cup of additive per quart of paint. Remember to follow the instructions on the paint can regarding the appropriate temperature for applying the paint .

Image Notes
1. Primer gets thicker and more granular when you add the magnet paint additive

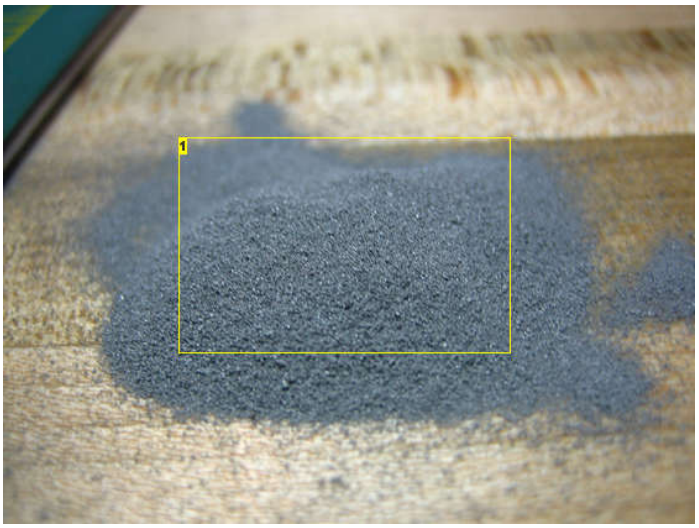


Image Notes
1. Sweep up your metal shop, sieve it to the desired particle size and sell it as magic paint additive.

Image Notes
1. rare-earth magnets fasten the LEDs to the wall, but allow you to remove them and reposition them very easily.

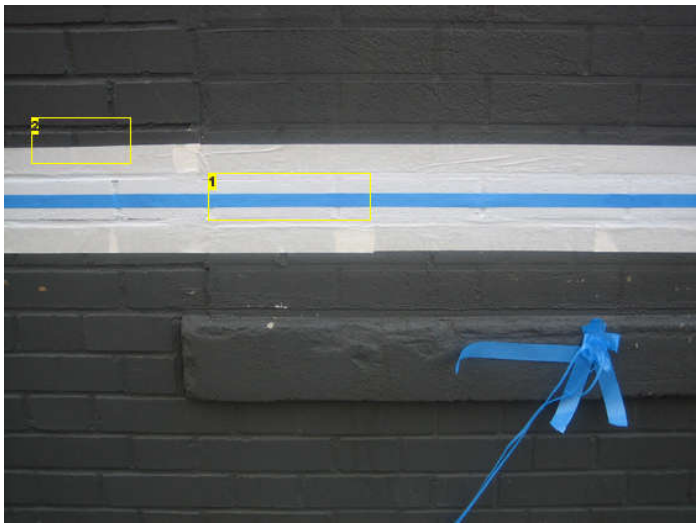


Image Notes
1. a piece of blue painter's tape over a white magnet paint stripe 2.5" wide by 30' long
2. masking tape

step 4: Apply conductive coat

Now, apply the stencil circuit using Super Shield conductive spray-paint. You will need to apply 2-5 coats of spray-paint for best functionality. Use the multimeter to test for conductivity and resistance. The trace resistance should be less than 10 -20 Ohms per foot. To decrease the resistance, add more coats of paint. Make sure you functionally test the circuit whenever you can.

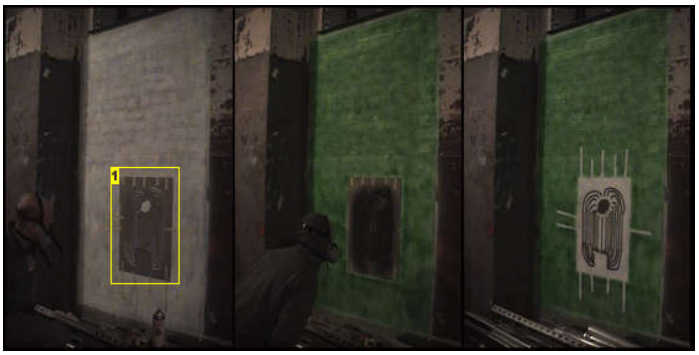


Image Notes
1. circuit stencil

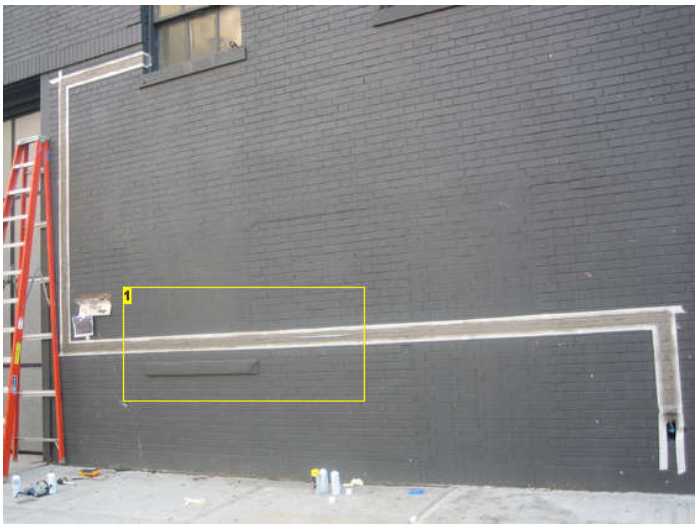


Image Notes
1. conductive layer. 5 coats.

step 5: Tape contact pads

If you intend to add a topcoat to the electro-graf, like in the case of the prototype indoor electro-graf, you need to put masking tape on the circuit stencil to create contact pads. These are where the LED leads or the wires will make contact with spray-on conductive traces and close the circuit. I used 1/2" by 1/4" pieces of masking tape to make the contact pads. Remember to put these on before you spray your topcoat! The outdoor electro-graf did not require a topcoat of paint or tape to cover the contact pads.

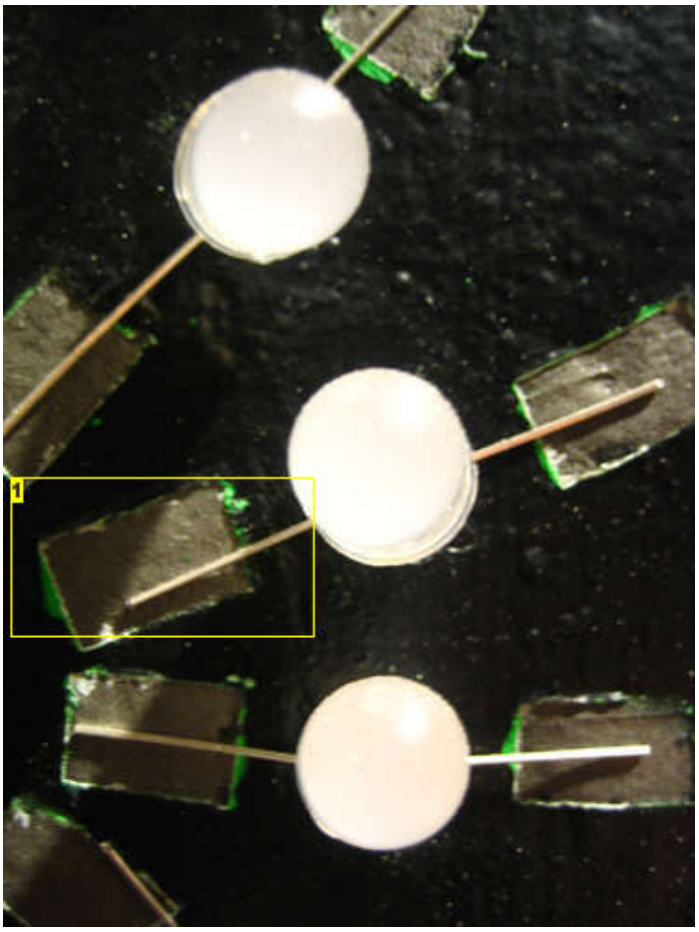


Image Notes
1. This is a contact pad after the topcoat is sprayed and the tape has been removed

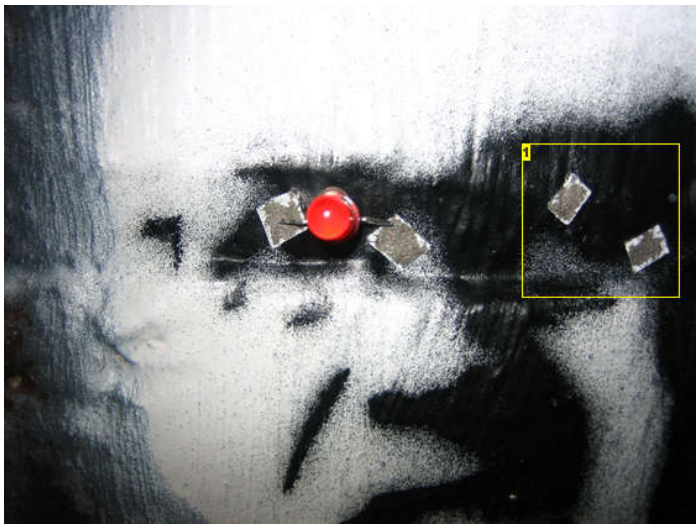


Image Notes
1. Contact pads

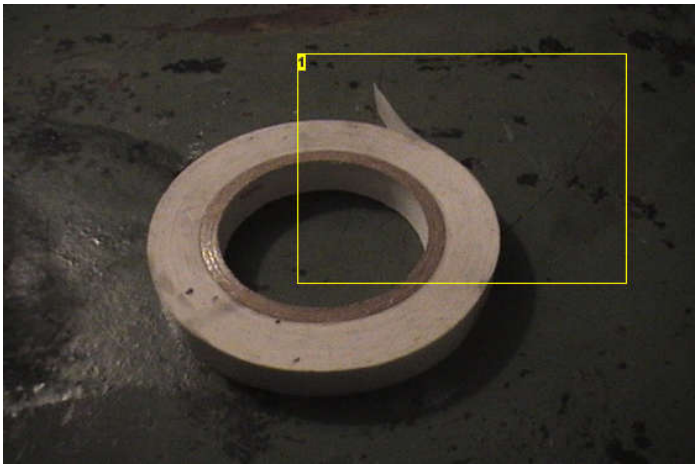


Image Notes
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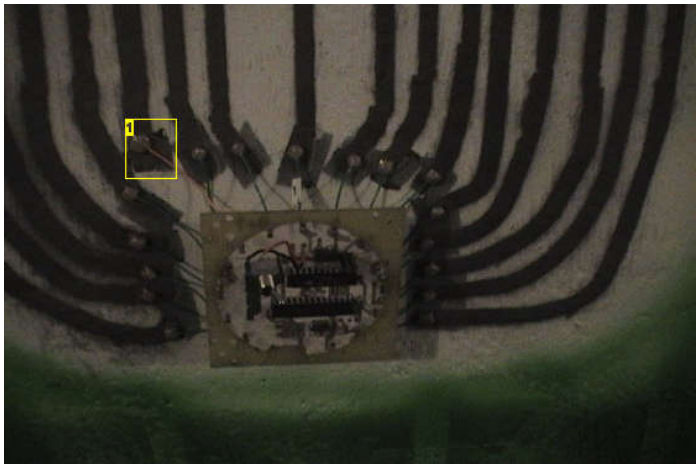


Image Notes
1. This is a contact pad prior to taping and topcoat application. The magnet that is epoxied to the wire will determine the size of the contact pad

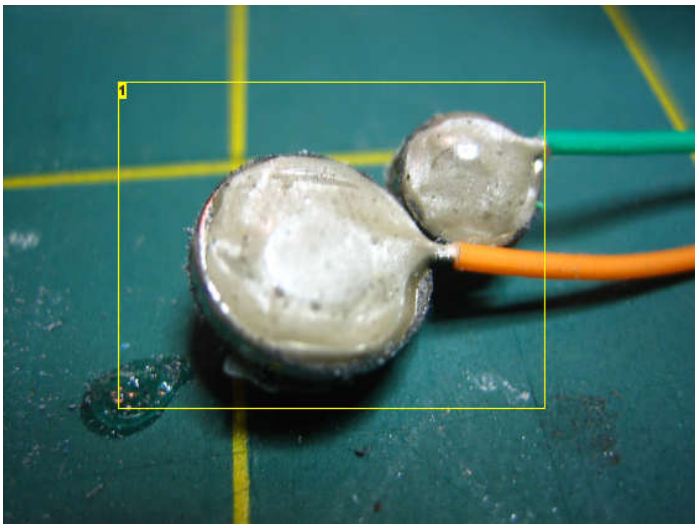


Image Notes
1. Conductive epoxy is used to attach magnets to wires for interfacing with the wall

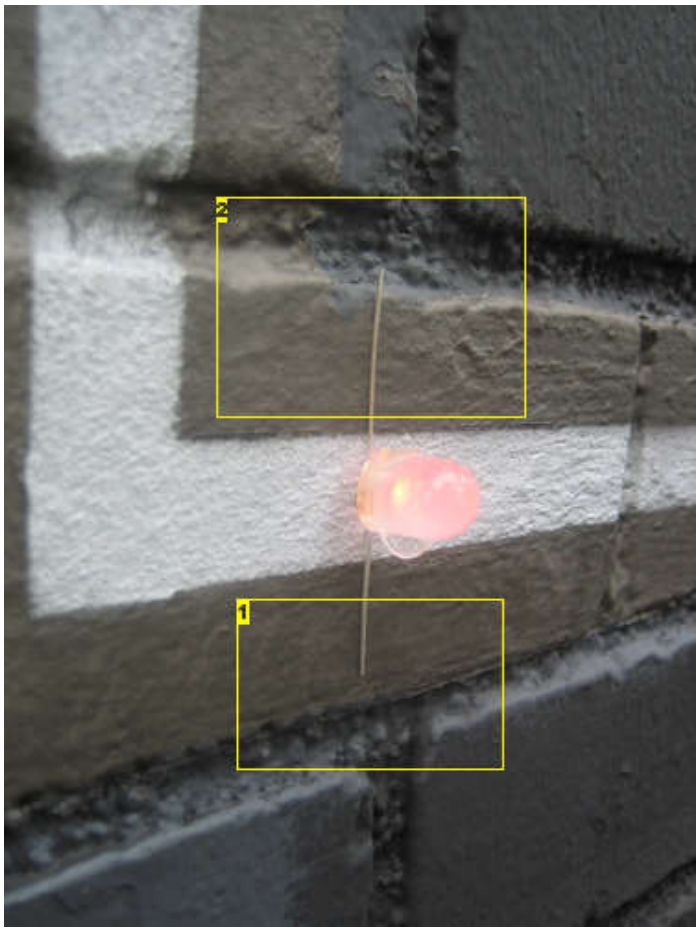


Image Notes
1. LED lead is preloaded into the conductive trace
2. pay attention to the way the leads make contact with the conductive traces

step 6: Apply topcoat

Once you have taped the contact pads, you can apply the topcoat. I used Krylon green fluorescent and black ultra-flat spray-paint. You can get specialty caps at a number of online stores. Here is one. Fat caps help reduce the time it takes to cover large areas with a single color. Remember to allow sufficient time for the paint to dry between coats.

Note: acetate produces a tight stencil with less under-spray than cardboard or thick paper. But acetate is flimsy and requires much more taping to stay flush with the wall.

step 7: Remove tape

Now, you can use an exacto blade, tweezer or small screwdriver to remove the tape over the contact areas. Once the tape is removed, use the multimeter to test the traces conductivity and resistance. Remember to functionally test the circuit every chance you get. and pay attention.

step 8: Make mods to electronics

Every electronic component needs to interface with the wall in two ways: electrically and mechanically.

Mechanical

Components like wire, LEDs and circuit boards can be taped, epoxied or screwed into the wall. Another option is to create a metallic surface on the wall (using magnet paint) and then modify the electronic components by adding rare-earth magnets. The magnet mod-ed components then adhere to the section of the wall where the magnet paint has been applied. Wire can be attached directly to magnets using conductive epoxy. Be patient with conductive epoxy and don't speed-up the curing process with heat. Attaching magnets to LEDs is a bit more difficult.

Attaching magnets to LEDs

I have developed a simple technique for attaching magnets to LEDs using old, used exacto knives. First, I created a LED holder on the laser cutter. You can also use a little mound of clay, putty or, I suppose, chewing gum. While holding the LED with its leads pointed up, mix a small batch of epoxy. Place the magnet on the end of a used exacto blade, about 1/4-inch from the tip (see picture). It will adhere magnetically. Put a dot of epoxy on the magnet and on the LED. Now, with the magnet facing down, let the tip of the blade slide between the leads of the led until the magnet is laying face down on the underside of the LED. You can adjust the distance between LED leads and the magnet by moving the magnet further away from the tip of the blade. THE MAGNET SHOULD NOT TOUCH THE LED LEADS. This will create a short since the magnet is conductive. Once one has dried you can repeat the process with a second magnet on the opposite side of the leads. The first magnet will help keep the blade in place for the second magnet. Confused?? Just check out the flicks and give it a try.

Electrical

You can connect wires and LEDs to the wall to make electrical connections in many of the same ways. To attach wire to the wall just bond the twisted strand of wire to a magnet using conductive epoxy. Then connect the magnet to a wall that has both magnet and conductive paint applied. The circuit will connect across the conductive magnet. To modify LED to make an electrical connection you can simply bend the LED leads so that they run parallel with the underside of the LED. When the magnet mod-ed LED is adhered to the wall, the bent leads are pre-loaded via magnetic attraction onto the conductive traces. This way you can remove and re-configure the LEDs on the wall at a number of locations by design. Look at the flicks for more details on the process.

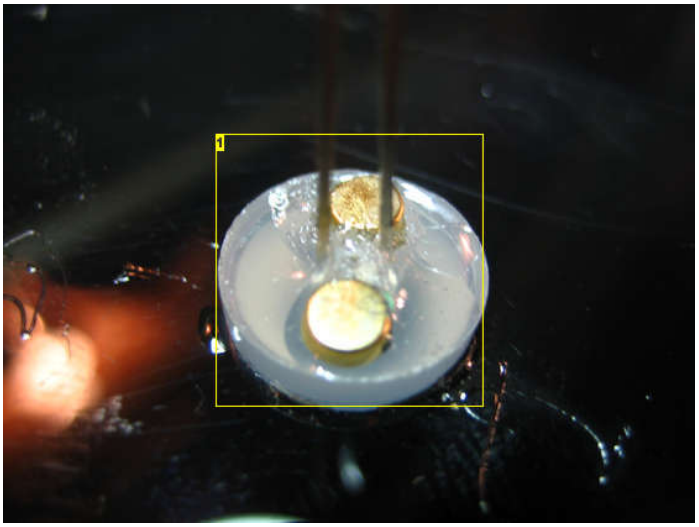


Image Notes
1. Two rare-earth magnets on the underside of the LED.

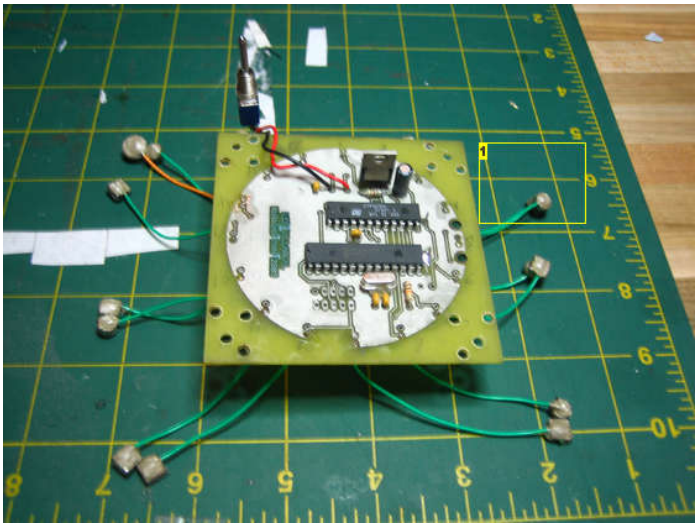


Image Notes
1. magnets epoxied to wires that interface the pcb to the traces on the wall

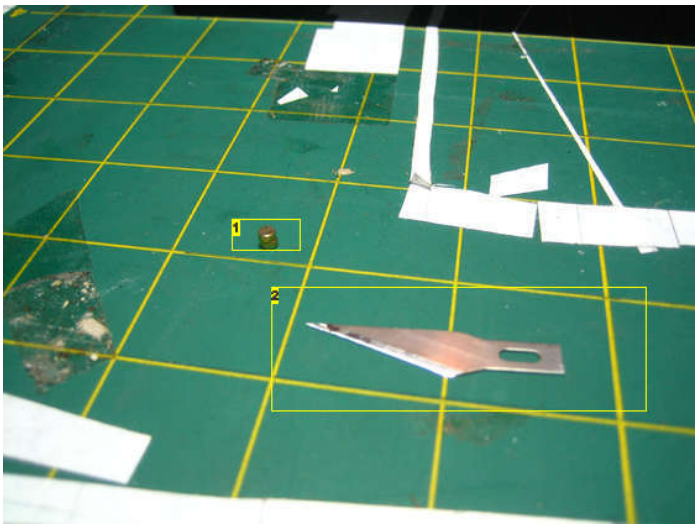


Image Notes
1. two little magnets
2. Used blade

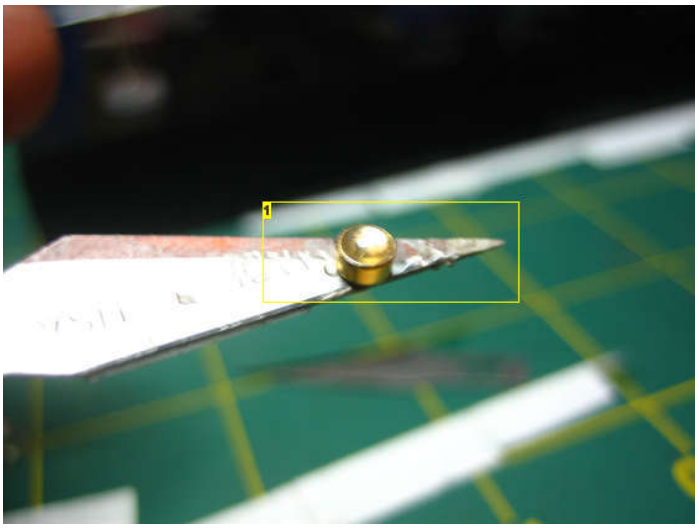
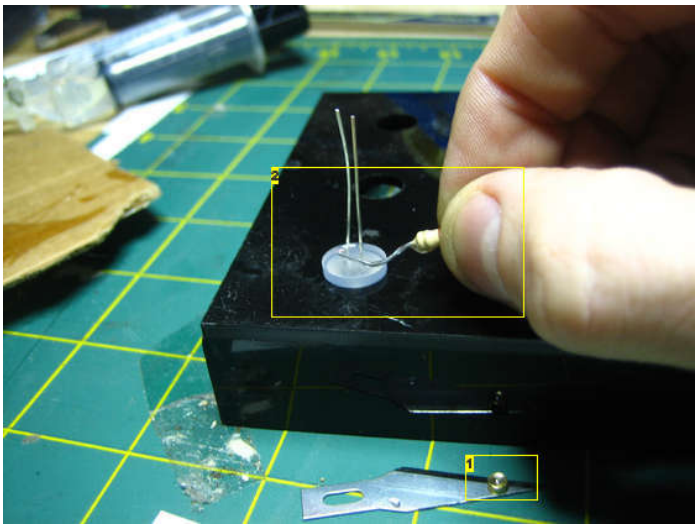


Image Notes
1. magnet on tip of blade



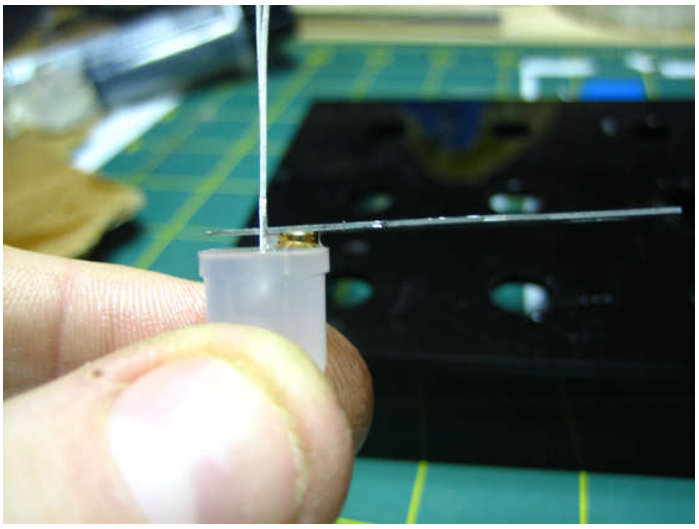
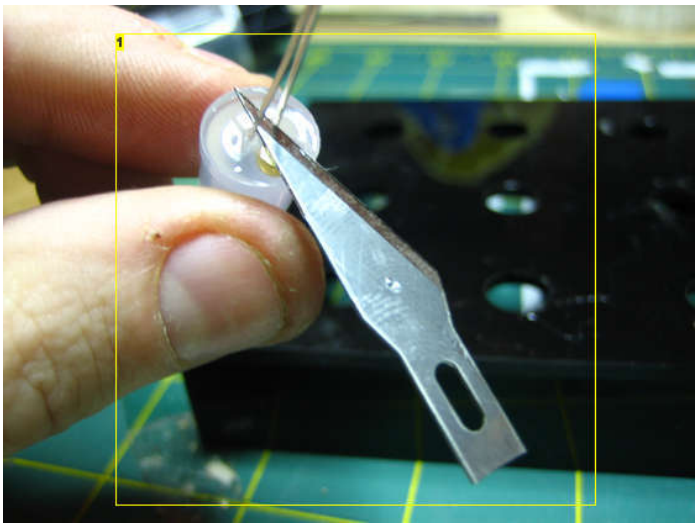


Image Notes
1. epoxy on top of magnet
2. adding epoxy with a bent resistor



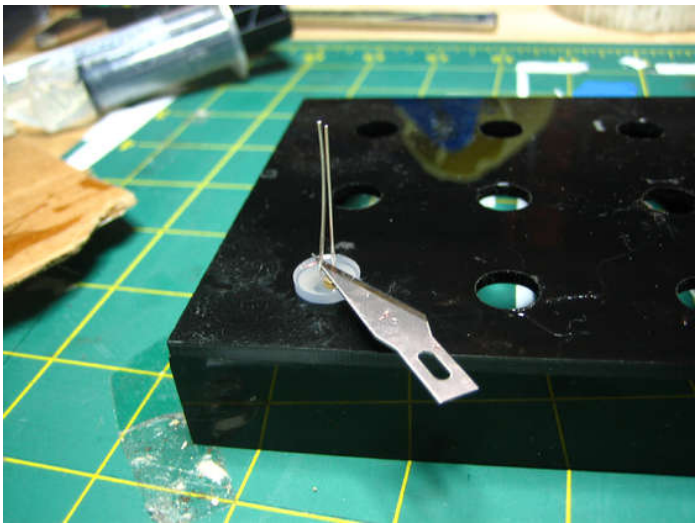


Image Notes
1. Let this dry for 5 minutes in the holder

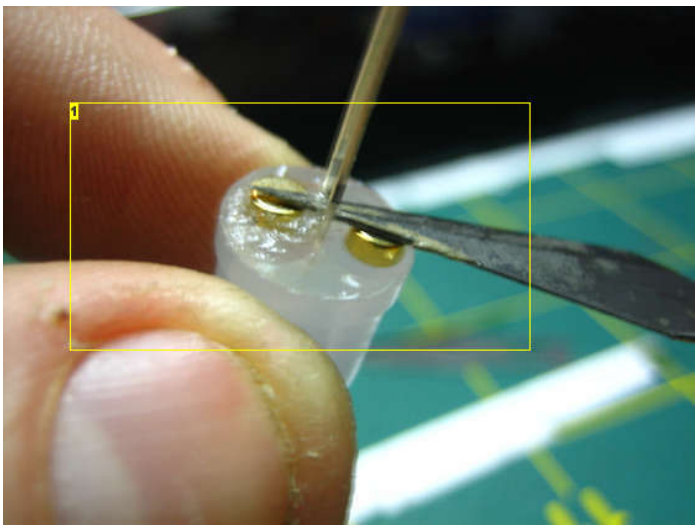
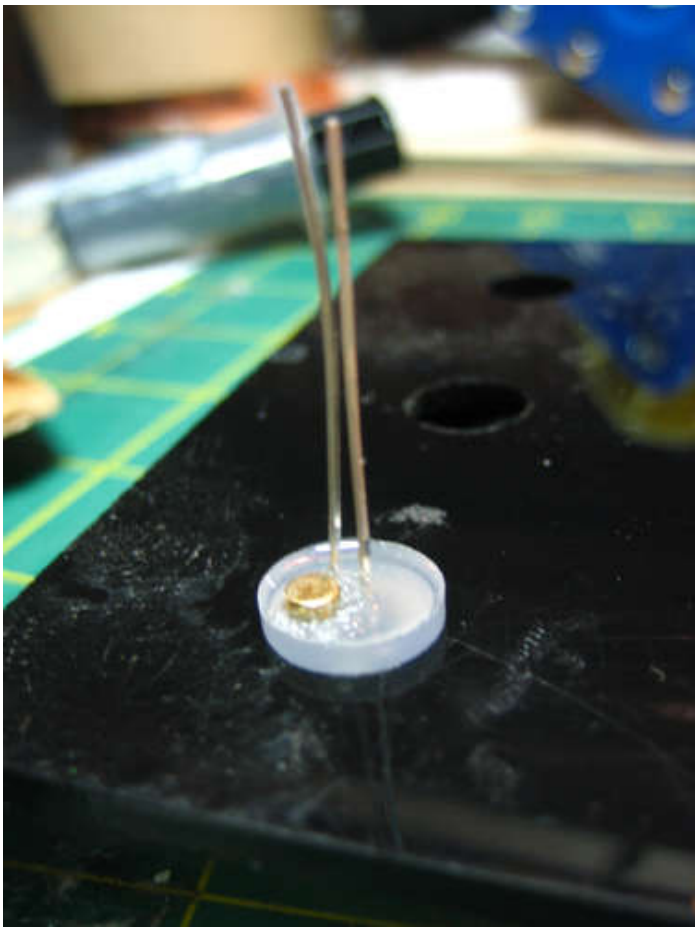


Image Notes
1. The first magnet helps stabalize the blade during the application of the second magnet



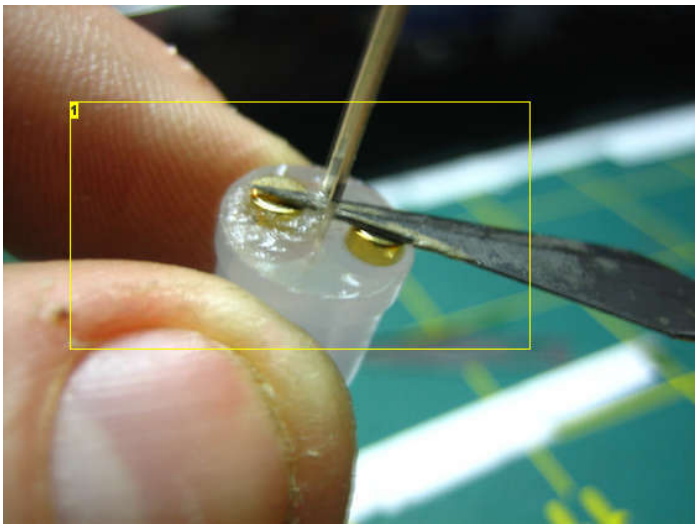


Image Notes
1. dont get much epoxy on the blade. dont glue the magnet to the blade.

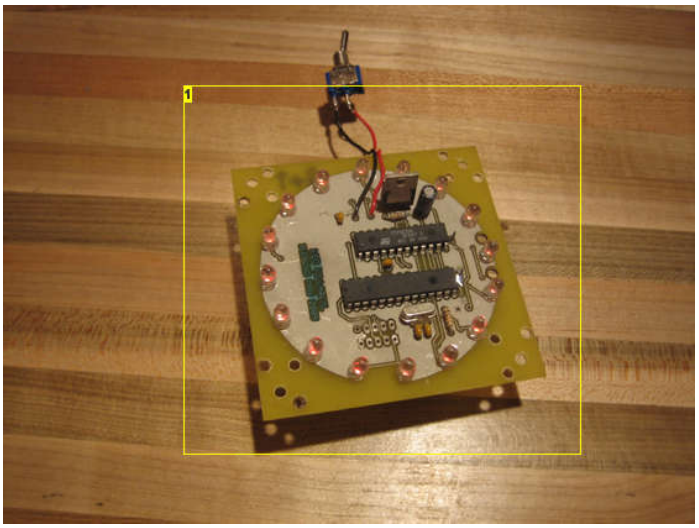


Image Notes
1. Twin A's board designed for Leo Vilareal and borrowed by me

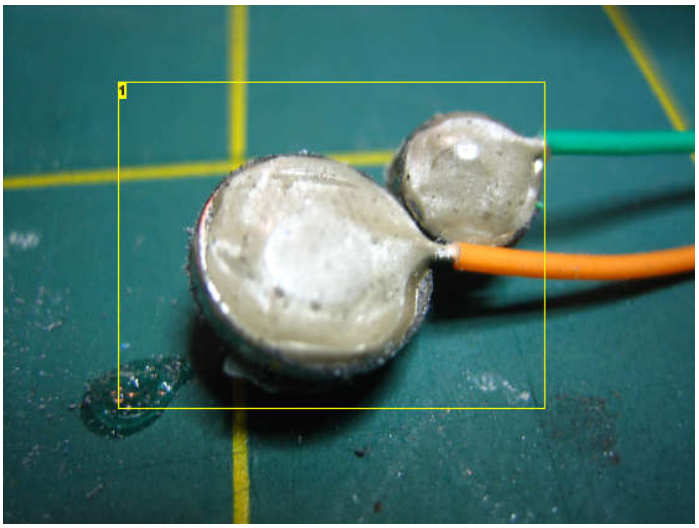


Image Notes
1. Conductive epoxy is used to attach magnets to wires for interfacing with the wall

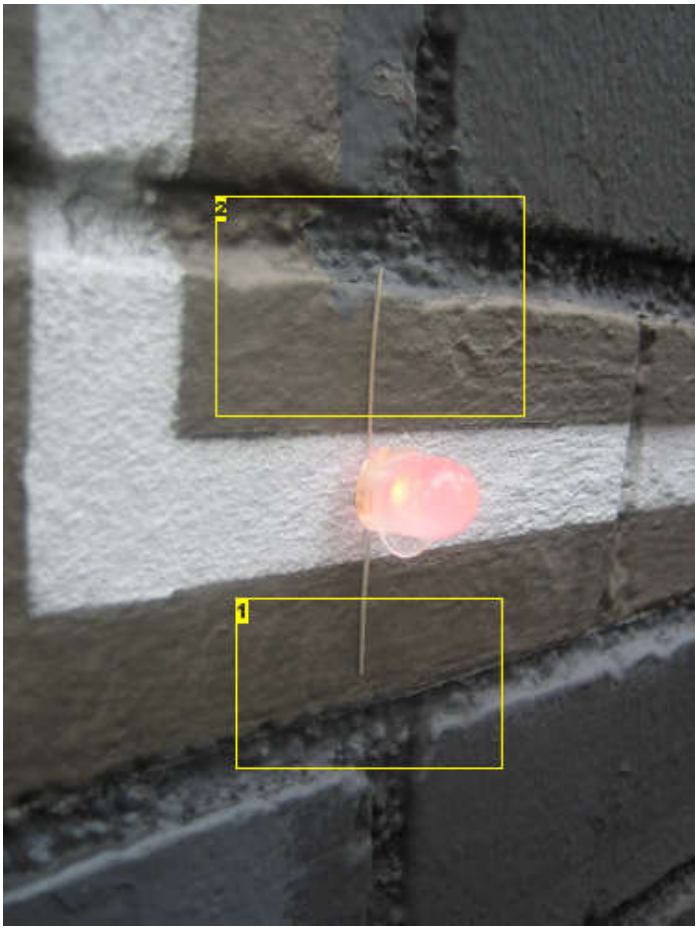


Image Notes
1. LED lead is preloaded into the conductive trace
2. pay attention to the way the leads make contact with the conductive traces

step 9: Integrate

Now you can put the LEDs on the wall, connect the power supply and any control electronics and turn it on. Depending on your design this could take a second or hours. If you use the techniques described, your LEDs can be reconfigured along the piece (as in the case of the outdoor electro-graf) or LEDs can be replaced and colors changed (as in the case of the indoor electro-graf stencil).

In some cases you will need to add a resistor directly to the LED cahthode lead. This will help prevent the LED from drawing too much current and getting damage and reduce the voltage drop that occurs in a parallel circuit due to LEDs that are not current limited. To determine you resistor value use the following easy formula.

(SupplyVoltage - LEDForwardVoltage)/ NominalLEDCurrent = ResitorValue

In the case of the outdoor electro-graf we used the following values:

(12 VDC - 3VDC)/.020 mA = 450 Ohm resistor

The main design driver for the magnetic paint and magnet mod-ed electronics was ease of integration. This step should be relatively easy.

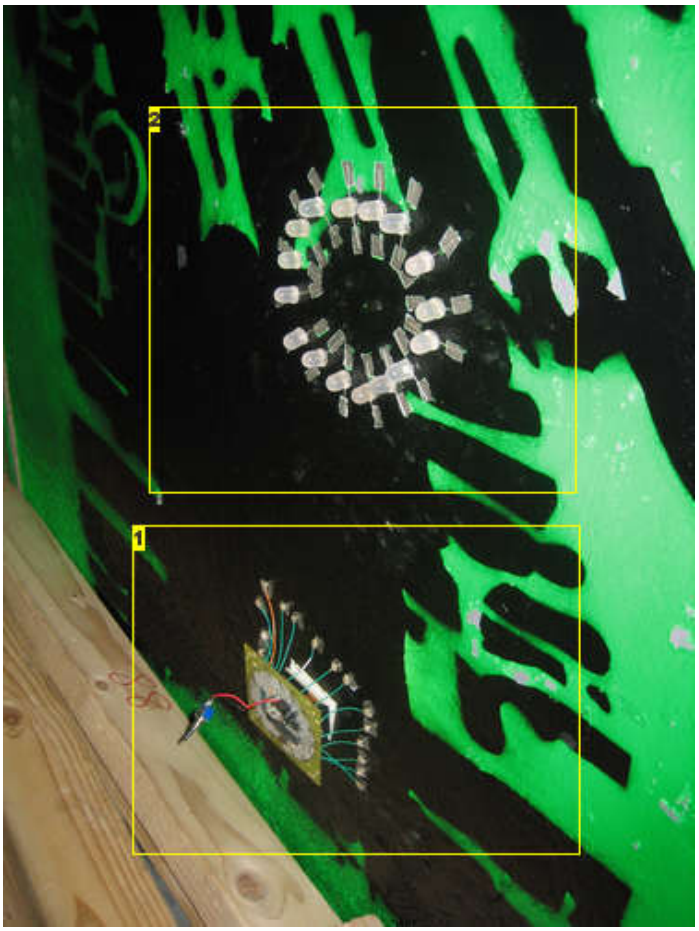


Image Notes
1. This board is adhered with magnet leads and epoxy. The 9 volt battery on the back of the board is powering the electro-graf
2. LEDs leads are loaded into the conductive surface at the contact pads. You may have to work to bend the leads so they make good electrical contact

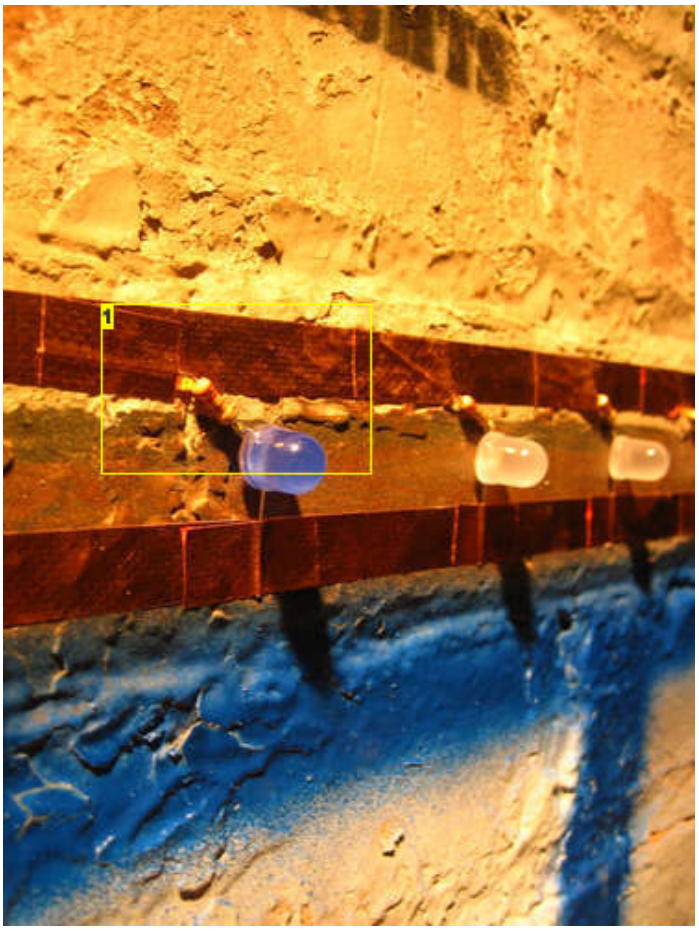


Image Notes

Image Notes
1. fi5e throw-up w/ resistor and twin A

1. 220 Ohm resistor on each LED

Image Notes
1. power and ground wires from regulated power supply connected to the wall by epoxied magnets.

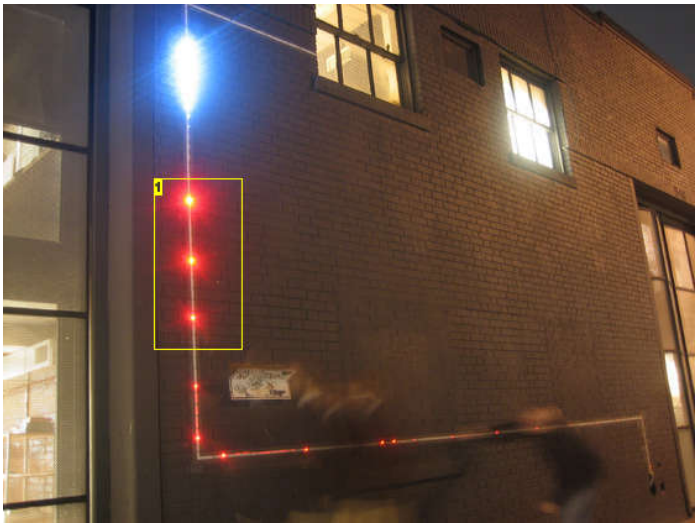
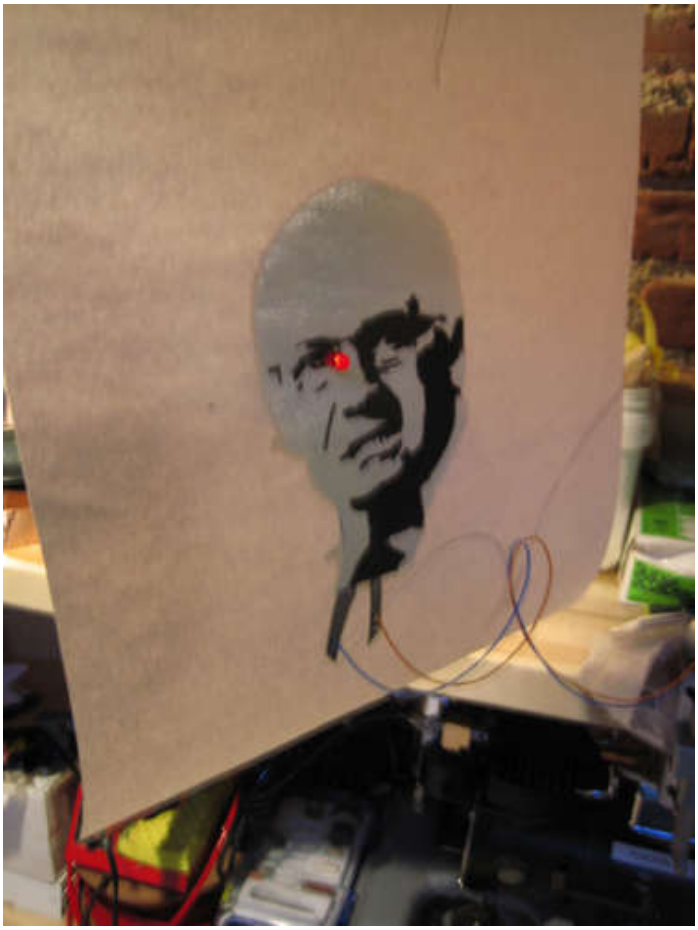
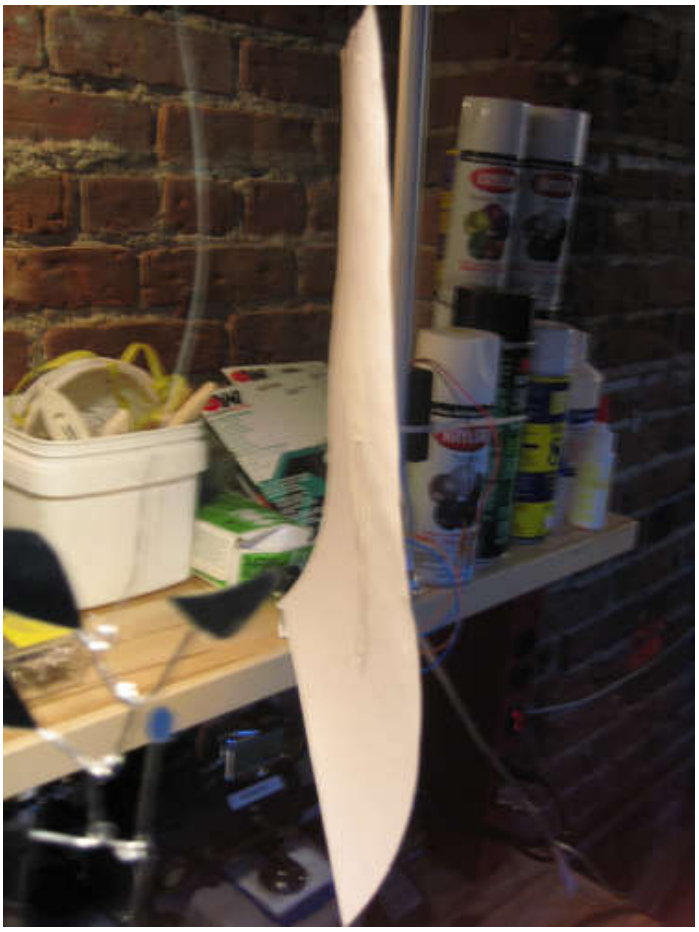


Image Notes
1. resistor and fi5e putting LEDs up on the electro-graf at Eyebeam

step 10: Applications and upgrades

The materials and proccesses discussed in this section will work on concrete, brick, cardboard, paper and plastic. The cost and complexity of an electro-graf can vary wildly. You can construct an electro-graf that requires days of work and interfaces with complex eletronic circuitry or even a networked back-end architecture or you can make an electro-graf throwie with copper tape and a few LEDs that can be up in five minutes. G.R.L. agents are working right now to improve and innovate upon aspects of the electro-graf, including: the prevention of rust, the integration of sustainable power sources, the interaction design and more interactivity. If you want to become a G.R.L. agent or are just interested in getting more involved, contact [mailto:megaohmresistor@hotmail.com resistor]. Good luck and get em up.





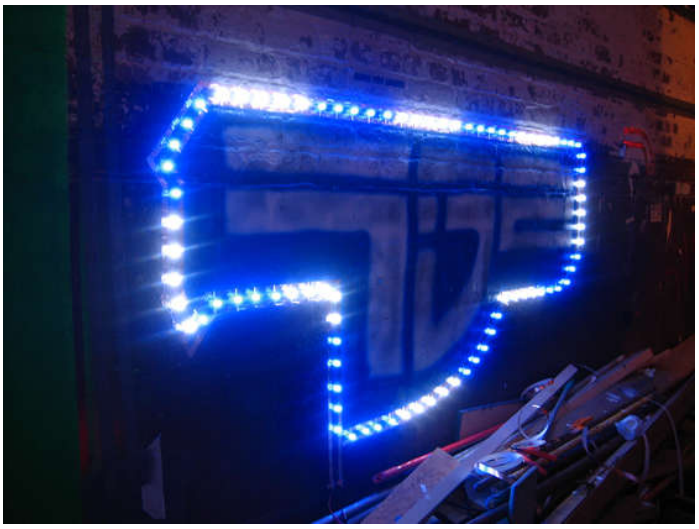
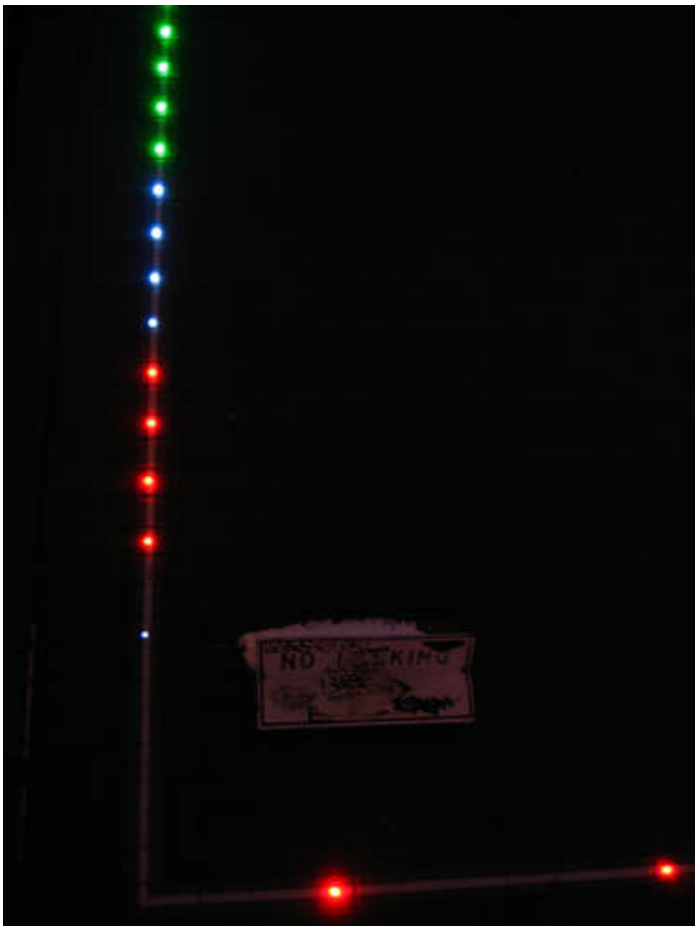
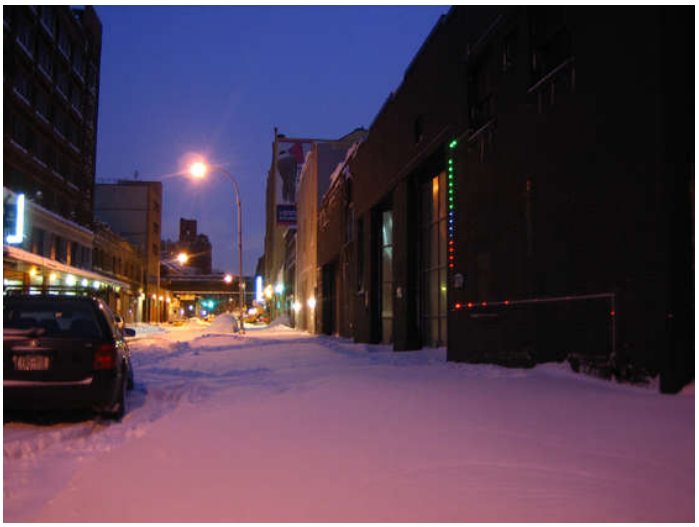


Image Notes
1. fi5e throw-up w/ resistor and twin A





Related Instructables

LED Throwies by Q-Branch

My LED Throwies by zildjian

All Surface LED Throwies by SniperNinja

Low-Cost Illuminated Signage for Todays Responsible Citizen by Q-Branch

How to Go Postal by Q-Branch

Magnetic Refrigerator Lights by sockmaster

LED Throwie - Instant Messanger Tube by adambehman

LED Throwie Talkie by pcunning

Comments

38 comments **Add Comment**

zwild1 says: Apr 15, 2007. 12:00 AM **REPLY**

Brilliant- Great Idea. But how can one so well versed in science such as yourself throw political BS into an instructable? Totally unrelated and irresponsible.

mrdepo96 says: Oct 28, 2009. 6:20 PM **REPLY**

I agree. I was looking for an Instructible not an opinion.

MagnetDude says: Jan 10, 2009. 6:56 AM **REPLY**

Love the concept, but your graphics are not very nice....It's fun to shoot some people? Guns kill real people and it isn't fun to shoot anyone. I agree there are people who deserve getting a bullet in the head, but it isn't our place to shoot them. It's up to a higher powers to take care of these schmucks.

jfrawley28 says: Feb 22, 2009. 12:32 PM **REPLY**

If guns kill people, spoons made Rosie O'Donnell fat!

mowie says: Sep 21, 2009. 5:15 PM **REPLY**

LOL HAHAHAHA

-Aj- says: Feb 23, 2009. 10:09 PM **REPLY**

i the killing bit is a joke.
also LOL

josf says: May 15, 2009. 9:42 PM **REPLY**

you repeat a lot of pics

sunshine n a bottle says: Dec 30, 2008. 12:26 PM **REPLY**

Congrats and nice piece of work.

Gjdj3 says: Sep 15, 2008. 6:26 PM **REPLY**

Haha, congrats on being on *I Want to Work For Diddy.*

The one redeeming quality to that show! Lol.

sigmaz says: Jun 9, 2007. 10:32 PM **REPLY**

I'm wondering if I can get a copy of the schematics or find out if Twin A is selling his boards?

I dig the patterns and It'll sure save time putting together my piece.

twina says: Jul 12, 2007. 4:51 PM **REPLY**

i can't give out those schematics/patterns, sadly, BUT i will be developing a totally open-source AVR-based 32-LED controller board this summer, and an open-source system for controlling hundreds of lights in 16 RGB LED modules.

troykyo says: Feb 5, 2008. 7:34 AM **REPLY**

I can't wait to see that. I so got a project that needs that kind of lovin.
We love you A!!!

twina says: Aug 20, 2007. 11:30 PM **REPLY**

I'm using a Tiny2313 into either a STP16CP05TTR (doing the PWM in the AVR) or for more PWM channels I use a few of the TI TLC5940 PWM chips. If you're running patterns in the microcontroller, you'll probably want more flash memory...The larger chip on the electro-graf board is one of the ST chips, and it's being driven by a PIC18F242.

sigmaz says: Aug 18, 2007. 8:52 AM **REPLY**

Hey TwinA.. Can you at least tell me which chips you used?

I have been tinkering with a 2313 but I can only drive 12 channels with it..
it looks like you might be using an AT90WPM but I cant figure out the larger chips role..
Email me if you can I have some questions.

killerjackalope says: Dec 19, 2007. 3:44 AM **REPLY**

I think the idea is genius and execution is possible (for rich people) but maybe a combination of standard spray paint ing and conductive epoxy could be more effect, think no magnets, no magnetic paint and as long as it keeps its conductivity over distance. Another experiment or two could be based around EL wire (if you could get really fine stuff) or maybe a computer that is thinner than any other in existence (think the 2D computer, stencilled on sheets of paper, then folded to make your laptop that can be recycled with the daily paper. (oh and high tech business cards (for made at home ones anyway...)

Final idea ould be doing a brick wall and lighting all the mortar lines making a magice wall (plus having it in the crevices would make a handy electrical grid and make it way harder to remove)

muranoashtray says: Apr 7, 2007. 7:36 AM **REPLY**

oops. on closer inspection they look about 6mm. But still...

muranoashtray says: Apr 7, 2007. 7:34 AM **REPLY**

That qty of ultra bright 10mm blues would have drawn a fair amount of power for somthing so exposed. I would have used an AC sorce for somthing this big - is there a large battery hiding under that pile of stuff?

sockmaster says: Mar 6, 2006. 12:28 AM **REPLY**

By the way, you can save time and do away with the mess of having to use epoxy and/or conductive epoxy by simply soldering your wires and LED pins directly to the magnets. Solder bonds very easily to nickel plated magnets (and likely silver plated magnets too.)

Q-Branch says: Mar 7, 2006. 7:37 AM **REPLY**

Do not solder to magnets, especially rare-earth magnets. Temperatures over 80C will damage the magnet and reduce or eliminate its magnetic field. I have tried using various heat sinks, fluxes and techniques to accomplish the task mentioned above and each has resulted in a damaged magnet.

sockmaster says: Mar 7, 2006. 12:37 PM **REPLY**

It works amazingly well for me. There's no damage to the magnet or reduction in it's magnetic field. I've only tried this with nickel plated rare-earth magnets - but I imagine it ought to work work with silver plated magnets too.

Here is what I use to solder wires or LED pins to nickel plated magnets:
-multicore solder
-250 watt soldering gun with a tinned tip
-a metal surface or any other way to keep the magnets in place

Pre-coat the wire with solder first so that it will bond quicker when you solder it onto the magnet. Preheat your soldering gun. Hold the wire and some solder over the magnet, then quickly touch the gun to the point you want soldered. It takes less than 1/4 of a second. The magnet barely even gets warm.

Q-Branch says: Mar 8, 2006. 10:13 AM **REPLY**

1. Anecdotal evidence is the enemy of science. How are you measuring the magnetic field before and after soldering? I would suggest, though the magnet still "sticks" to things, that you ARE damaging the magnetic field significantly enough that it will no longer be useful w/r/t the magnetic field needed to adhere to the magnet paint used in the electro-graf project.
2. The Curie Temperature of rare-earth magnets is 500 degrees F. This is the point at which the magnetic field of a magnetic material will reach zero due to heat excitation. The magnetic field will be significantly decreased with temperatures greater than 176 degrees F . Due to the high thermal conductivity and the small size of the magnets, you WILL damage them if you solder using any technique. No soldering technique will prevent this damage. You must introduce heat to the magnet to cause the solder to flow. I will note I have a hand soldering certification from NASA and from Mi-6, which is to say I have a good deal of experience with current materials and techniques.
3. Sockmaster you're beaking rule #2: don't damage the hardware.

endolith says: Mar 24, 2007. 5:09 PM **REPLY**

"Anecdotal evidence is the enemy of science."

So you're going to discourage experimentation? Even if it damages the magnetism somewhat, if it still achieves the ultimate goal of sticking to the magnetic paint, what's the problem?

Q-Branch says: Mar 8, 2006. 10:54 AM **REPLY**

Just to be fair, the way sockmaster is using a metal surface to hold the magnet creates a heat sink. A heat sink helps prevent temperature damage when soldering. The problem is, depending on the impurities in the materials used, NdFeB can be as thermally conductive as steel, tin and impure nickel. And the melting point of solder is typically around 300F and this is about the median temperature between damaging and destroying your magnet.

Sockmaster keep inovating. There is plenty of room for improvement in the design. The attachment method and location of the magnets is an area ripe for innovation in this project. I am only suggesting that the soldering iron is not the right hammer for this non-nail.

richelton says: Dec 20, 2007. 10:37 PM **REPLY**

One of my all-time favorite quotes: *In theory there is no difference between theory and practice. In practice, there is.*

(I'm sorry guys, but I just have to post this--meant in fun!--or my head will explode!)

YOU CANNOT DO x.
look! look! i'm doing x!
NO, x IS IMPOSSIBLE.
but i've been doing x for some time now.
YOU ARE MISTAKEN.
(posts picture inflagrante-del-X-o)
YOU ARE VIOLATING THE LAWS OF NATURE (BUT KEEP PRACTICING)

(all humor aside this is still a way-cool project and very inspiring!)

Sgt.Waffles says: Jun 18, 2008. 11:48 PM **REPLY**

"But I've been doing X for some time now"

stifles laughter

kingred says: Oct 18, 2007. 12:59 AM **REPLY**

sorry but I don't believe that a short exposure to temperature change will reduce the effectiveness of a rare earth magnet. its not like your using a bloody blow torch are you? are you?

Robotguy says: Mar 22, 2007. 3:27 PM **REPLY**

Adding a third trace and a "one-wire" network to this would greatly expand the possibilities. Imagine being able to individually address the leds from a central point, or add a light sensor to turn everything off during the day. Heck even a proximity sensor so the thing only lights up when someone gets close.

See http://www.maxim-ic.com/1-Wire.cfm for the list of one-wire products. I don't work for Maxim, just thought this would be a nifty addition.

infared067 says: Mar 1, 2006. 5:29 PM **REPLY**

i was wondering if anyone knows if there is such a thing as like a "blacklight led"
if you had a few and used flourecent spray paint i bet that would be pretty cool

Eriswerks says: Mar 4, 2006. 11:34 AM **REPLY**

There are, indeed, blacklight LEDs. I have a bag of them on the desk in front of me, as a matter of fact. If you look on ebay you can find these being sold cheap directly from China (search for ultraviolet or UV LED). Just don't use them for any application where they point right at people's eyes!

Q-Branch says: Mar 4, 2006. 12:54 PM **REPLY**

Check out this fine tutorial on building a scorpion detector with UV LEDs. I think LSDiodes is the best name for an LED company I have ever heard.

slayerforhope says: Feb 25, 2007. 9:28 AM **REPLY**

way too expensive. just buy led cristmas lights and take them apart. real cheap.

sumguysr says: Dec 13, 2006. 12:30 AM **REPLY**

this would be incredibly cool if someone used capacitive sensor pads to create an interactive electrograf

blksheep says: Mar 20, 2006. 5:15 PM **REPLY**

This is a beautiful idea. Great project.

chuckr44 says: Mar 15, 2006. 1:19 PM **REPLY**

Yes, I bought a UV LED from LSDiodes and it works great. Although we didn't find any flourescent rocks with it. And only some species of scorpions flouresce under UV.

grobelaar says: Mar 15, 2006. 12:43 PM **REPLY**

soldering certificate from Mi-6 now that I would like to see?

InvaderEvan says: Mar 8, 2006. 10:17 PM **REPLY**

woah woah woah 5 words bread-board-on-the-wall

a little bit of breakout board+magnet setups and you can do anything on the wall

just tape lines and have sections of conductive and non-conductive wall

in lines like breadboards

ranex says: Feb 25, 2006. 8:01 PM **REPLY**

could you use that conductive spray to make cheap printed circuitboards

maffiou says: Feb 24, 2006. 2:56 AM **REPLY**

This is so cool... And very well documented: Well done...