


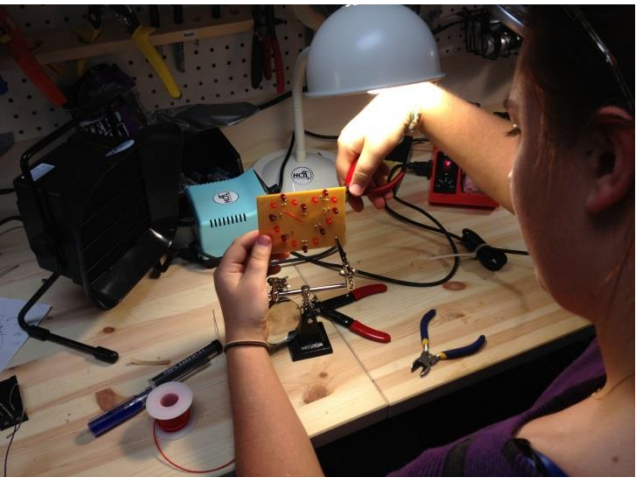



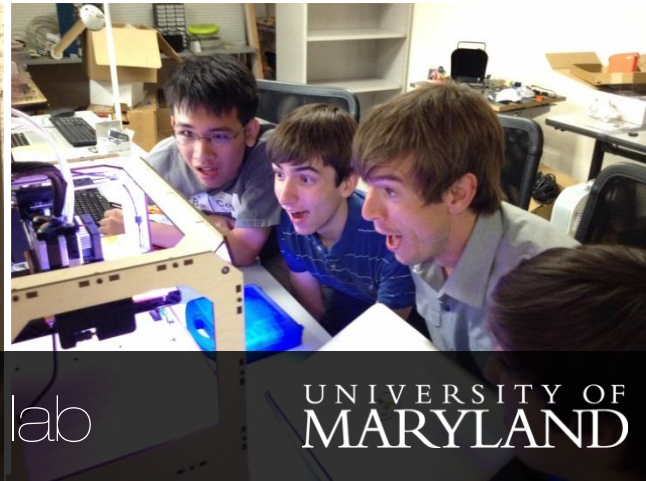

Making in the HCIL

31st HCIL Symposium
May 29, 2014
@jonfroehlich

Human Computer Interaction Laboratory

COMPUTER SCIENCE
UNIVERSITY OF MARYLAND

makeability lab

UNIVERSITY OF MARYLAND

Motivating Story

Two high school interns

One aerial quadcopter robot

One professor (me)


Broken
Gear

Parrot GEARS & SHAFTS for AR.Drone 2.0

compatible with AR.Drone

$14.99

61 In Stock Now

Stock Usually Ships In 4 Days

ADD TO CART

Check out with PayPal

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AR.Drone 2.0 - Broken Propeller & Gear Replacement

Description

Thingiverse Featured

Andrew Haglund's Air Stand is a designer booster seat that lets your laptop sit at the grown ups table.

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Global Feed

Latest Thingiverse Activity

- aBrainDump liked Board game bits (moved)
- aBrainDump liked Chinese Checkers - Printable and ...
- sbarde started using Customizer
- barbarahoward started using Customizer
- aBrainDump liked Random Vase V2 (moved)

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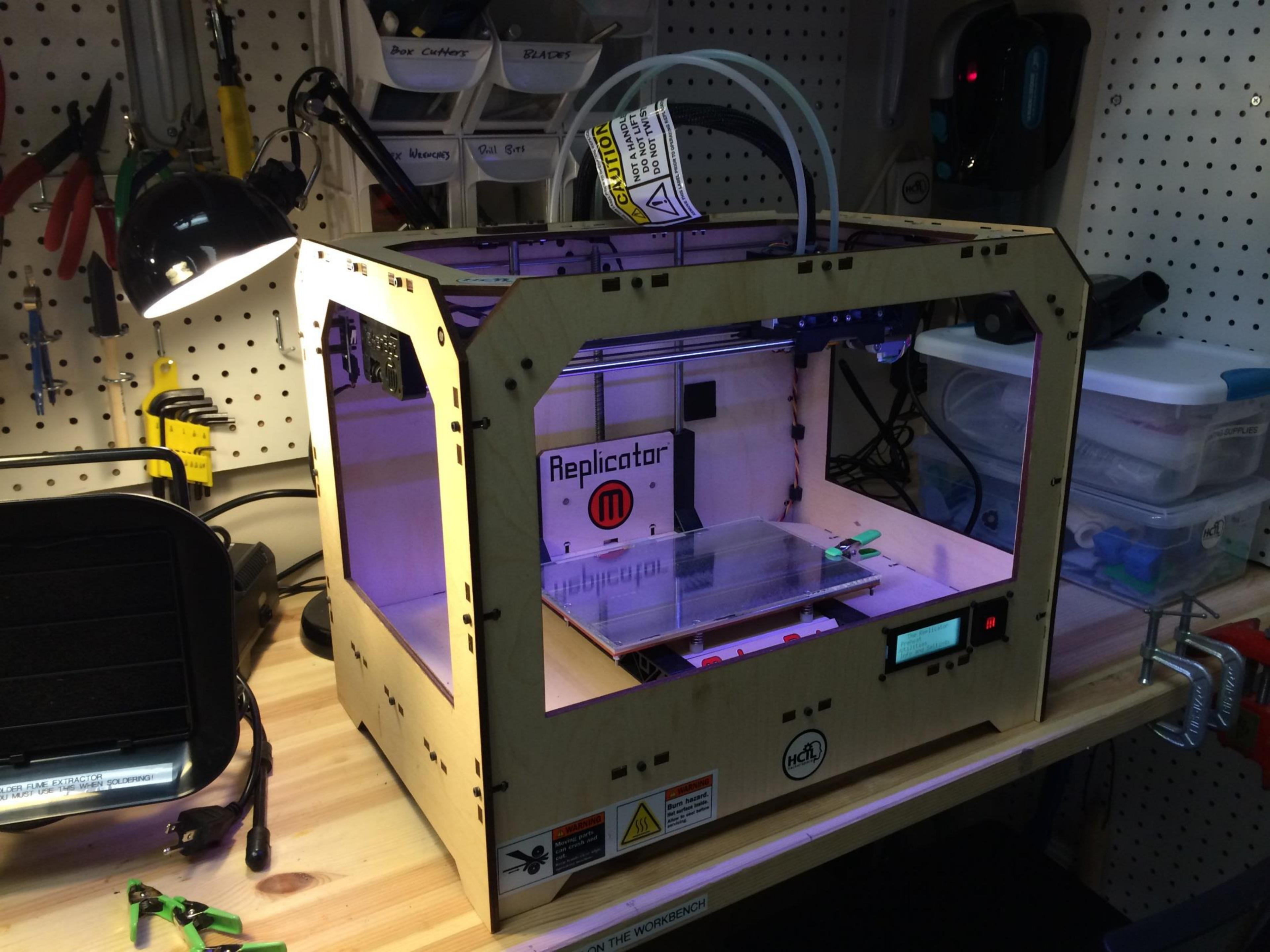
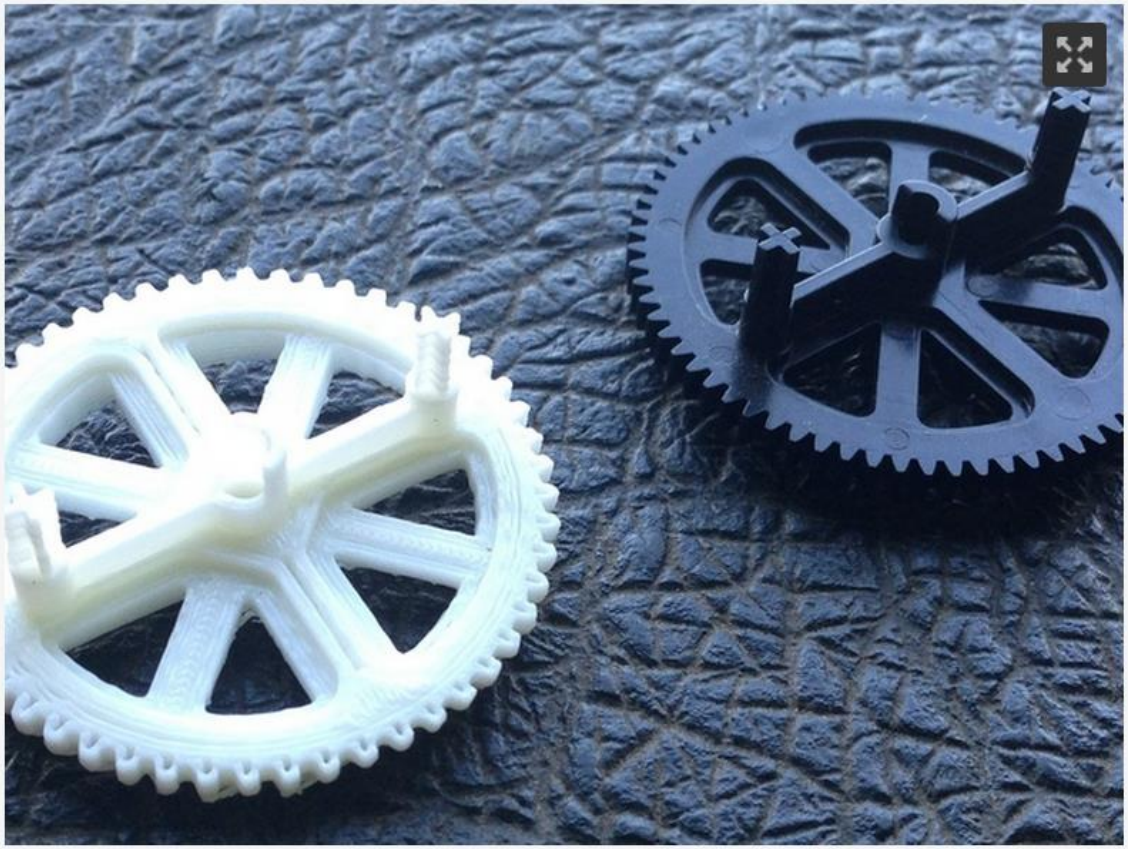


Box Cutters
BLADES
Drill Bits
CAUTION
Replicator
WARNING
Burn hazard.
ON THE WORKBENCH

AR Drone Gear v3.3

Made by Geoffro, uploaded Oct 20, 2013



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Source

27 29 18

320

Description

These actually work very wel, thank you. I used 50 percent infil, 0.2mm abs

Comments

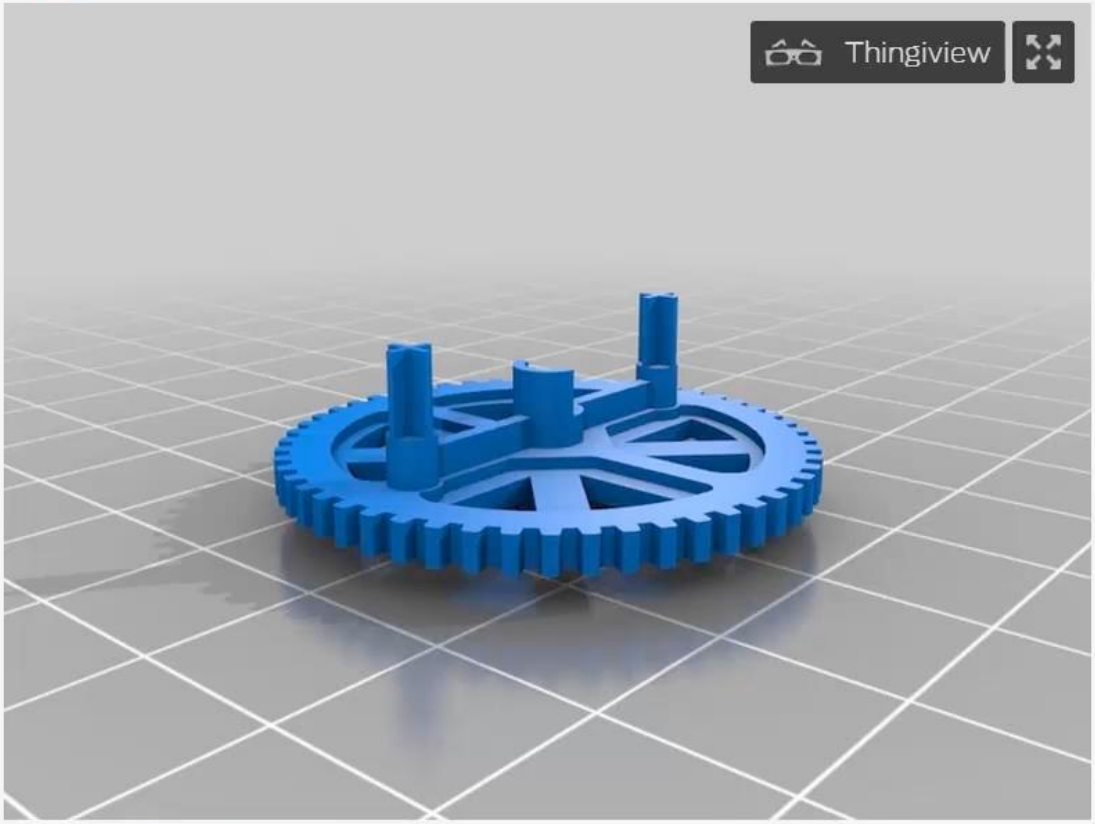
What's remarkable is not just that these students did this but that they ***thought*** **of doing it** and **had the resources** around them to seamlessly support the effort.

But the story does not end there…

Hey! This thing is still a Work in Progress. Files, instructions, and other stuff might change!

AR Drone Gear v3.3

by ajolivette, published Apr 14, 2012



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Share

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Thing Info | Instructions | Thing Files | 28 Comments | 0 Made | 79 Collections | 0 Remixes

Description

Replacement propellers, gears, and clips to get your Parrot AR Drone up and flying again. Or just make your drone look awesome by printing in new colors.

The models of the propellors and gears are edited versions of models by ajolivette, bellbm and jingabar. I would like to thank these makers for all of the dedication they put into their models to help others.

Recent Comments

All comments have been deleted.

4966 1119

Found in R/C Vehicles

Report Thing as Inappropriate

Remixed From


AR Drone Gear v3.3 by ajolivette


Fixed AR drone 2.0 propellor by G.

Built-in tool support for remixing

Liked By

view all






Share

Download This Thing!

Thing Info | Instructions | Thing Files | 28 Comments | 0 Made | 79 Collections | 0 Remixes

Description

Replacement propellers, gears, and clips to get your Parrot AR Drone up and flying again. Or just make your drone look awesome by printing in new colors.

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4966 1119

Found in R/C Vehicles

Report Thing as Inappropriate

Recent Comments

All comments have been deleted.

Explicit shout-out & nod to spirit of making / sharing

Built-in tool support for remixing

Remixed From


AR Drone Gear v3.3 by ajolivette


Fixed AR drone 2.0 propellor by G.

Liked By

view all

open hardware

This is a

BIG

deal

Chris Anderson, *Makers: The New Industrial Revolution* , 2012

SMALL BUSINESS

How the 'Maker' Movement Plans to Transform the U.S. Economy

In his new book, WIRED editor-in-chief Chris Anderson writes that technology has "democratized the means of production."

By Sam Gustin @samgustin | Oct. 01, 2012 | 9 Comments

Chris Anderson was trying to fire up his kids about science and technology when he flew the family's radio-controlled airplane into a tree on Hopkins St. near their Berkeley, Calif. home. After a lot of rock-throwing and branch-flinging, Anderson finally retrieved the wreckage. "My kids were mortified," Anderson told me last week. "I had to bribe them with ice-cream."

Getty Images

WIRED editor-in-chief Chris Anderson.

It was Anderson's second attempt in as many days to do a science project with his children, and the experiments weren't going well. The previous day, he had brought home a Lego robot review-model from the office. Anderson and his family spent all morning assembling the device, only to finish with a "three-wheeled rover that bounced off the walls." His kids were unimpressed. *Transformers*. "No lasers? No rockets? It doesn't turn into a

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SMALL BUSINESS

How the 'Mak
the U.S. Ecor

In his new book, WIRED
the means of production

By Sam Gustin @samgustin

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Chris Anderson was tryi
science and technology
radio-controlled airpla
St. near their Berkeley
rock-throwing and br
finally retrieved the
mortified," Anderso
bribe them with ice

It was Anderson's
do a science proj
experiments we
he had brought
from the office
morning asser
"three-wheel

Bits

OCTOBER 29, 2013, 8:31 AM | 13 Comments

The Wide Open Era in 3-D Printing

By QUENTIN HARDY

Pirate3D's printer has a new casing — and a very Apple-esque design touch.

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SINGAPORE — For a 15-person start-up in 3-D printing — a nascent industry at best —

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The Maker Movement: Forming the Next Tech Tidal Wave

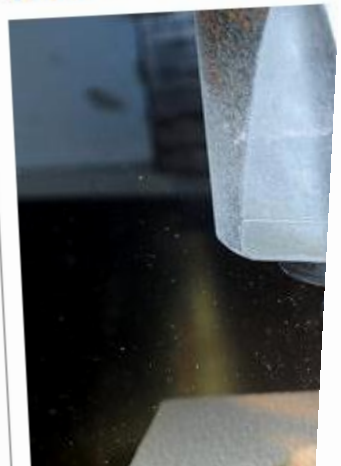
Posted by Ashish Arora on June 25, 2013 at 9:06am | View Blog

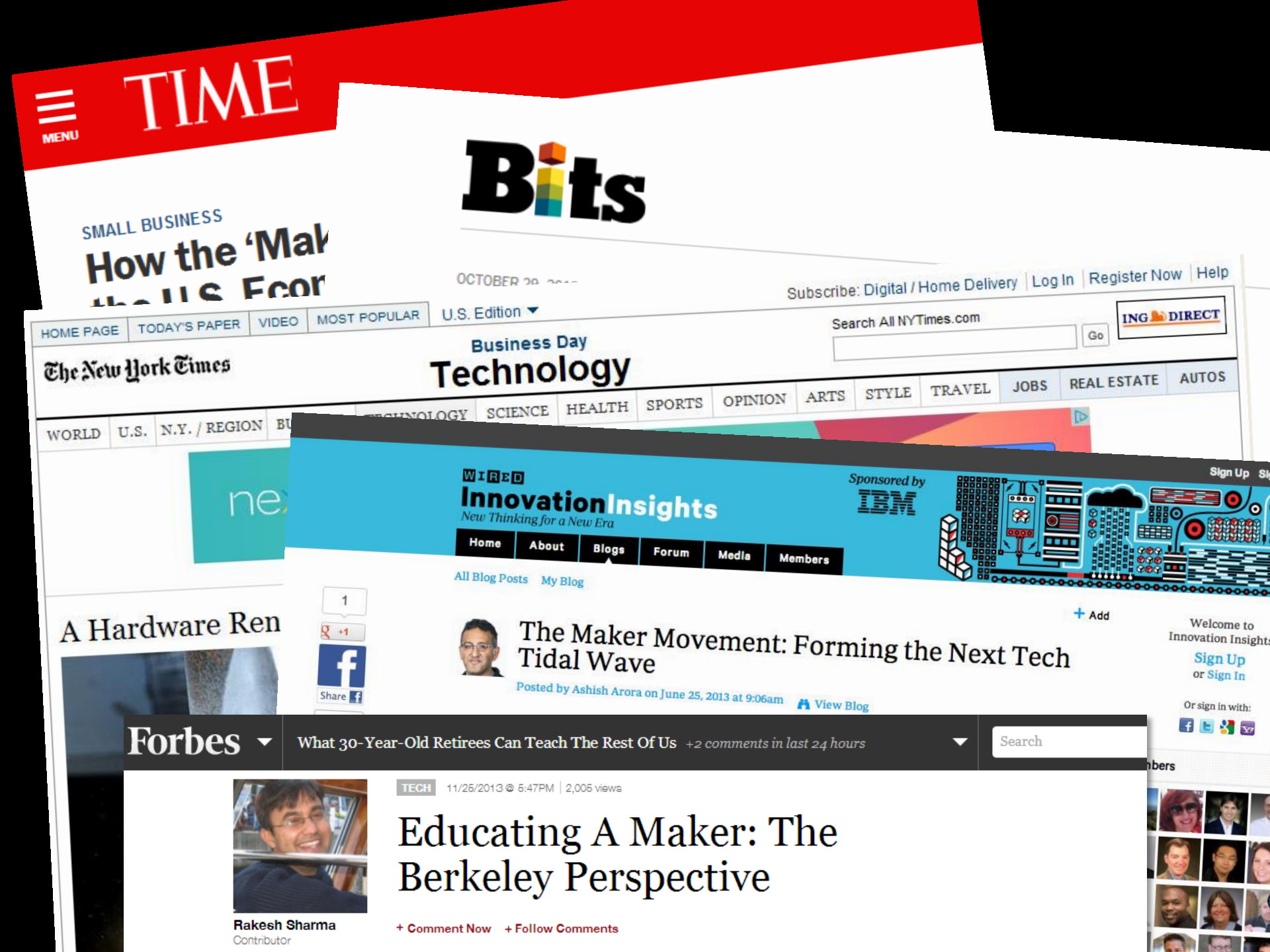
With a wealth of unprecedented tools and resources, it has never been easier for people to explore their own personal creativity. Technology is adding simplicity and removing barriers, allowing for a fuller range of creative expression, something particularly true in the emerging maker movement.

For the unfamiliar, the maker movement is a tech-infused subculture of do-it-yourself (DIY) culture. So where one would engage in a creative project – jewelry making, scrapbooking, fashion, etc. – a maker would leverage technology to complete it. Think using a cutting machine instead of scissors. It takes manual processes and makes them automatic, resulting in more professional-looking, high-quality work.

While perhaps best known by its use of 3-D printers, maker culture also consists of traditional arts and crafts, robotics, electronics and metalworking and woodworking. Its parent DIY culture is a burgeoning one, no longer confined to hardcore creative types.

A Hardware Ren

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The Maker Movement: Forming the Next Tech Tidal Wave
Posted by Ashish Arora on June 25, 2013 at 9:06am
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Rakesh Sharma
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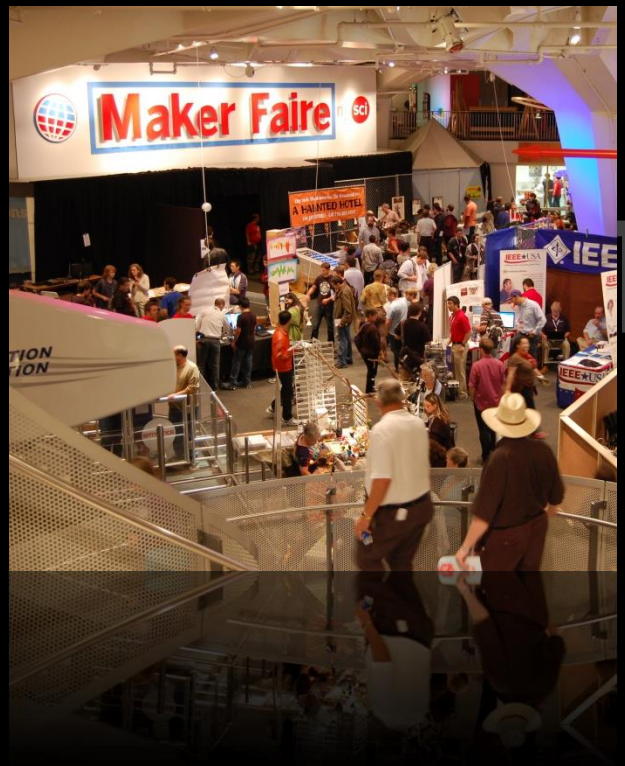
This Talk: Three Parts

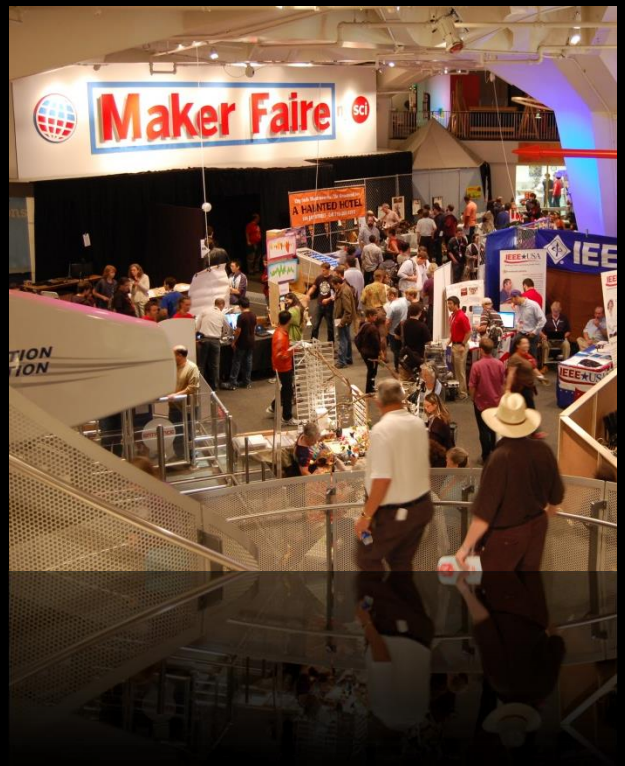
Rise of Maker/DIY Movement



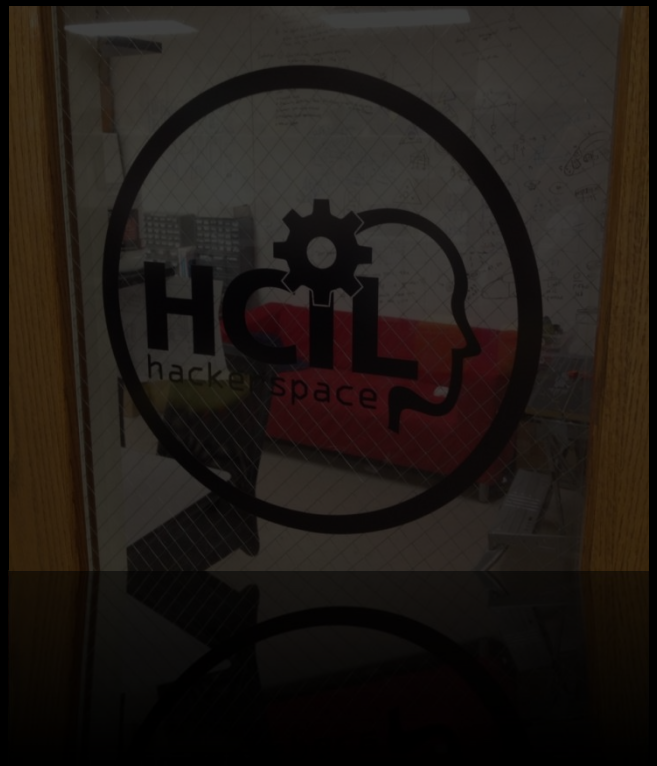
Making & Makerspaces at UMD

'Making' in the Classroom

Rise of Maker/DIY Movement



Making & Makerspaces at UMD



'Making' in the Classroom

The Anthrax Killer: Did They Get the Wrong Guy?

The Cocaine Smuggler's Submarine

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INSIDE THE SHAKE-UP AT GOOGLE

WIRED

The DIY Revolution Starts Now

HOW TO Make Stuff

Maker hero Limor Fried

If You Can Think It, You Can Build It!

25 AWESOME PROJECTS

under construction | apr.2011

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INSIDE **NERF** ◢ MAKING **GORILLA GLASS** ◢ BUILDING A **SKYSCRAPER IN 15 DAYS** ◢ **ETSY** GOES PRO

WIRED

MAKE BELIEVE | OCT 2012

THIS MACHINE WILL CHANGE THE WORLD

This man [MAKERBOT'S BRE PETTIS] will show you how.

Print amazing objects at home!

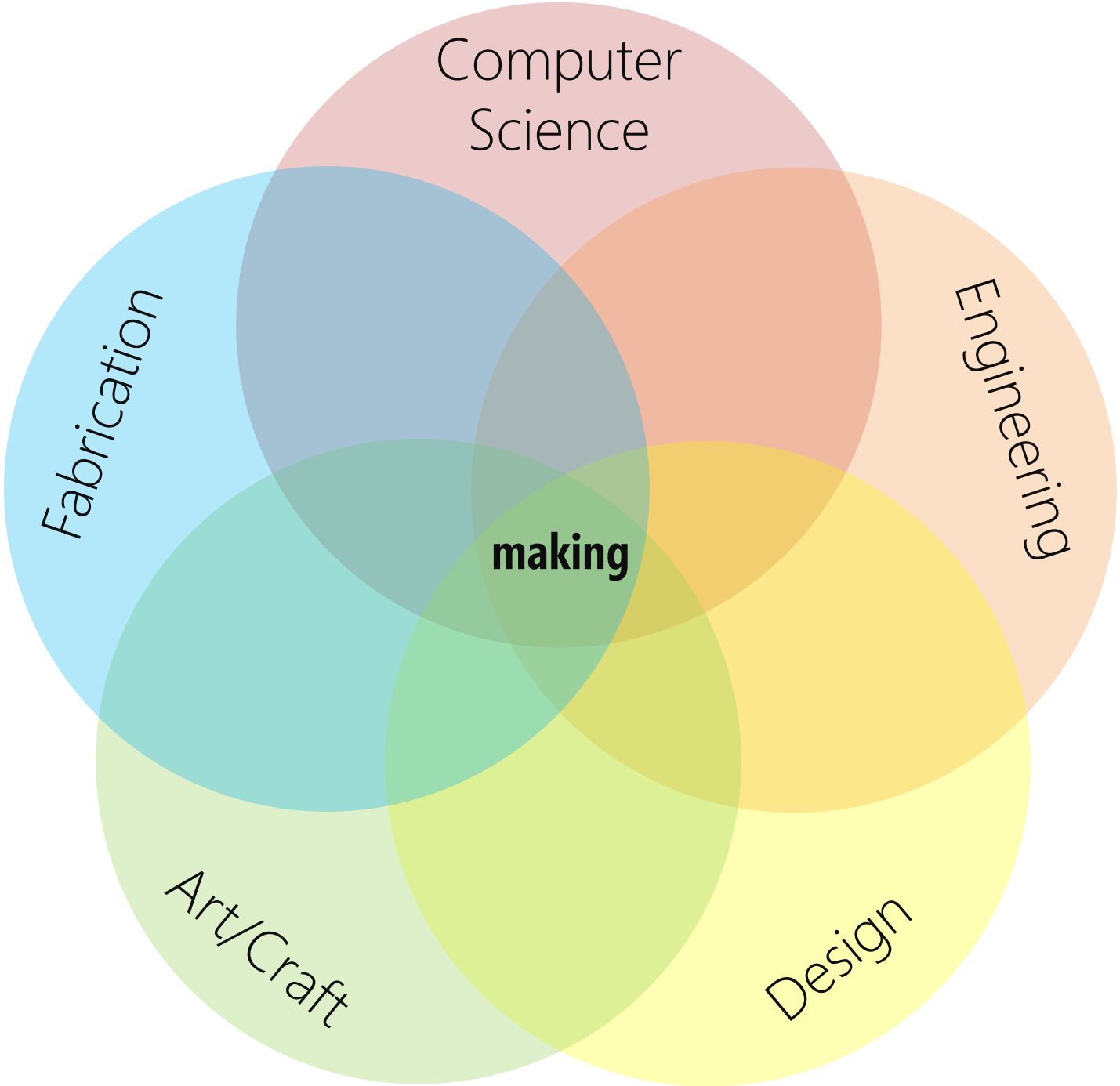
THE NEW REPLICATOR 3-D PRINTER

'Maker culture' emphasizes **learning-through-doing** (constructivism) in a social environment. Typical interests include electronics, robotics, 3D printing, and the use of CNC tools, as well as more traditional activities such as metalworking, woodworking, and traditional arts and crafts.

Wikipedia
Maker Culture
http://en.wikipedia.org/wiki/Maker_culture

'Maker culture' emphasizes **learning-through-doing** (constructivism) in a social environment. Typical interests include electronics, robotics, 3D printing, and the use of CNC tools, as well as more traditional activities such as metalworking, woodworking, and traditional arts and crafts. The culture stresses new and unique applications of technologies, and **encourages invention and prototyping**. There is a strong focus on using and learning practical skills and applying them creatively.

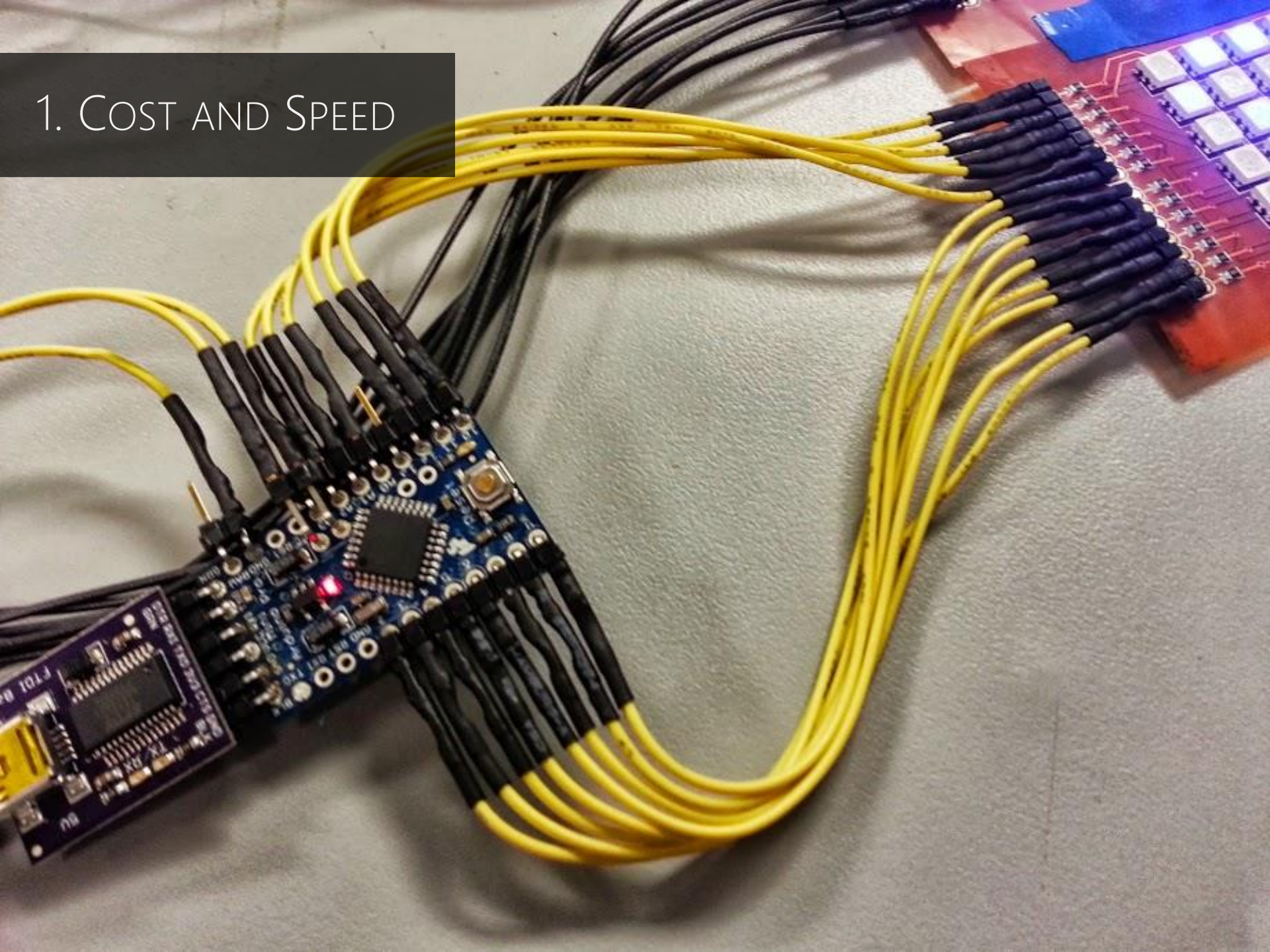
Wikipedia
Maker Culture
http://en.wikipedia.org/wiki/Maker_culture


Computer Science
Fabrication
Engineering
making
Art/Craft
Design

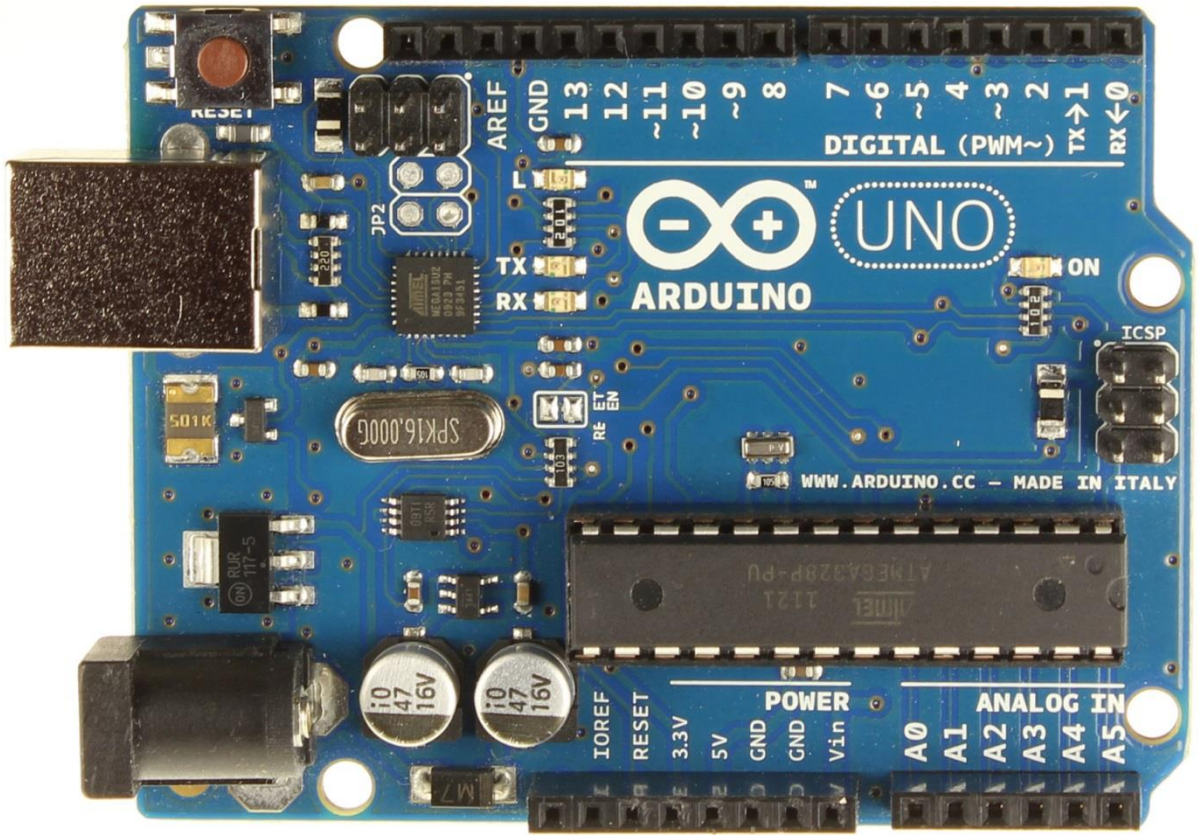
why

now?

1. Cost and Speed

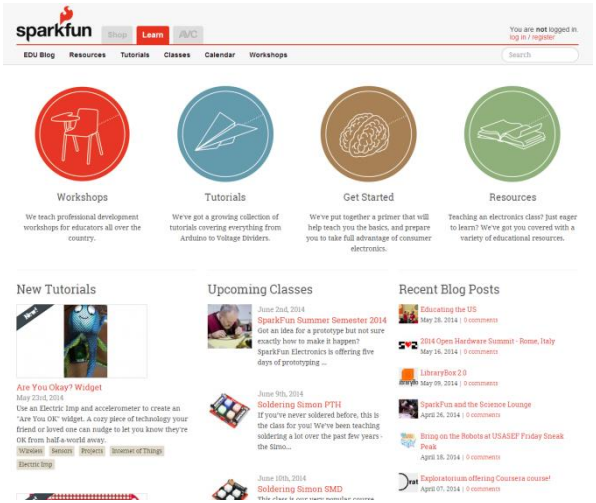


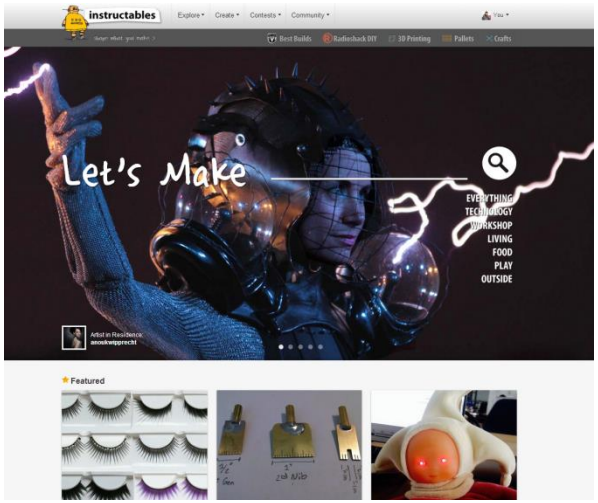
2. Open Hardware



The Arduino has lowered the barrier to programming physical computing systems and created a vibrant eco-system of use

3. The Internet





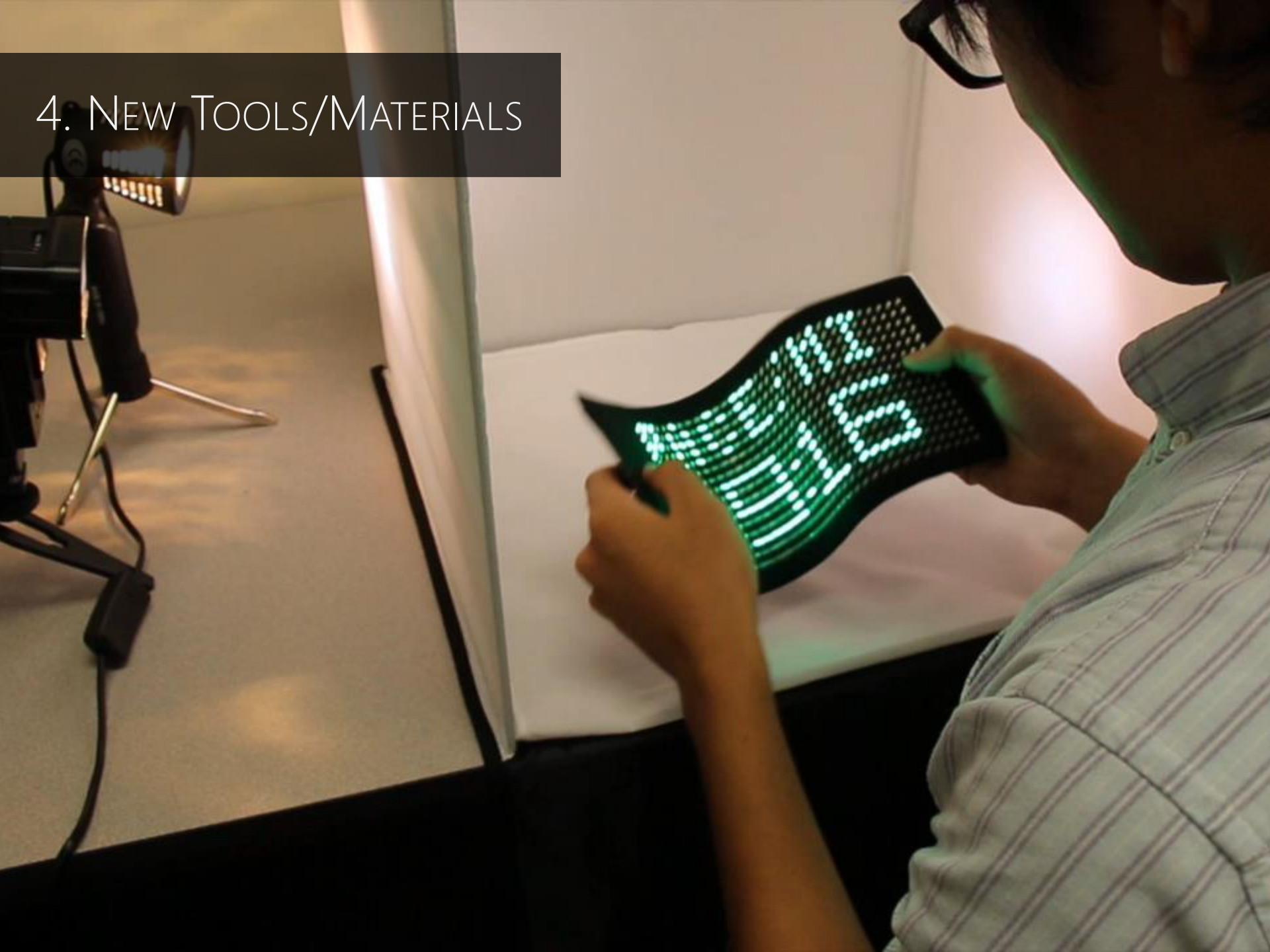
Websites provide easy access to help, supportive communities, and, just as importantly, purchasable materials

4. New Tools/Materials

3D-Printing

CNC machines

4. New Tools/Materials



5. Supportive Community

Maker Faire®

It's a wrap! See you in New York

Live from @makerfaire Bay Area 2014 on Instagram

Sign up for news and updates on all faires and calls for makers.

Enter your email GO

Follow @makerfaire

#makerfaire

Susan Finkle @SnCFinkle 48m

'@cmlplunkett: @charlesmire @F_I_N_K from @structur3Dprint make a splash at #MakerFaire bit.ly/1gBRvXm - amazing time-lapse photos.'

Ian Ferguson @fergie_arm 1h

At recent #makerfaire , @SocialGreg interviews #ARMís Dominic Pajak about key elements needed for #IoT: bit.ly/1jXAupX

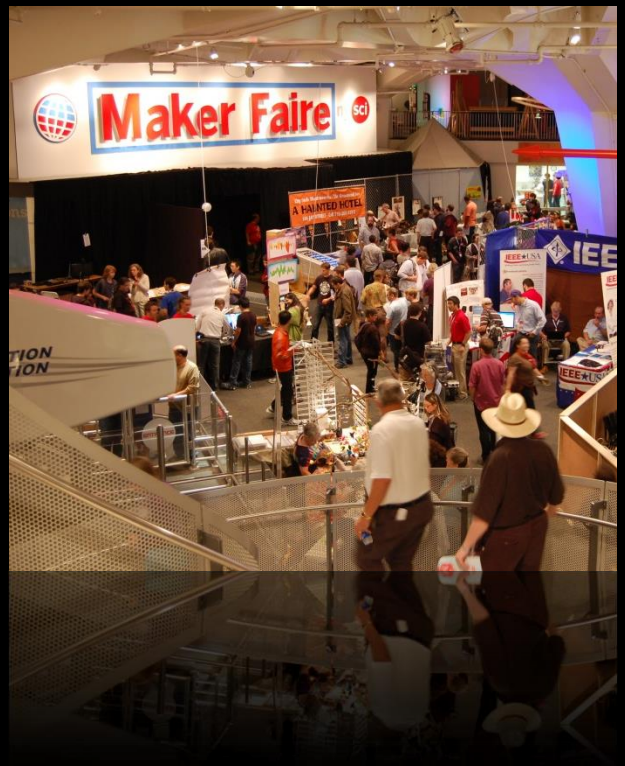
Show Media

ashutosh syal @SyalAshutosh 2h

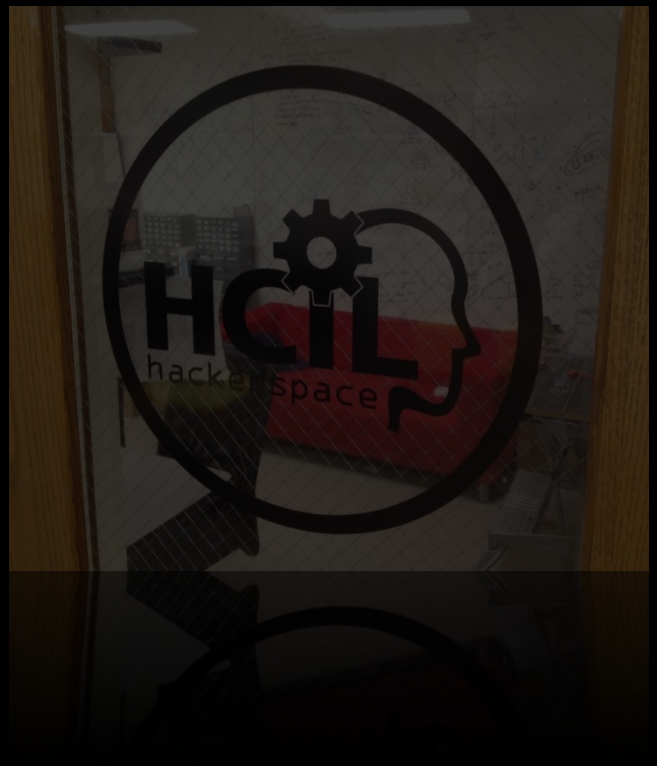
Check out this cool article about @structur3Dprint, our neighbors @HYPERDRIVE151 and fellow #MakerFaire presenters. communitech.ca/start-news/howÖ

HCIL Booth at the Silver Spring Mini-Maker Faire

Rise of Maker/DIY Movement

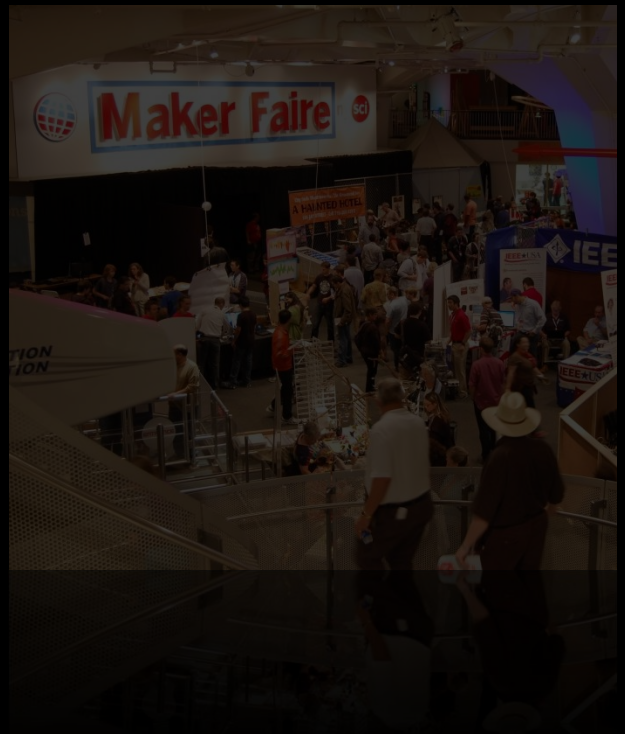


Making & Makerspaces at UMD



'Making' in the Classroom

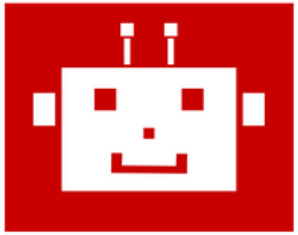
Rise of Maker/DIY Movement



Making & Makerspaces at UMD

'Making' in the Classroom


Making
at UMD



ter·ra·pin (n.) /ˈtɛrəpɪn/

1. Any of several North American turtles of the family Emydidae, that live in fresh or brackish water: especially diamondback terrapin.

   The diamondback terrapin has been the University of Maryland's official school mascot since 1932.

hack·er (n.) /ˈhækər/

1. One who makes innovative customizations or combinations of retail electronic and computer equipment.
2. One who combines excellence, playfulness, cleverness, and exploration in performed activities.

Make awesome stuff.
Meet fantastic people.
Maybe even win a hackathon.
No experience needed. Join now!

We do three things:

1. Hacktorials. Weekly student run workshops.
2. Hack nights. Make something every Wednesday evening.
3. Hackathon trips. Everyone should go to a hackathon.

NEWS & EVENTS

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Terrapin Hackers Awarded 1st Place Trophy in Major League Hacker Standings

October 18, 2013

On November 6, 2013, the Terrapin Hackers were officially crowned the champions of the inaugural Major League Hacking season in a ceremony held at the Jeong H. Kim Rotunda. MLH Commissioner Mike Swift presented a handmade two foot statue to the dozens of Hackers who spent countless hours building and coding innovative apps and products during the six-week season.

The president and co-founder of Terrapin Hackers, Shariq Hashme, a double major in Computer Science and Electrical Engineering, stood in front of a crowd of computer science and engineering students and proudly demonstrated the winning hacks from HackRU at Rutgers University and M-Hacks at the University of Michigan.

The students were recognized by distinguished faculty and staff as well. Dr. Samir Khuller, Department Chair of Computer Science and Dr. Rama Chellappa, Department Chair of Electrical and Computer Engineering offered congratulatory speeches to the members of Terrapin Hackers and Dr. Darryll Pines, Dean of the Clark School of Engineering also offered the students words of encouragement as well.

The Terrapin Hackers **http://www.terrapinhackers.com/**, are a dynamic group of over 150 Computer Science, Engineering and other students from the University of Maryland claimed first place in the Major League Hacker Standings **http://mlh.io/standings/**. Throughout the first half of the fall semester, the Terrapin Hackers spent their weekends competing in Hackathons—24 to 96 hour events in which students code or 'hack' a software or hardware project from scratch. The Terrapin Hackers travelled to events in:

- Philadelphia (PennApps **http://2013f.pennapps.com/**)
- Michigan (MHacks **http://www.mhacks.org/**)
- New York (HackNY **http://hackny.org/a/**)
- Boston (HackMIT **http://www.hackmit.org/**)
- New Jersey (HackRU **http://www.hackru.org/**).

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Fang Cao Named 2014 Truman Scholar

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Rajesh Chitnis Wins Outstanding Graduate Student Award

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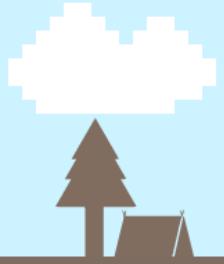


bitcamp

Hackathon @ University of Maryland
April 4-6, 2014

a new hackathon experience

Take what you love, fuse it with tech, build something the world has never seen.

Camp is a place for creation, exploration, and imagination. At Bitcamp, you'll have 36 hours to combine your curiosities and wild ideas with code and gadgets to make something awesome. Throw in world-class mentors and hundreds of peers from around the world, and you're in for an amazing time. See you by the bonfire!

FAQ


Oculus

Bitcamp retweeted

Kirk Morris @kirk_morris2 4/6/14

.@bitcmp, today I attended my first hackathon and my way of thinking has forever changed.....

5 16


Oculus Rift CEO
Brendan Iribe
HCIL MS Student
Michael Gubbels
bitcamp
bitcamp

4

UMD Maker/Hackerspaces

Is it a Hackerspace, Makerspace, TechShop, or FabLab?

By Gui Cavalcanti Posted May 22nd, 2013 1:34 pm Category Education, Maker Pro, Makers, Makerspaces View Comments

The past decade has seen the sudden, dramatic appearance of community spaces offering public, shared access to high-end manufacturing equipment. These spaces are interchangeably referred to as hackerspaces, makerspaces, TechShops, and FabLabs. This can lead the intended audience to become incredibly confused as to why there might be so many names for a single concept. I'd like to take some time to untangle the mess, explain the concepts behind each title, and talk about why I now make significant distinctions between all of these types of spaces.

Let's start with the hardest to untangle – what's the difference between a **Hackerspace** and a **Makerspace**?

Hackerspaces

I'll start by saying that there are many people "in the know" who don't make any distinctions between the term 'hackerspace' and 'makerspace'. Truth be told, these people usually associate themselves with hackerspaces. I personally find that I need to differentiate between the two, because at this point the concepts and representations behind the words have diverged significantly for me. Let's start with a little bit of history on hackerspaces, both paraphrased from Wikipedia and drawn from personal knowledge.

4

UMD Maker/Hackerspaces

Startup Shell
http://startupshell.org/

Collider
http://www.collider.org/

McKeldin Library
http://startupshell.org/

HCIL Hackerspace
http://slidesha.re/1mHefoy

Startup Shell

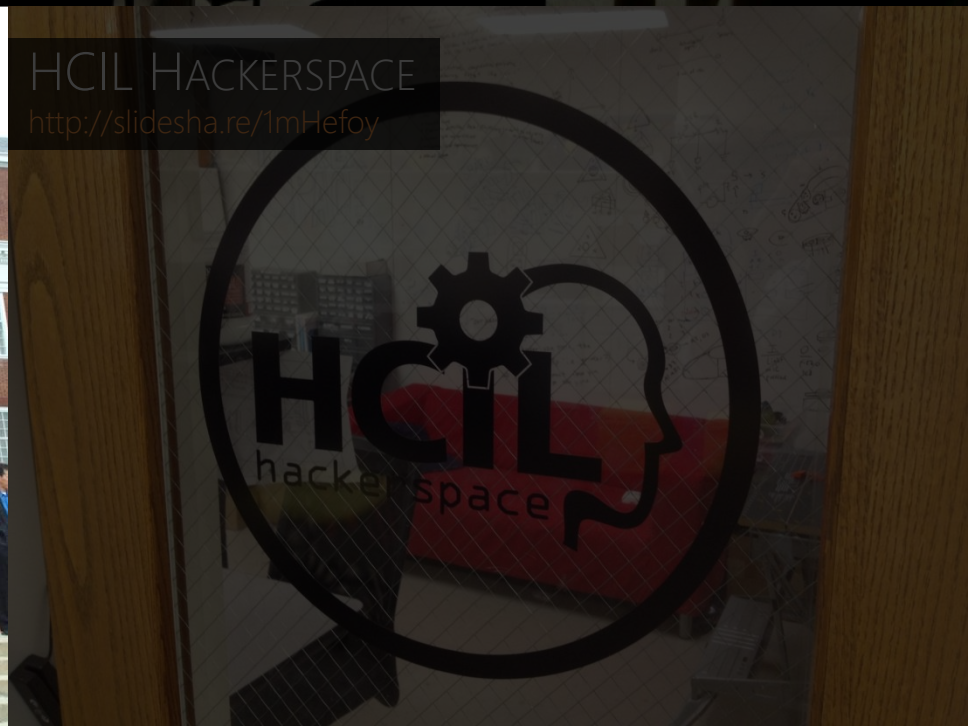
http://startupshell.org/

Collider

http://www.collider.org/

McKeldin Library

http://startupshell.org/



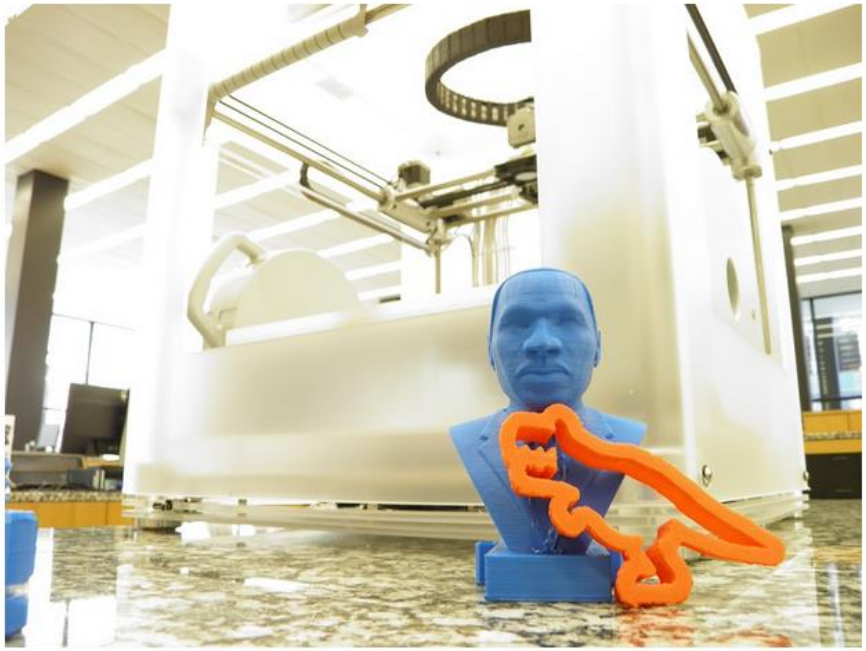
HCIL Hackerspace

http://slidesha.re/1mHefoy

what
makes
a space
a makerspace

Need to use a 3-D printer? Try your local library.

BY ANDREA PETERSON August 1, 2013 at 8:15 am



The 3-D printer at the Martin Luther King Jr. Memorial Library in Washington. (Andrea Peterson/The Washington Post)

It's no secret that tech is forcing libraries to change. A public service that primarily lends physical books seems almost quaint in a world where you can download hundreds upon thousands of books from Project Gutenberg and search through an almost unfathomable amount of data via Google. So libraries are bringing in e-book rentals, computers loaded with graphic design programs, and yes, 3-D printers to maintain their digital street cred.

Nicholas Kerelchuck, manager of the recently opened Digital Commons at the Martin

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The top-read stories of the past four hours

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2 Money and access parked at the Capitol

3 Elliot Rodger's UCSB massacre, sexual assaults and campus speech codes

4 Inside the 'manosphere' that inspired Santa Barbara shooter Elliot Rodger

5 In a final videotaped message, a sad reflection of the sexist stories we so...


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1 Father of victim in Santa Barbara shootings to politicians: 'I don't care about your sympathy.'

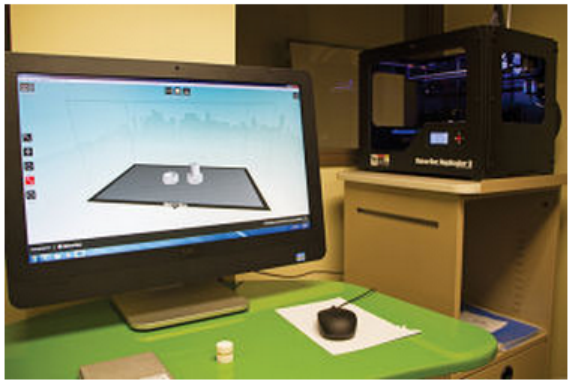

2 Money and access parked at the Capitol

3 Elliot Rodger's UCSB massacre, sexual assaults and campus speech codes

DBK THE DIAMONDBACK
THE UNIVERSITY OF MARYLAND'S INDEPENDENT STUDENT NEWSPAPER

81°
Clear

McKeldin Library gains 3-D printer



James Levin/The Diamondback

Posted: Tuesday, September 10, 2013 1:11 am | *Updated: 1:04 am, Wed Sep 11, 2013.*

Posted on Sep 10, 2013
by Josh Logue

There's a brand new 3-D printer in McKeldin Library, and anyone can use it. But so far, no one has.

3-D printer

McKeldin Library now has the capability to print 3-dimensional objects on the second floor with the new MakerBot Replicator.

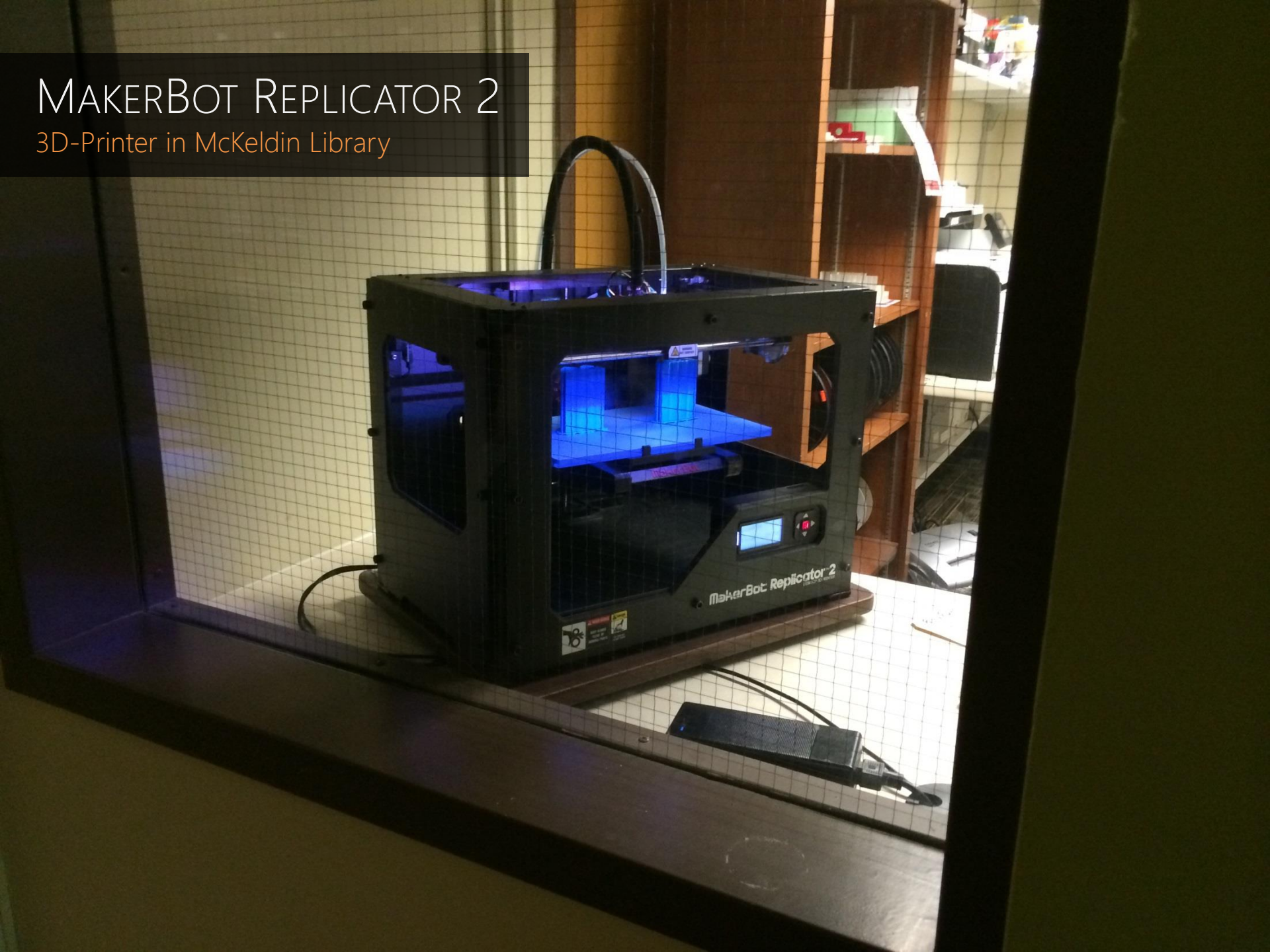
Nestled in a corner behind the Terrapin Learning Commons Tech Desk on the library's second floor, the microwave-sized, black-accented MakerBot Replicator 2 glows blue through a window. The $2,500 piece of equipment, paid for through funds from the student technology fee, officially became accessible to the public on Friday, and learning commons staff said they are still waiting for the first person to request to print an object.

"We wanted to give students across different disciplines access to a resource they may not have through their own department," said Gary White, library public services associate dean. "A low-cost way to bring an idea of innovation forward."

The learning commons staff is on hand to acquaint students with the MakerBot, a machine that uses

MakerBot Replicator 2

3D-Printer in McKeldin Library



MLK Library

Downtown Washington DC

Digital Commons at MLK

LISTEN

Search
Words or Phrase
For...
GO
Catalog Site
Library Locations
How do I...?
My Account/Pay Fines
Support the Library
Select Language

MLK Library Digital Commons

http://dclibrary.org/digitalcommons

MLK Library Digital Commons

http://dclibrary.org/digitalcommons

MLK Library Dream Lab

http://dclibrary.org/digitalcommons

McKeldin Library

Beginning to Create Makerspace

McKeldin Library

Future Location of First Makerspace

Startup Shell

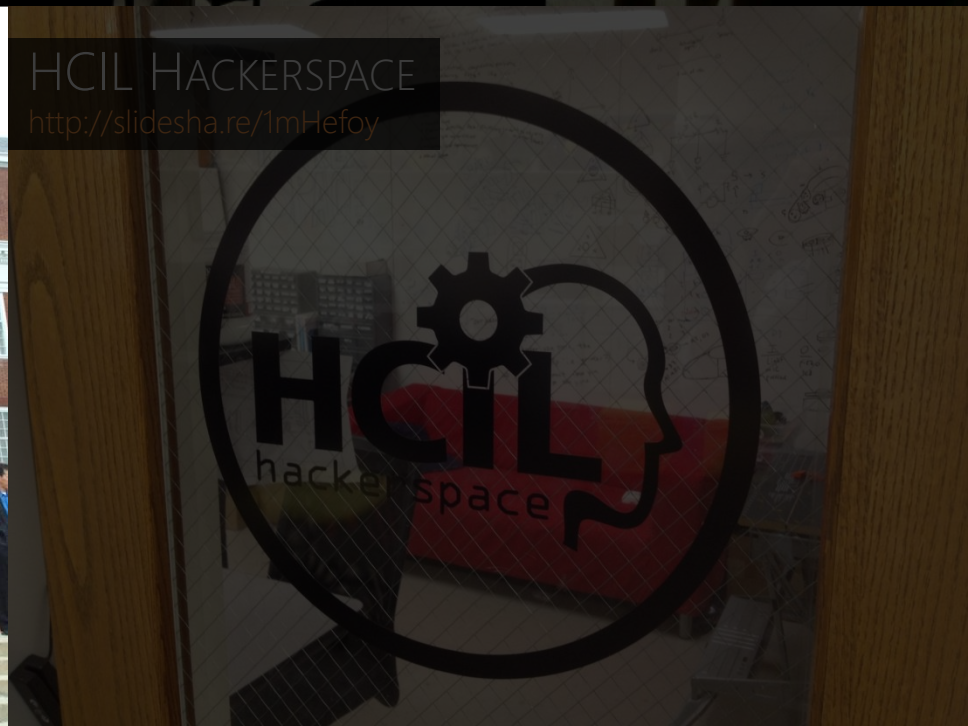
http://startupshell.org/

Collider

http://www.collider.org/

McKeldin Library

http://startupshell.org/



HCIL Hackerspace

http://slidesha.re/1mHefoy


Startup Shell
http://startupshell.org/
startup shell


Collider
http://www.collider.org/


McKeldin Library
http://startupshell.org/
KELDIN LIBRARY


HCIL Hackerspace
http://slidesha.re/1mHefoy
HCIL
hacker space

How

do you design a space for making?

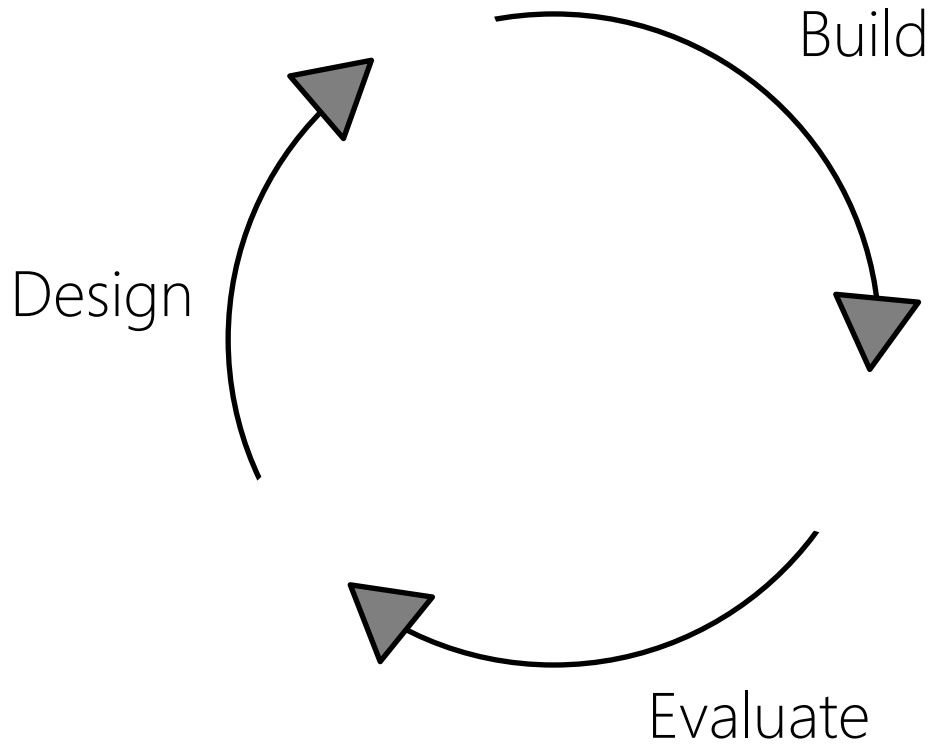

HCiL
hacker space

I want(ed) to make the HCIL Hackerspace a place to...

...inspire creativity & excitement
...encourage and allow for serendipitous interaction
...attract a diverse set of students
...allow students to experiment, play, learn, make
...build community and imbue a spirit of collaboration
...rapidly prototype physical computing designs
...promote working with low-tech and high-tech materials together
...

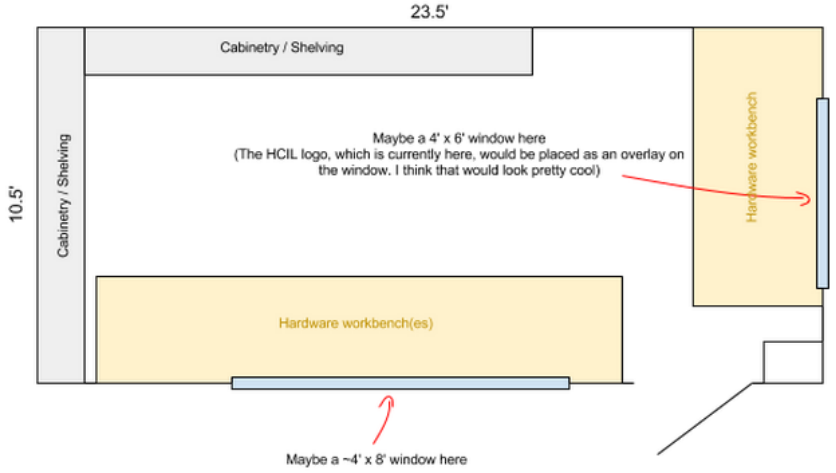
Human-Centered

Iterative Design



Layout and Decor

The layout below is only a sketch and not definitive. The overall goal here is to maximize workspace while still allowing for sufficient storage. The 4'x8' window, which looks into the larger HCIL space would be replacing, in part, the peg board. Evan notes that the peg board is useful, however, for quickly storing and accessing tools so we will have to come up with a plan here.



Windows

As part of this transition, we are likely going to be installing two windows: one largish 4'x8' window facing the HCIL and one smaller 4'x6' facing the hallway. This will be dependent on cost and feedback from fellow lab members. The goal here is to make the "closet" feel less cavernous and more like a part of the larger HCIL. The windows will also bring in more light and allow passerbys to briefly look in to see the activities in the lab.

Allison: I think the windows will be a great addition and Jon's idea of putting back the logo on the hallway window is inspired. Jon- you'll just need to let us know when we need to take down the shelf and pics on the lab wall that will get a window.

Krist: I think the windows will be great. A minor addition maybe a curtain that you can

HCIL "Messy Closet" -> "Hardware Lab"

https://docs.google.com/document/d/1nFW0JNb2vvYbC0F1oe9qsayoi0f4dee1mLCp7XmW_qY/edit

Jon Froehlich

HCIL "Messy Closet" -> "Hardware Lab"

File Edit View Insert Format Tools Table Help Last edit was yesterday at 10:26 PM

Comments Share

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Windows

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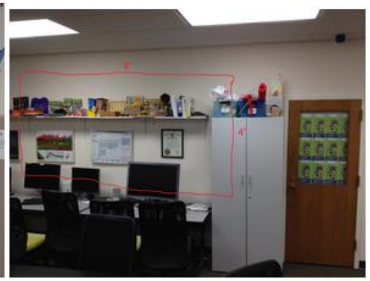
Krist: I think the windows will be great. A minor addition maybe a curtain that you can cover the "hardware lab" windows during brown bag or a private meeting in the main lab.

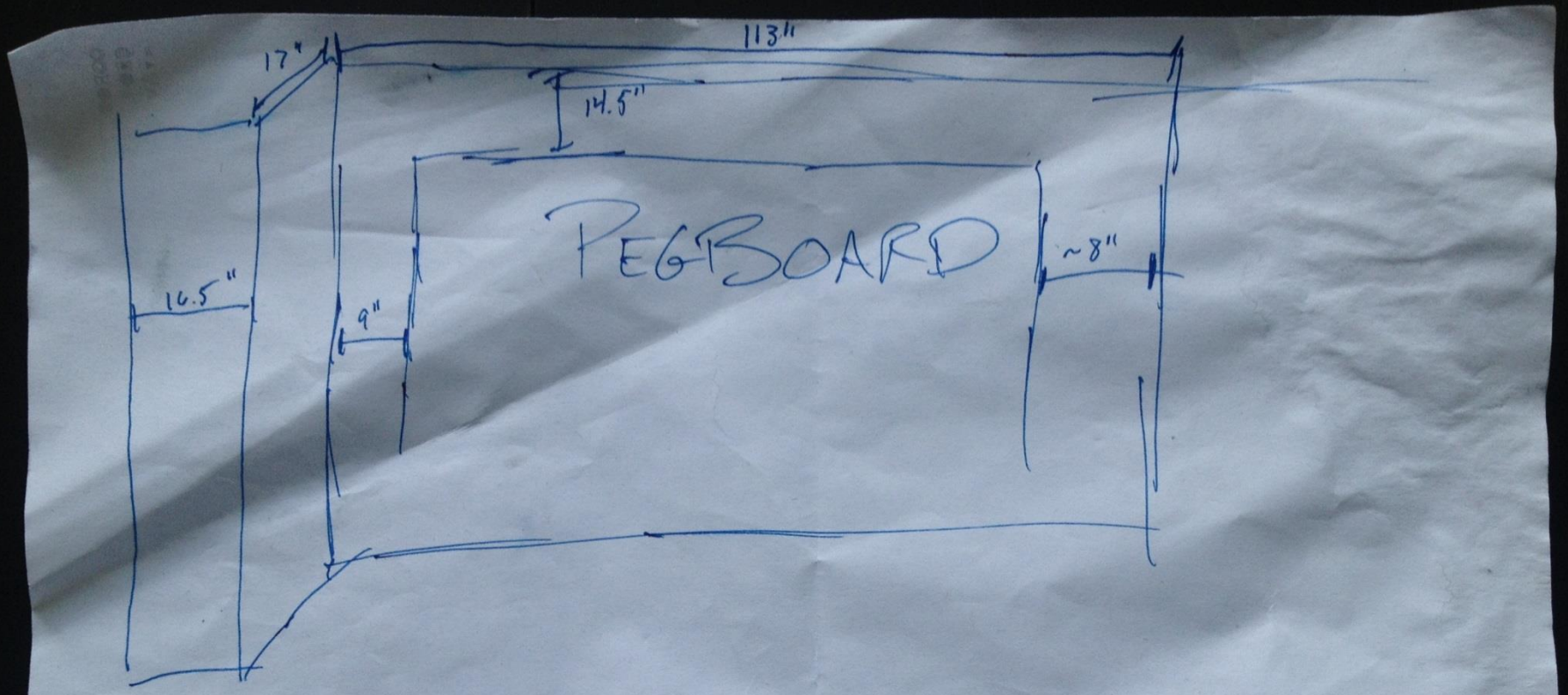
Tak : Adding windows is a great idea. How about a big twin glass door which can make the room feel much bigger? With a glass door the room may look like a part of the lab. But of course it will cost much more money.



Configuring the Space for Creative Work

I'm a huge believer in how space, architecture, and the overall flavor of a place can influence creativity and thought. I want the hackerspace (and the HCIL area as a whole) to inspire creativity, free thinking, and imagination. I also want the space to be equipped with the tools necessary to support creative work

Google Docs enabled multiple parties to easily provide feedback and even make their own edits to the planning doc



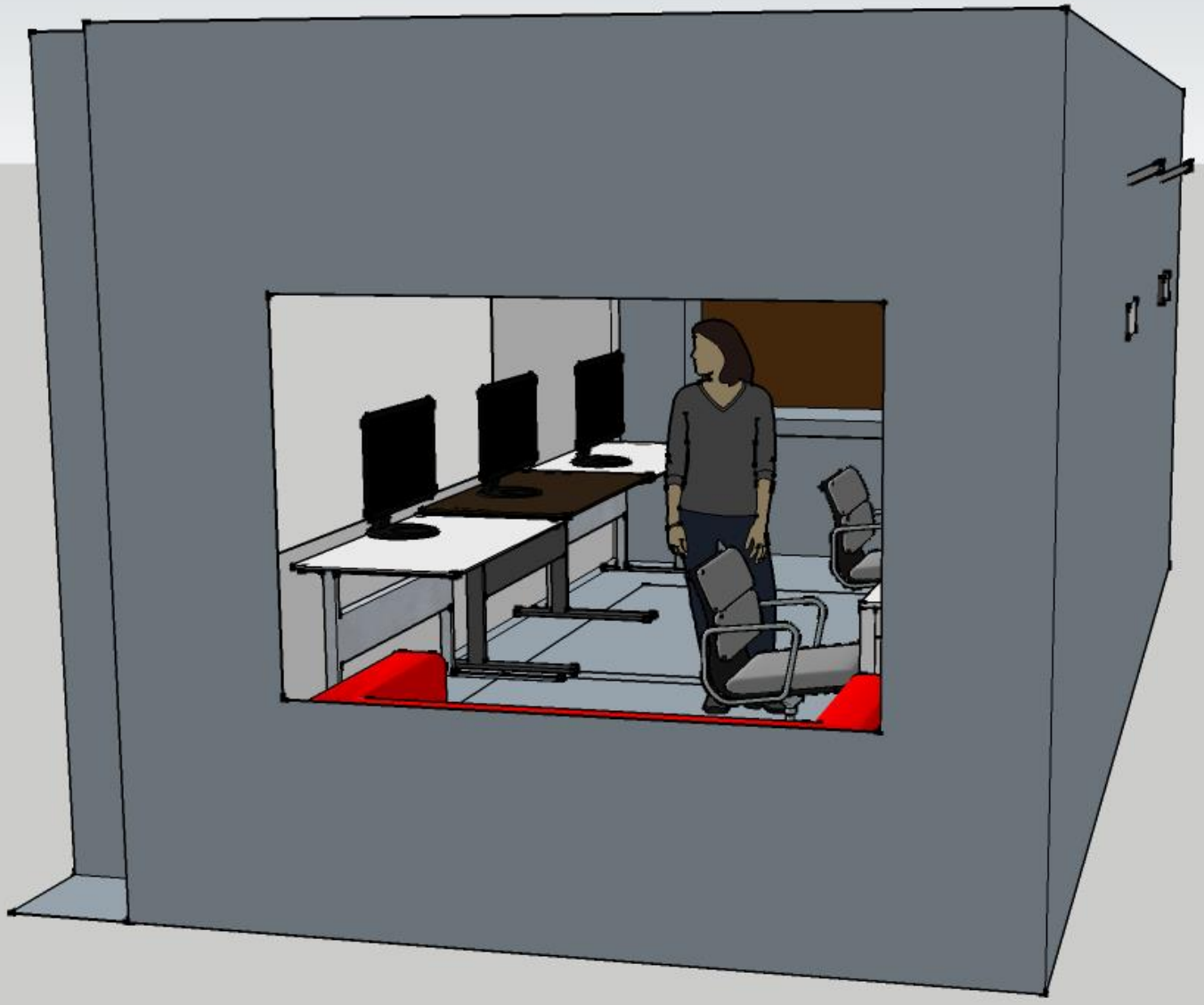
- [ ] whiteboard slot 39
- [ ] whiteboard slot 2 ~~41.5~~ 41.5"
- [ ] lots of gray stack boxes (HusKy)
- [ ] 113" black shelving above peg board
- [ ] 83" black shelving above doorway
- [x] Big gray boxes

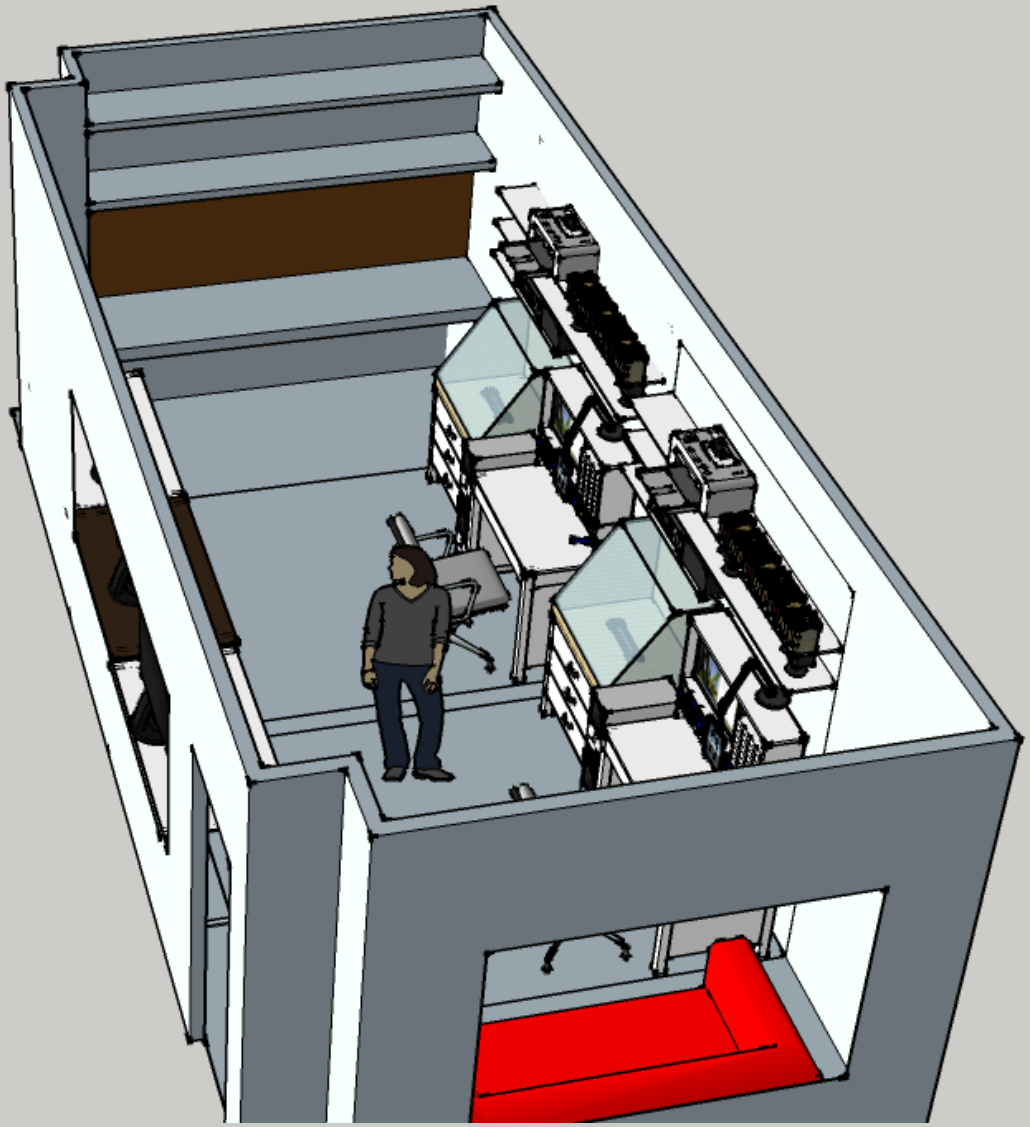
- [ ] Big Drill bit?
- [x] longer screw tips for drill
- [ ] More storage Bins from that Storage Bin Place
- [ ] IKea colored carpet
- [ ] Whiteboard on wheels
- [ ] Pillow / lap laptop holder
- [ ] Pico Projector
- [x] More L ~~Brace~~ bars (long) for shelf

Drawers underneath 3D printer table?

- [x] Wood Glue Aisle 5

Thrifty White Pegboard
SKU 346-428





HCIL Hackerspace

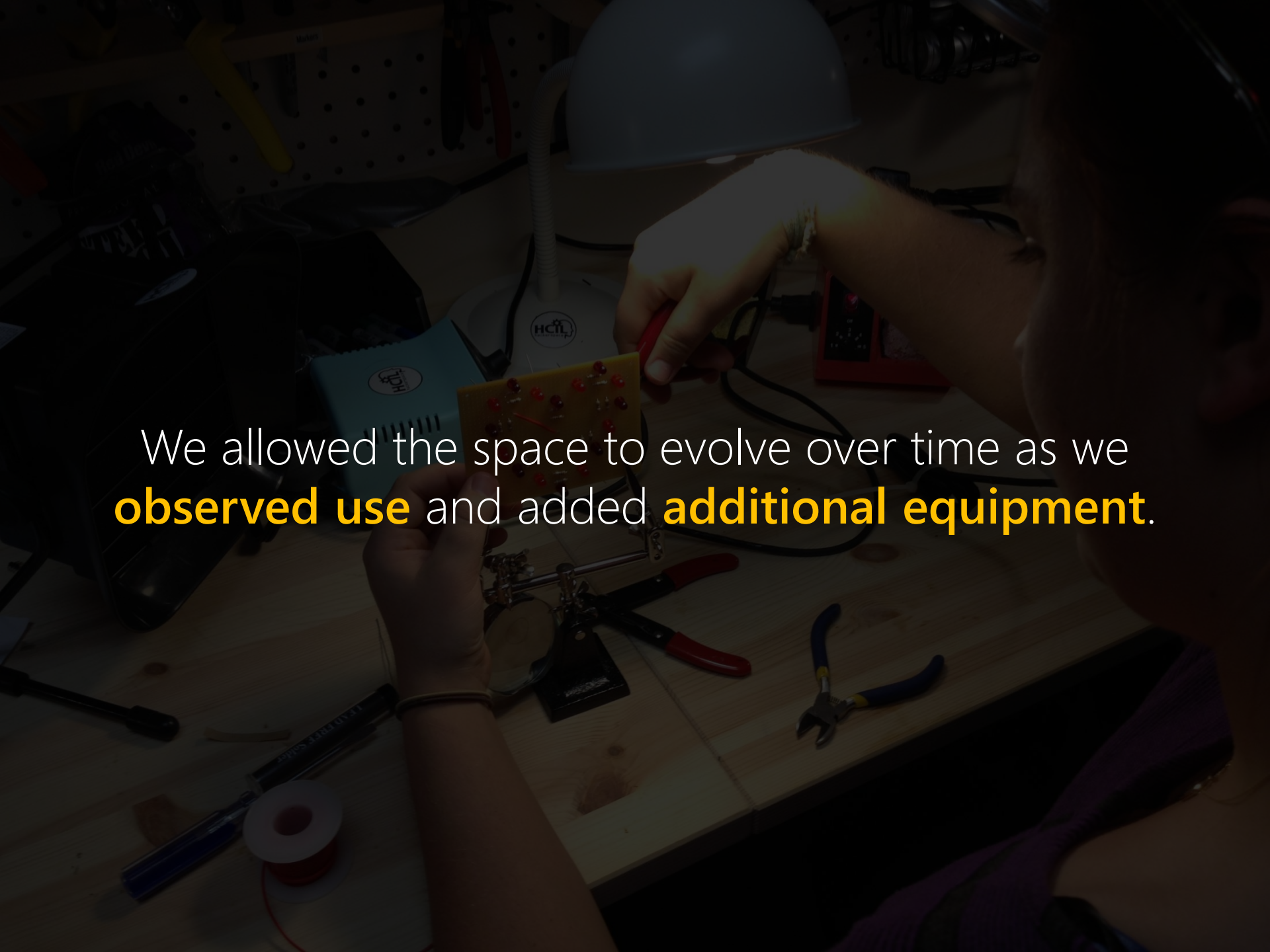
Prior to Renovation

HCIL Hackerspace

Version 1.0

HCIL Hackerspace

Version 1.0


We allowed the space to evolve over time as we
observed use and added additional equipment.

HCIL Hackerspace

Version 1.0

HCIL Hackerspace

Version 2.0


HCIL Hackerspace
Version 2.0
2018
2023

HCIL Hackerspace

Version 3.0

HCIL Hackerspace

Version 3.0


Making is enabled not just by space
but **ready access to material and tools**

Three Soldering Stations

HCIL Hackerspace

Craft/Textile Station

HCIL Hackerspace

Two Mannequins

HCIL Hackerspace

Basic Electronic Supplies

HCIL Hackerspace

Wall of Electronic Components

HCIL Hackerspace

Quadcopters

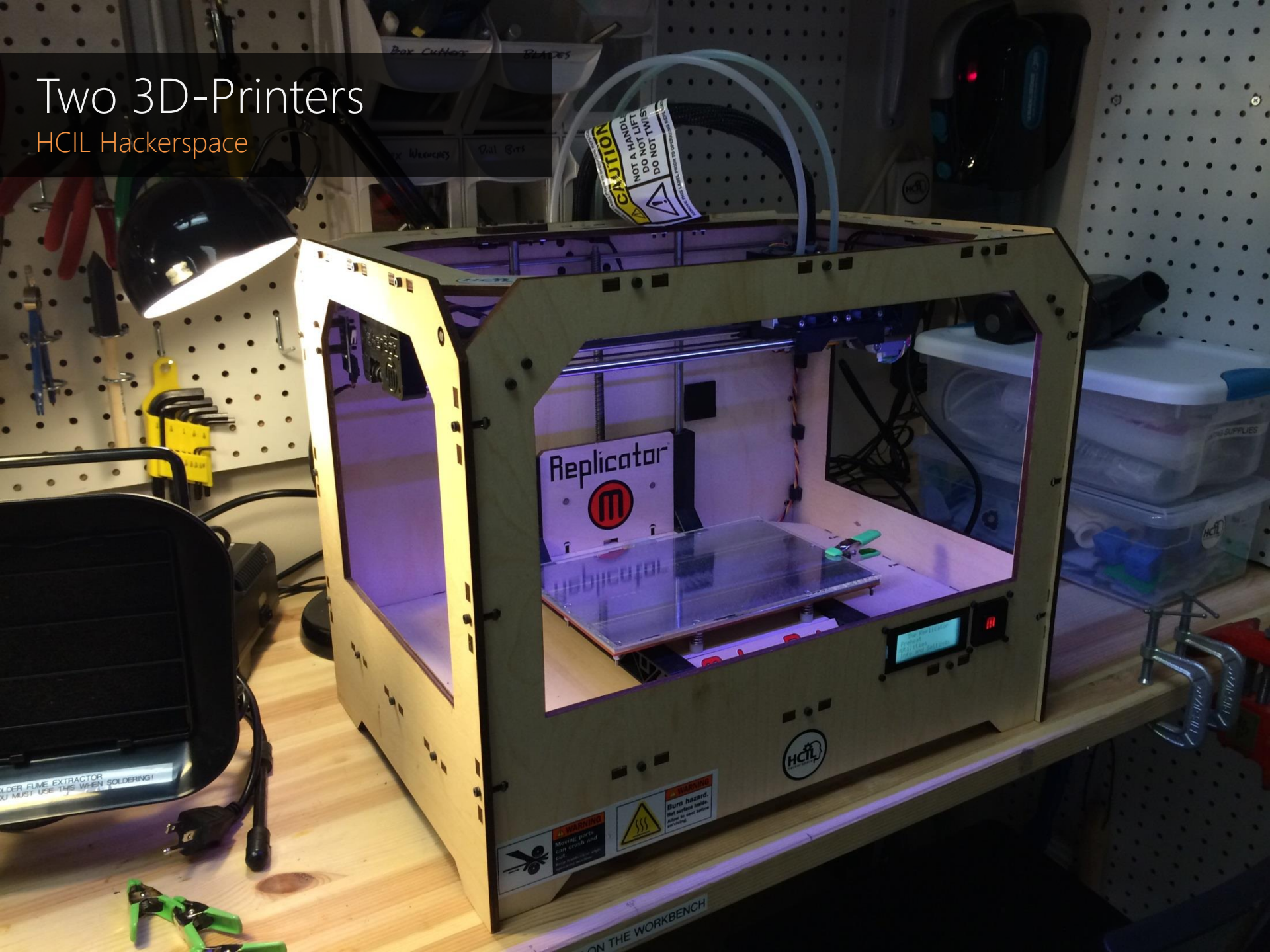
HCIL Hackerspace

One Oscilloscope

HCIL Hackerspace

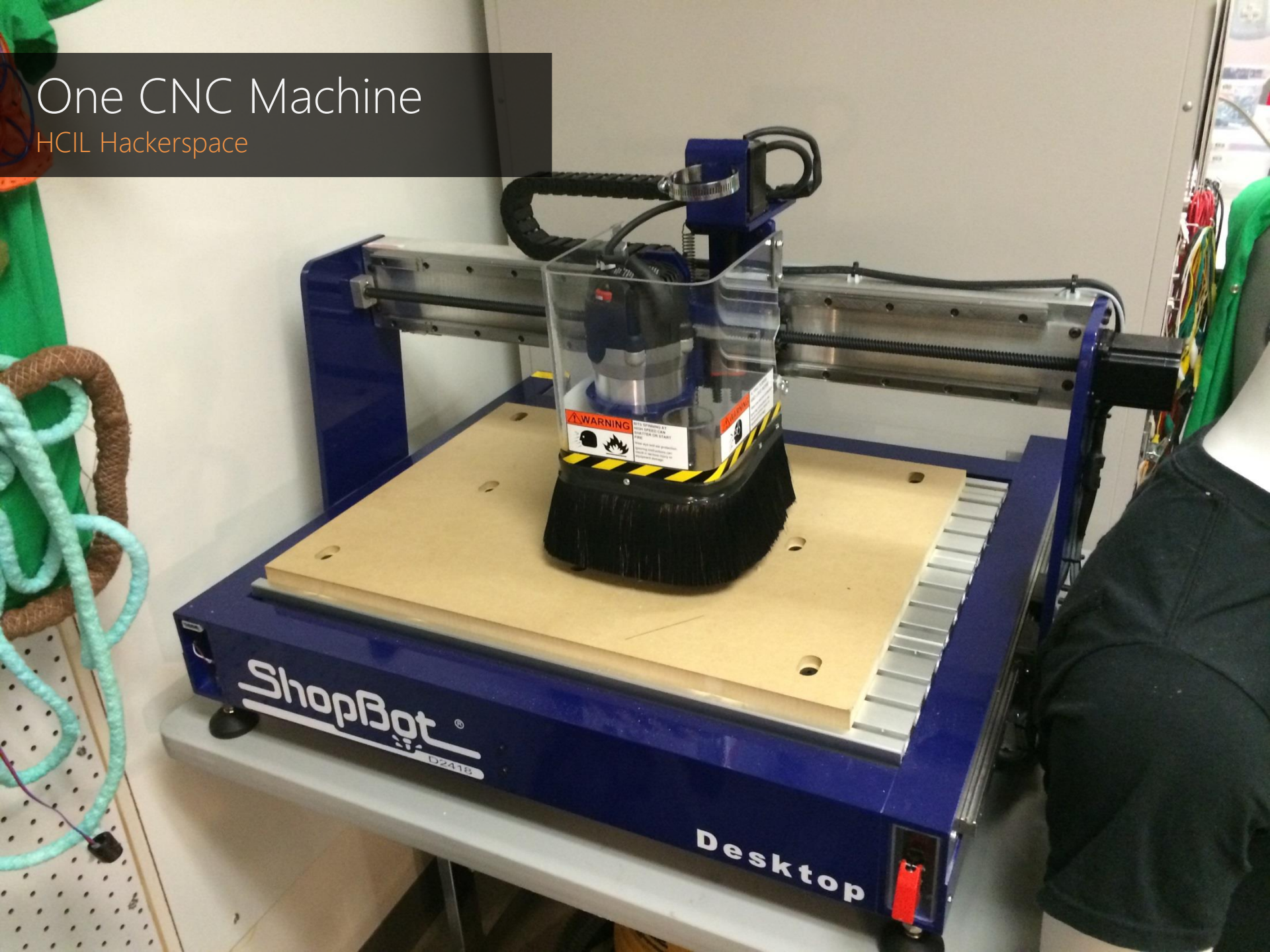
Two 3D-Printers

HCIL Hackerspace



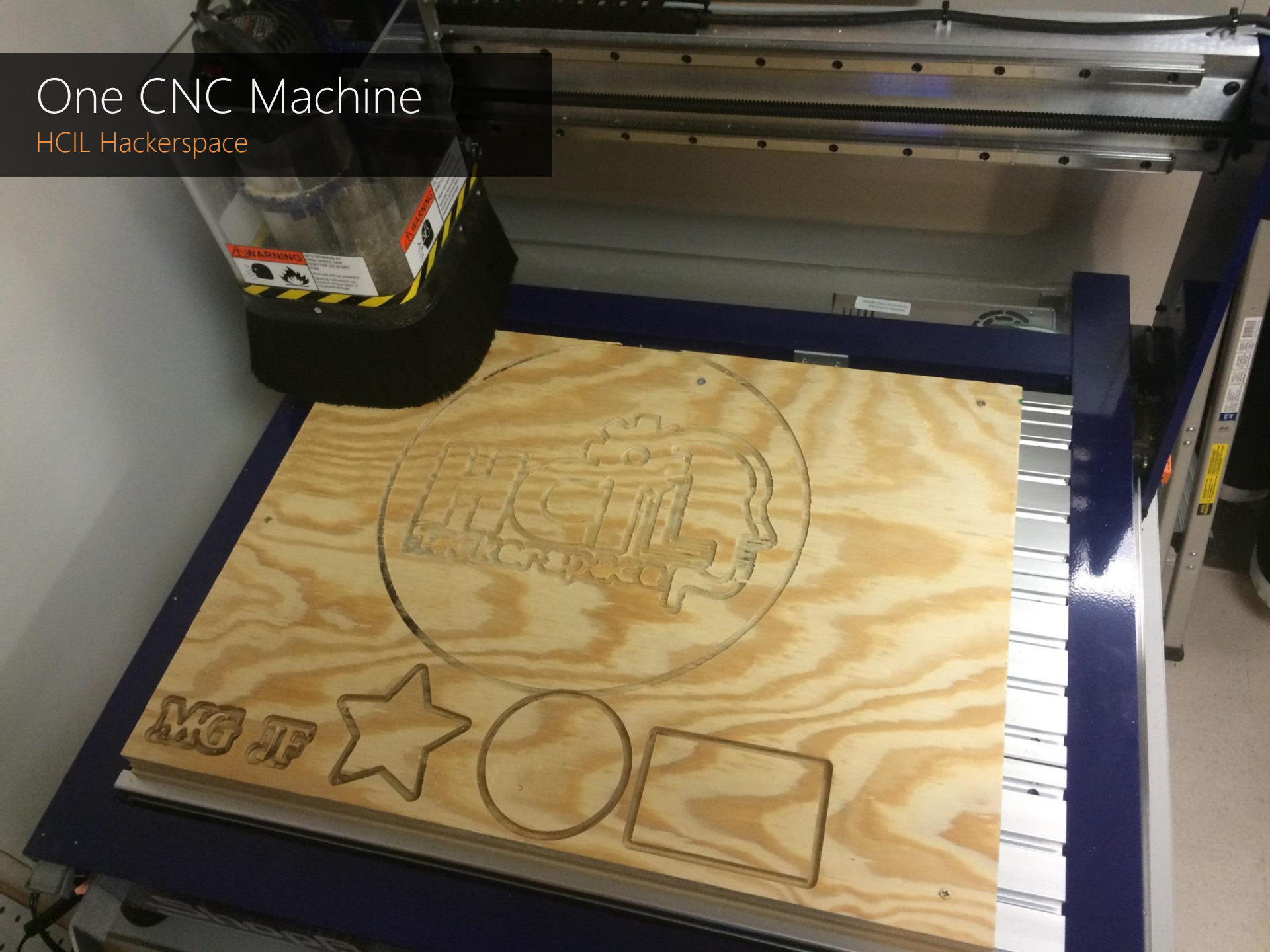
One CNC Machine

HCIL Hackerspace



One CNC Machine

HCIL Hackerspace



Top Five Tips

1. Observe the use of space and iterate
2. Allow the makers to help make the space
3. Configure not just for work but for inspiration
4. Big, open tables are important for collab making

Students Working Outside The Hackerspace

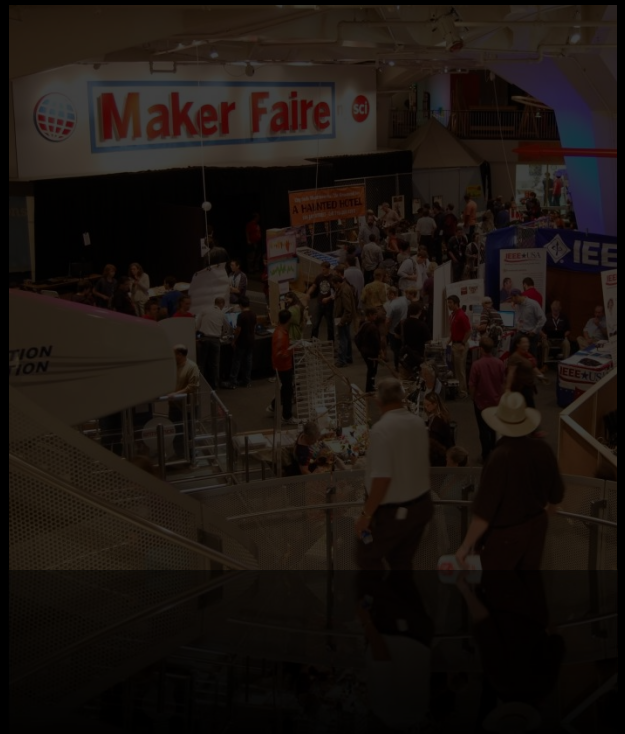
Students Working Outside The Hackerspace

Students Working Outside The Hackerspace

Top Five Tips

1. Observe the use of space and iterate
2. Allow the makers to help make the space
3. Configure not just for work but for inspiration
4. Big, open tables are important for collab making
5. Provide as much equipment as you can afford & keep it organized/accessible

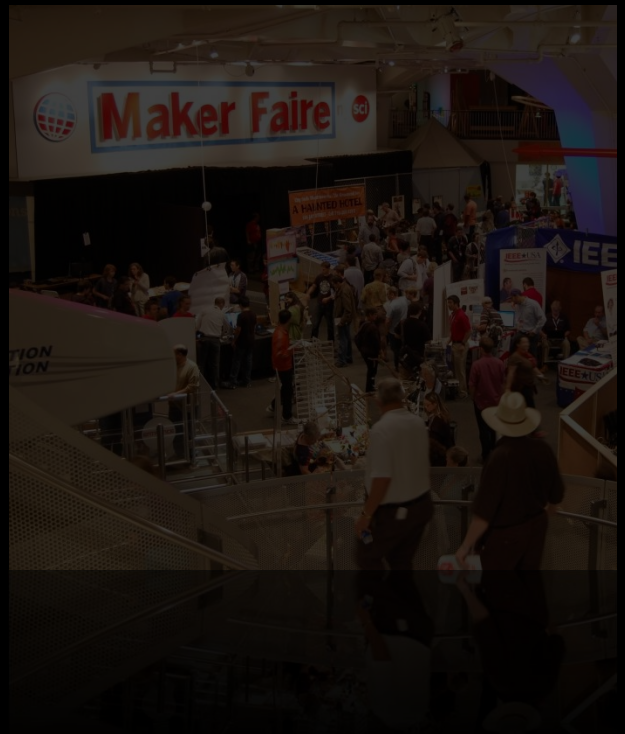
Rise of Maker/DIY Movement



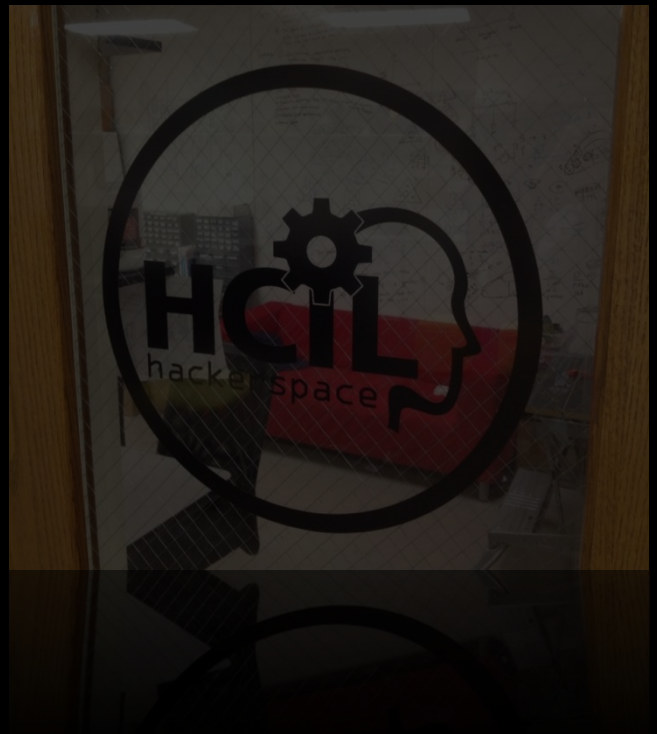
Making & Makerspaces at UMD

'Making' in the Classroom

Rise of Maker/DIY Movement



Making & Makerspaces at UMD

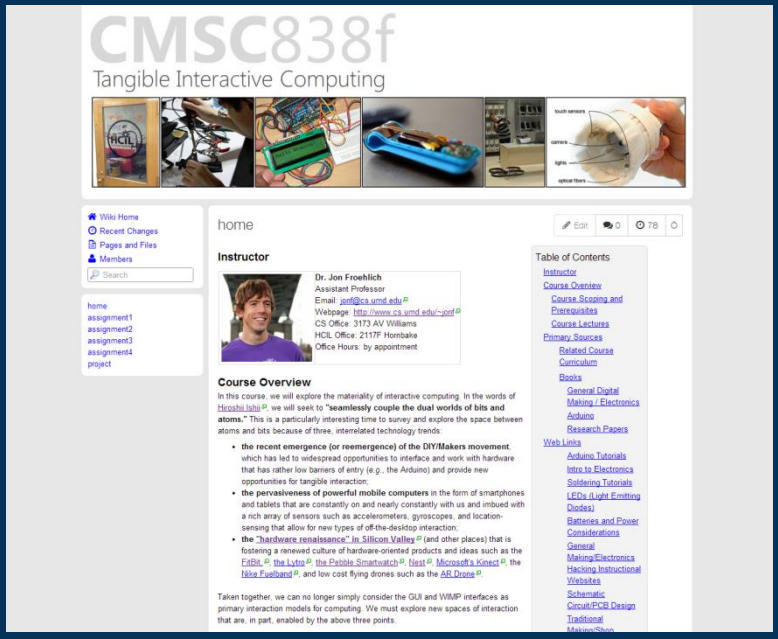


‘Making’ in the Classroom

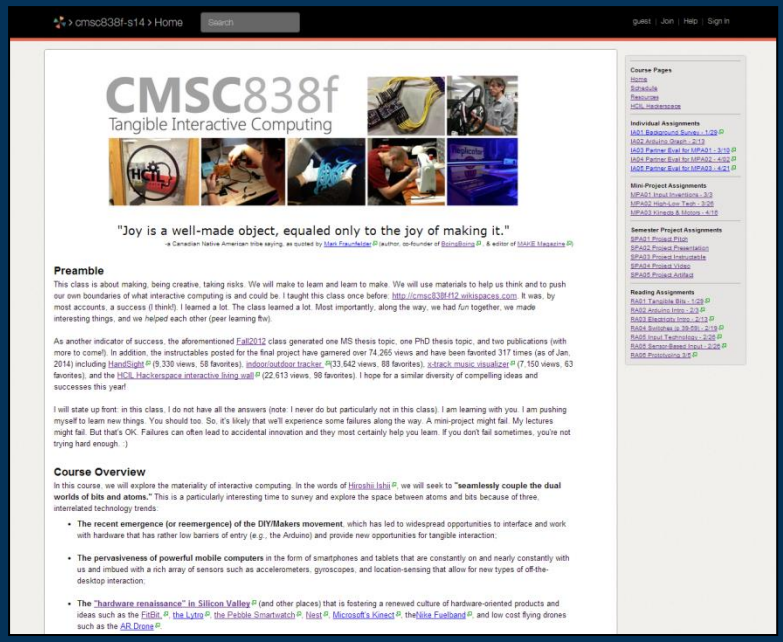
For me, the type of making that gets me excited combines **computation** with **physical material** to create new interactive experiences (*e.g.*, fabrics, objects)

Ryokai *et al.*, I/O Brush: Drawing With Everyday Objects as Ink, CHI2004

My ‘Maker’ Course

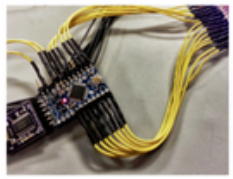


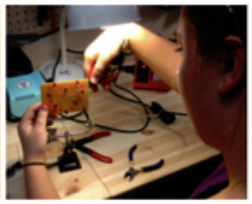
Tangible Interactive Computing
Fall 2012

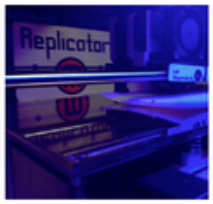


Tangible Interactive Computing
Spring 2014

CMSC838f
Tangible Interactive Computing





"Joy is a well-made object, equaled only to the joy of making it."

-a Canadian Native American tribe saying, as quoted by Mark Fraunfelder (author, co-founder of BoingBoing, & editor of MAKE Magazine)

Preamble

This class is about making, being creative, taking risks. We will make to learn and learn to make. We will use materials to help us think and to push our own boundaries of what interactive computing is and could be. I taught this class once before: http://cmsc838f-f12.wikispaces.com. It was, by most accounts, a success (I think!). I learned a lot. The class learned a lot. Most importantly, along the way, we had *fun* together, we *made* interesting things, and we *helped* each other (peer learning ftw).

As another indicator of success, the aforementioned Fall2012 class generated one MS thesis topic, one PhD thesis topic, and two publications (with more to come!). In addition, the instructables posted for the final project have garnered over 74,265 views and have been favorited 317 times (as of Jan, 2014) including HandSight (9,330 views, 58 favorites), indoor/outdoor tracker (33,642 views, 88 favorites), x-track music visualizer (7,150 views, 63 favorites), and the HCIL Hackerspace interactive living wall (22,613 views, 98 favorites). I hope for a similar diversity of compelling ideas and successes this year!

I will state up front: in this class, I do not have all the answers (note: I never do but particularly not in this class). I am learning with you. I am pushing myself to learn new things. You should too. So, it's likely that we'll experience some failures along the way. A mini-project might fail. My lectures might fail. But that's OK. Failures can often lead to accidental innovation and they most certainly help you learn. If you don't fail sometimes, you're not trying hard enough. :)

Sandbox Days

Alternates with lectures; focused on discussions, rapid prototyping, & peer learning

[Source: http://st-marks-preschool.org/wp-content/uploads/2013/02/Sandbox-play.jpg]

MPA02 High-Low Tech

MPA02 High-Low Tech Input/Output

Due: ~~**Monday, March 24 (before classtime)**~~
Now Due: **Wednesday, March 26 (before class, meet in HCIL)**

What To Do

In this assignment, your **goal is to rethink the materiality of computing and interaction.** You must make a primary input device (*e.g.,* paper joystick) or a primary output device (*e.g.,* ambient display) using low-tech materials such as paper, conductive paint, play-dough, tape, water, food, etc. The primary interactivity must be mediated by the low-tech material (*i.e.,* the low-tech material cannot be superfluous to your design, it must be directly integrated).

Some inspirational projects:

- Fawn Qiu's high-low tech version of Flappy Bird
- Jie Qi and Leah Buechley's "Computational Sketchbook" (video)
- Leah Buechley's High-Low Tech Living Wall

Material Ideas and Some How-Tos

Leah Buechley's High-Low Tech Group has a nice listing of material sources for electronic and conventional textiles, conductive inks and paper, and other materials. Browse her list and the list below and be inspired!

Paper Circuits

- Art, Craft, and Technology, Leah Buechley at the Cyberlearning Research Summit, 2012
- How to "Sketch" With Electronics, Leah Buechley at TEDYouth, 2011
- Paper Circuits with Copper Tape, Leah Buechley's High-Low Tech Group
- Microcontroller Circuit with Copper Tape, Leah Buechley's High-Low Tech Group
- Paper Speakers, Leah Buechley's High-Low Tech Group

Projects

- LED Paper Dragon Kite, Leah Buechley's High-Low Tech Group
- Electronic Origami Flapping Crane, Leah Buechley's High-Low Tech Group
- Computational Sketchbook, by Jie Qi and Leah Buechley

Conductive Paint

- My Love/Hate Relationship with Conductive Paint, by Dia via Sparkfun

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HCIL Hackerspace

Individual Assignments
IA01 Background Survey - 1/29
IA02 Arduino Graph - 2/13
IA03 Partner Eval for MPA01 - 3/10
IA04 Partner Eval for MPA02 - 4/02
IA05 Partner Eval for MPA03 - 4/21

Mini-Project Assignments
MPA01 Input Inventions - 3/3
MPA02 High-Low Tech - 3/26
MPA03 Kinects & Motors - 4/16

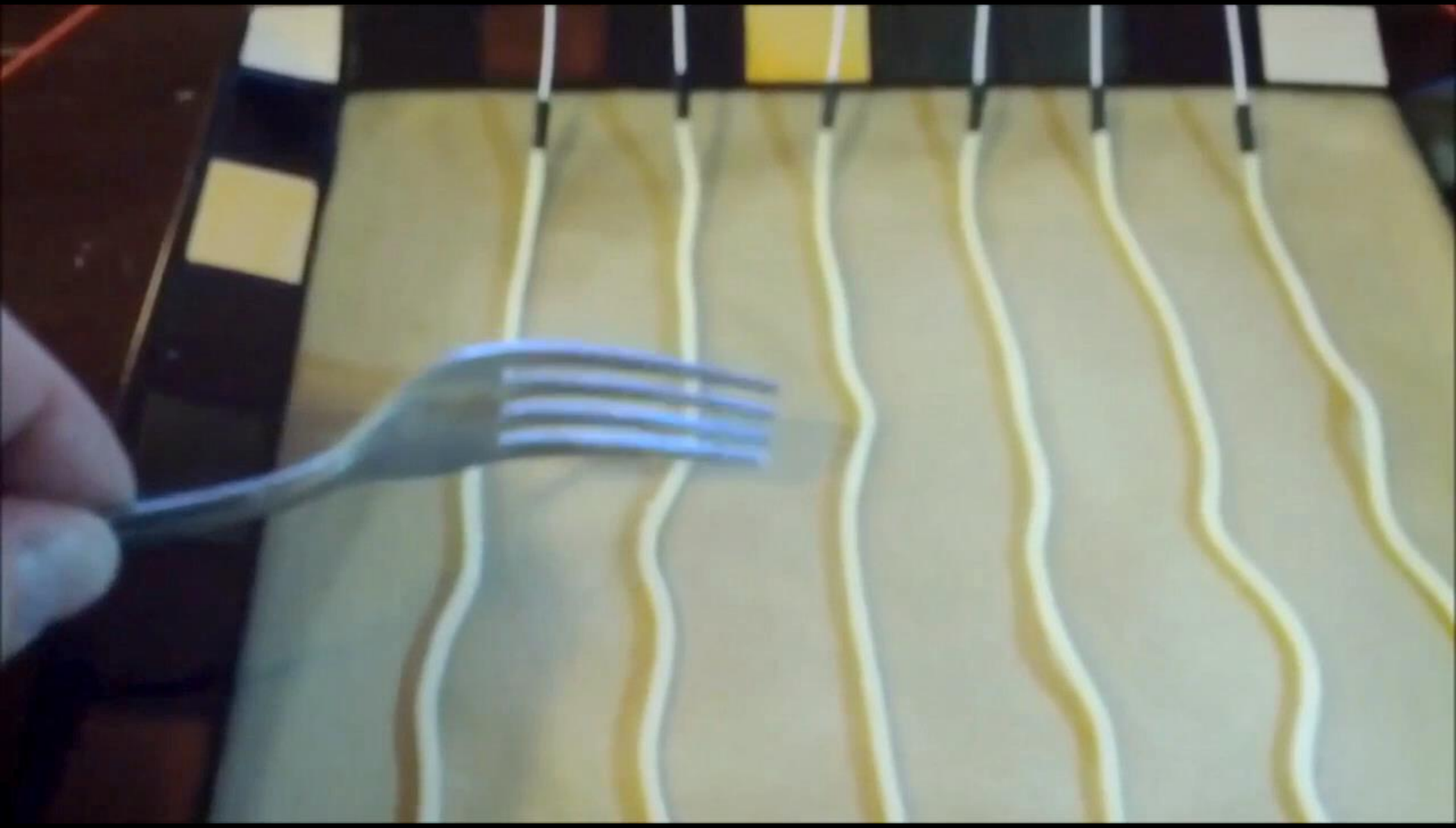
Semester Project Assignments
SPA01 Project Pitch
SPA02 Project Presentation
SPA03 Project Instructable
SPA04 Project Video
SPA05 Project Artifact

Reading Assignments
RA01 Tangible Bits - 1/29
RA02 Arduino Intro - 2/3
RA03 Electricity Intro - 2/13
RA04 Switches (p 39-59) - 2/19
RA05 Input Technology - 2/26
RA05 Sensor-Based Input - 2/26
RA06 Prototyping 3/5

edit navigation

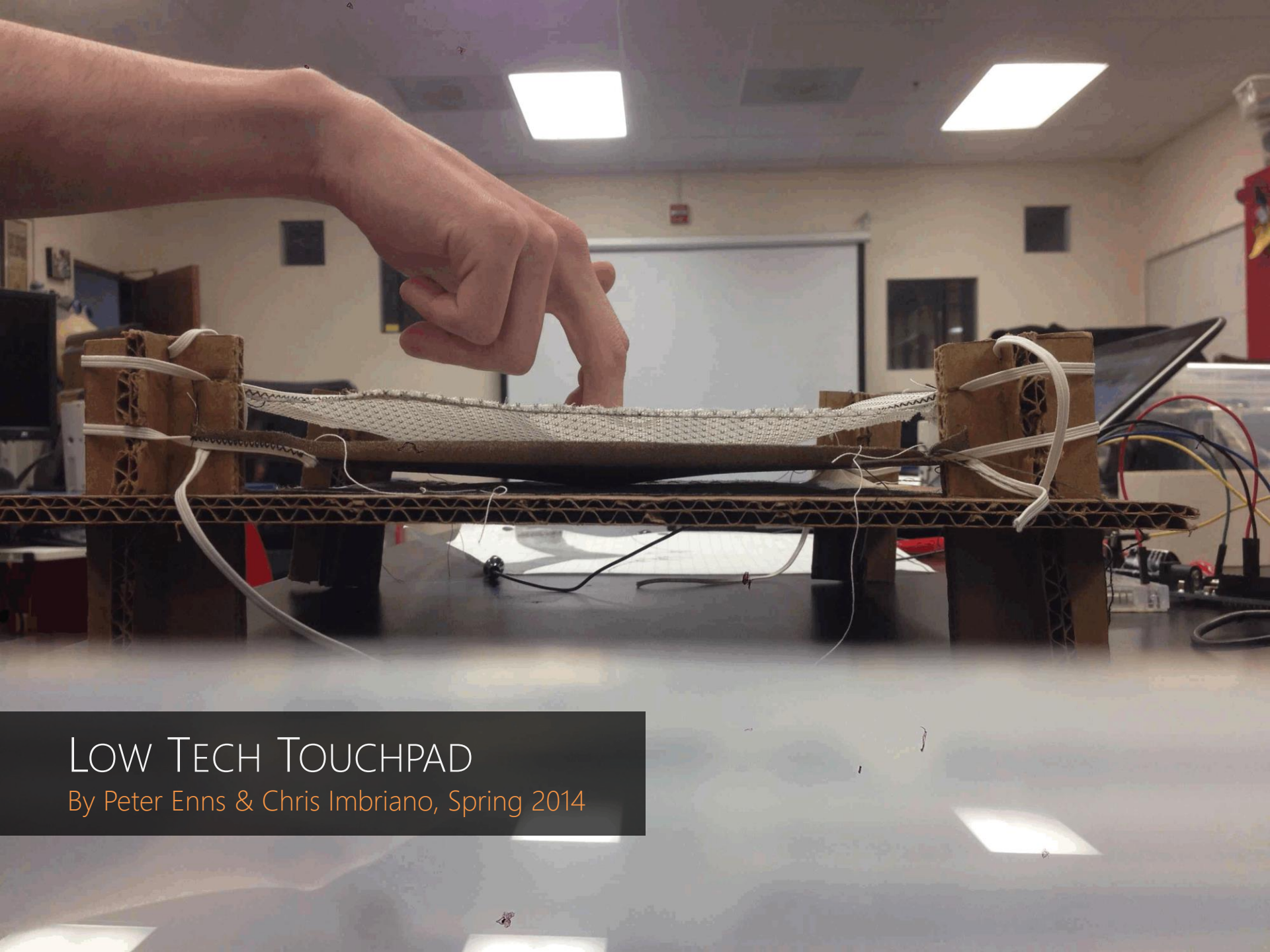
Musical Spaghetti Madness

By Richard Johnson, Spring 2014



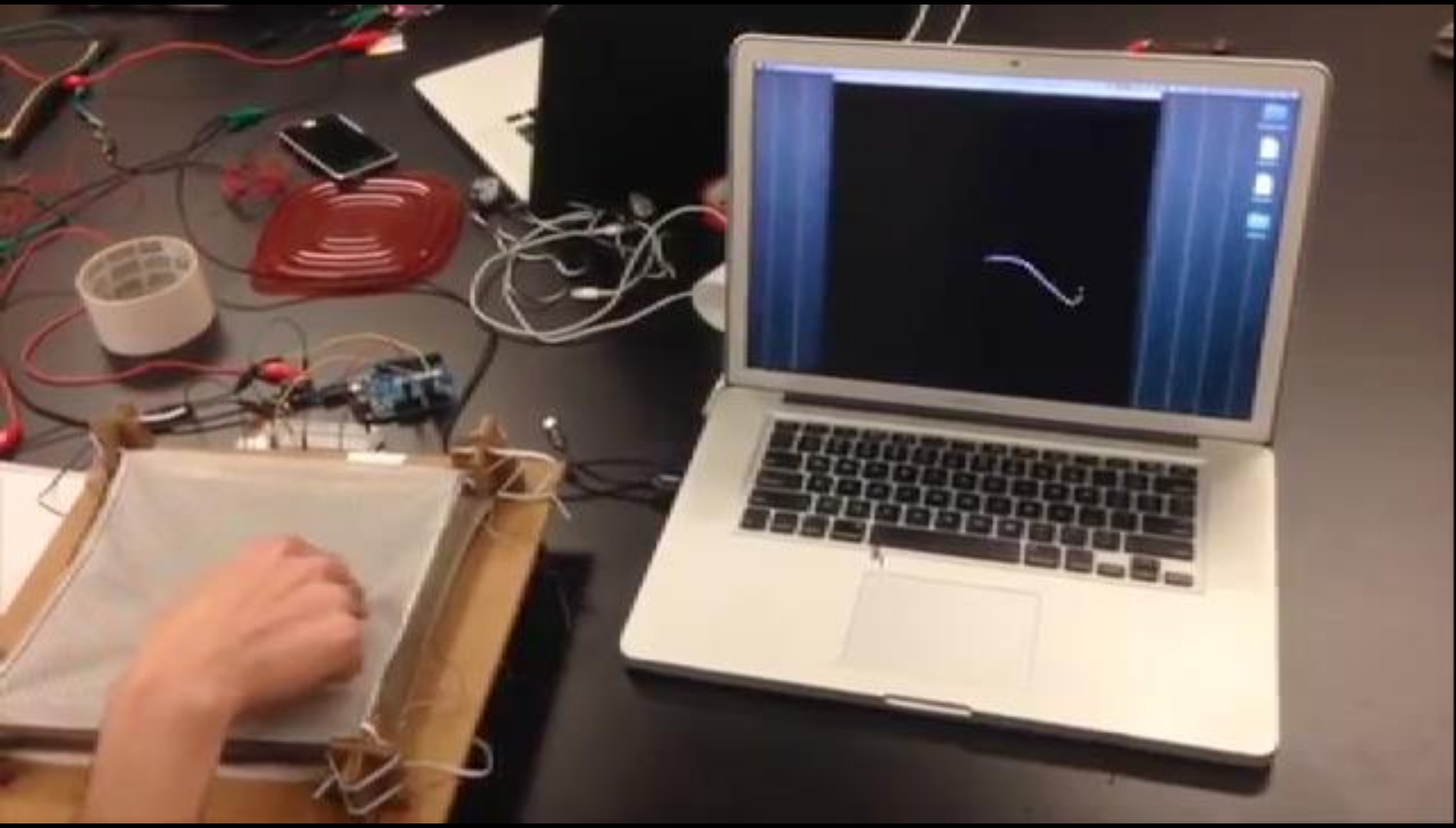

Richard brought spaghetti & sauce
Pringles
Original
Rubbermaid
easy find lids
All Profits To Charity


COME PLAY ME!
SPAGHETTI
PIANO



Low Tech Touchpad

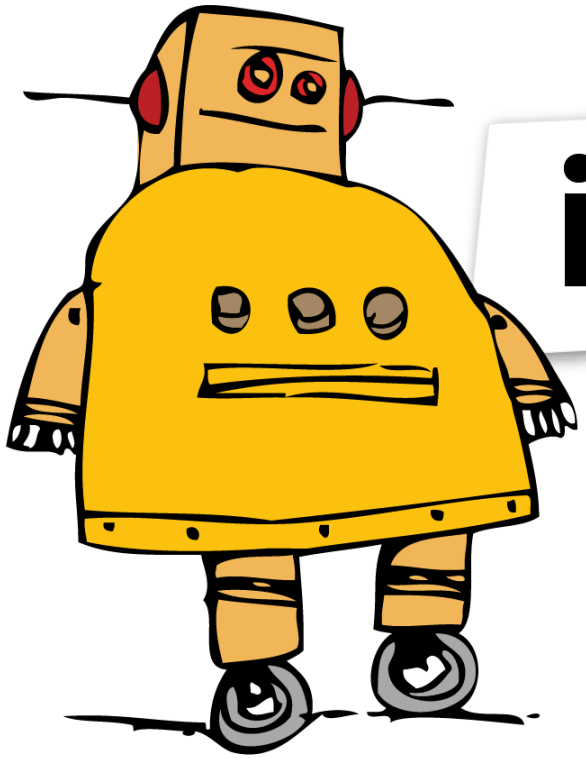
By Peter Enns & Chris Imbriano, Spring 2014



Starry Night

By Meethu Malu & Hitesh Maidasani, Spring 2014

Starry Night
Draco
Little Dipper
StarryNight



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by damianzuch in Props

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by BrittLiv in Nerf

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3D Printed Underwater Camera

by MoonLanding in 3D Printing

11 813

CARDBOARD SOLAR LAMP

by deba168 in Reuse

18 908

Playstation 2 controller with Raspberry Pi

by dexter_industries in Raspberry Pi

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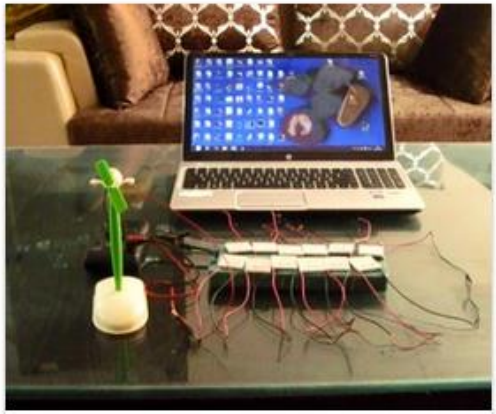
Automatic Beacon Night Light - Project Geek #3

by ProjectGeek in Sensors

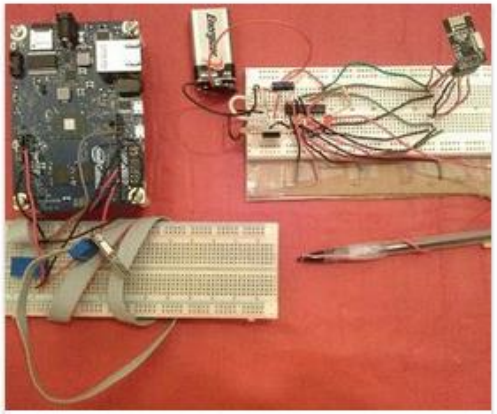
34 1.2K



Recycling CPUs Processor Heat

by ssarthak598 in Art

16 915



Using IPC for Wireless Encryption with Intel Galileo

by bunneydude in Electronics

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Dark walnut coffee table
by Thor02

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Low Budget Pallet Outdoor Lounge
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691 27K

Arts and crafts pallet clock
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179 3.3K

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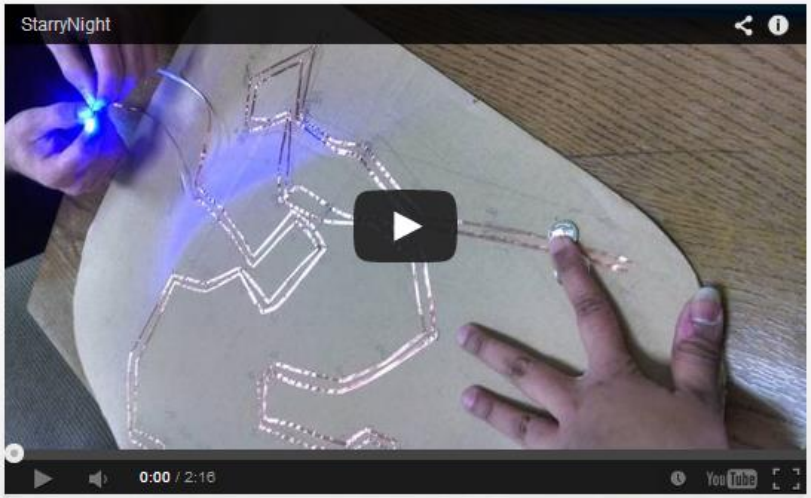

Ever looked in a sky full of stars and wondered what you were looking at? Where's

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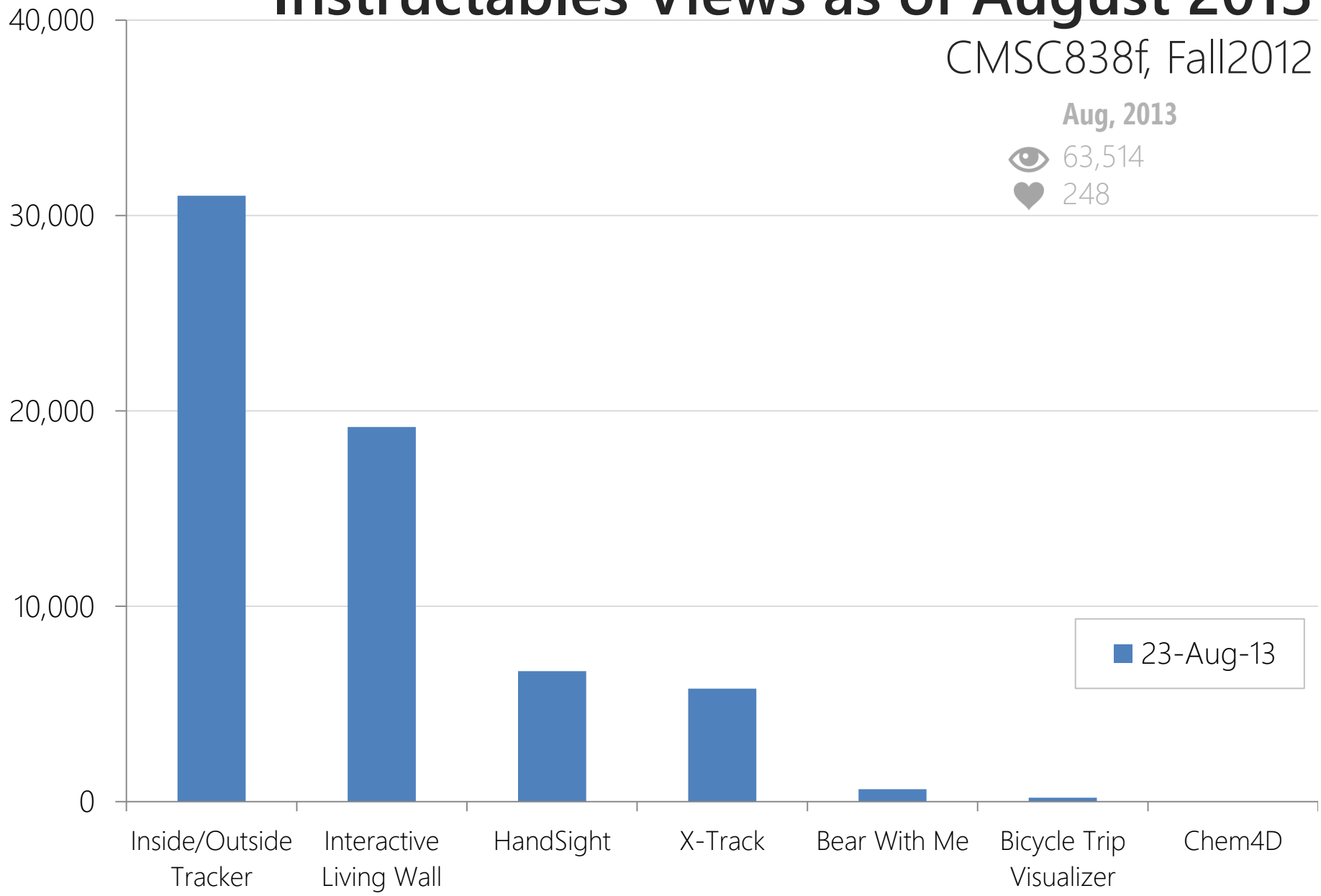
Total Favorites: 651

293

Spring 2014 totals; posted May 16

Instructables Views as of August 2013

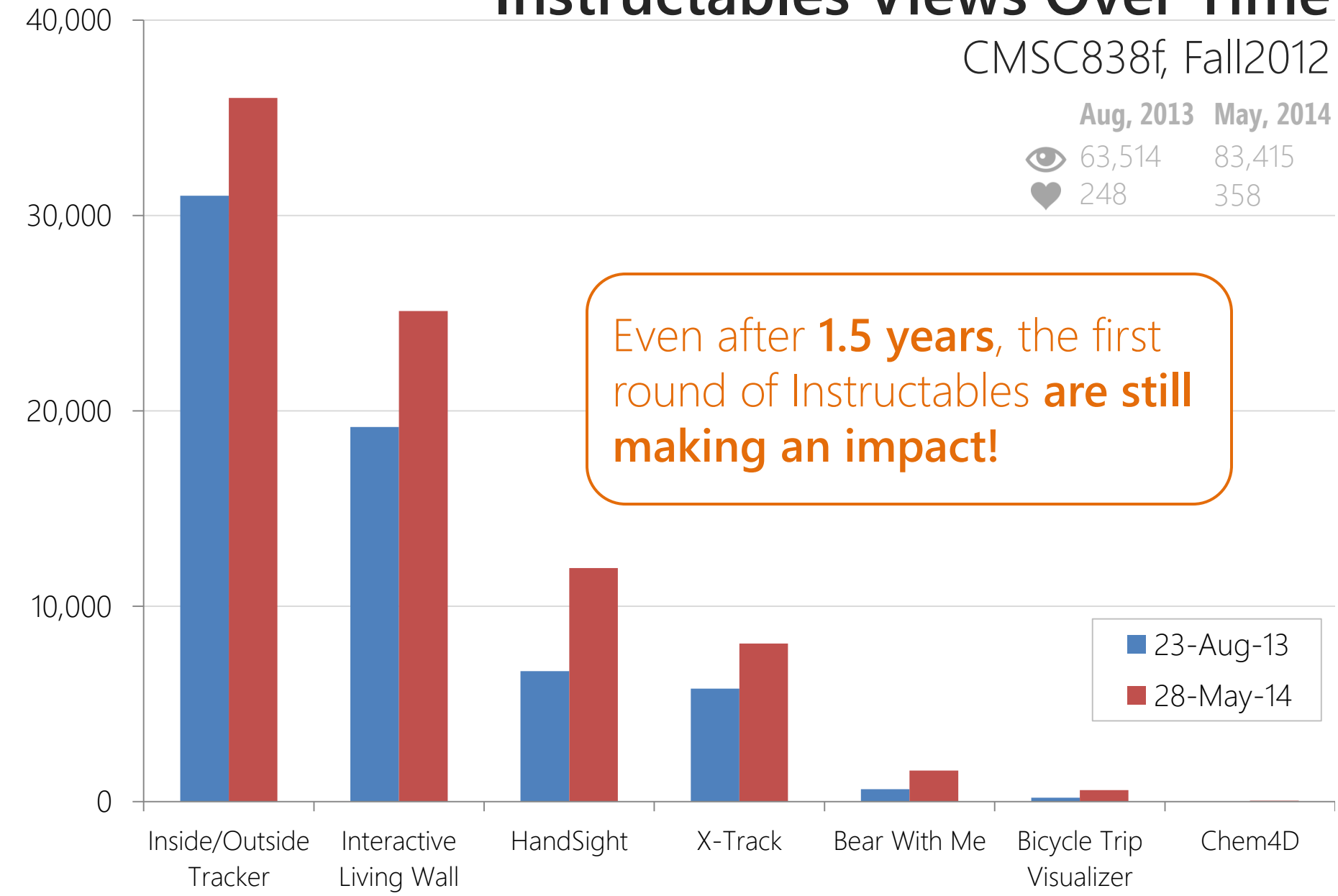
CMSC838f, Fall2012



Instructables Views Over Time

CMSC838f, Fall2012

	Aug, 2013	May, 2014
👁	63,514	83,415
♥	248	358



Even after **1.5 years**, the first round of Instructables **are still making an impact!**

StarryNight: Paper Circuits and Astronomy for Kids!

by meethumalu

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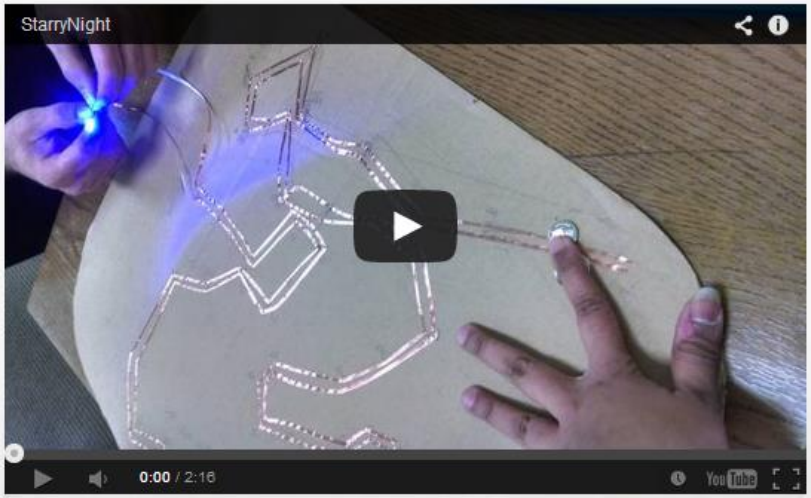

Ever looked in a sky full of stars and wondered what you were looking at? Where's

About This Instructable

3,950 views
80 favorites

Posted: May 19, 2014

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meethumalu
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Tags: paper circuits, low tech, LEDs, stars, constellations, copper tape

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How to build an LED Planetarium
by mattthegamer463

LED Star Constellation Light or night light
by Paulbacca

StarryNight: Paper Circuits and Astronomy for Kids! by meethumalu

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hobby4us 8 days ago Reply

This is a great idea, just what I've been looking for... I want to do something like this to cover my cars roof for an interior light.

flag

meethumalu (author) ▸ hobby4us 7 days ago Reply

Thank you :)

Would love to see this on the roof of your car. We also thought about putting it on the ceiling of a kids room with switches by the bed side :)

flag

Paulbacca 8 days ago Reply

I love projects like this. I did a similar one for my STEM after school club.

http://www.instructables.com/id/LED-Star-Constella...

There are now conductive pens and paints that you could use instead of copper wire. But that would take all the fun out of it. I never got around to putting them on display in school. Your ones would look amazing on display.

Good job!

flag

meethumalu (author) ▸ Paulbacca 7 days ago Reply

Thanks :) and I loved your project too !!

We did think about using conductive paint but heard mixed reviews about it. People said they crack when they dry. But I think I would give it a try! (Ha! That rhymes :))

flag

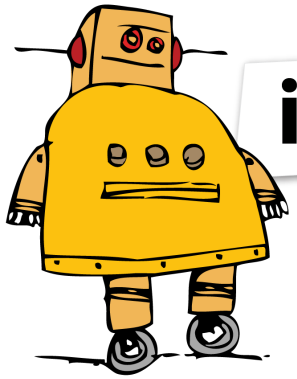
DIY-Guy 8 days ago Reply

It is beautiful to behold.

I would like to use these technical techniques to create lighted maps to real-world destinations in "local space" such as specific classrooms on campus, the location of a tool/machine in a Makerspace, or even a particular section of music in a composition. Thank you for the methods to make maps in the real world also!

Student interaction extends beyond classroom

Community suggests new ideas and alternative approaches!



instructables

in the classroom!

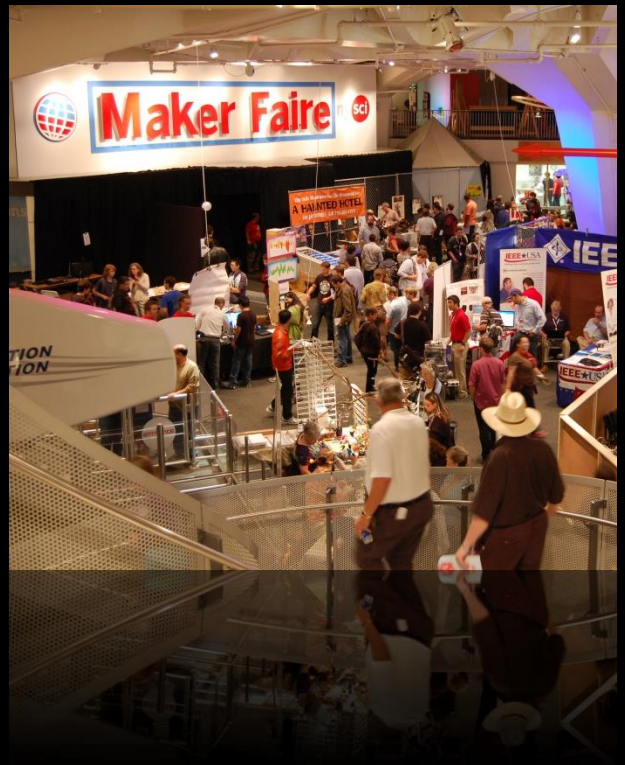
1. **Fulfilled original goal:** allowed for impact beyond the classroom & to contribute back to the maker community

2. **Impact continued over time:** student Instructables sustained interest/readership long after course completed

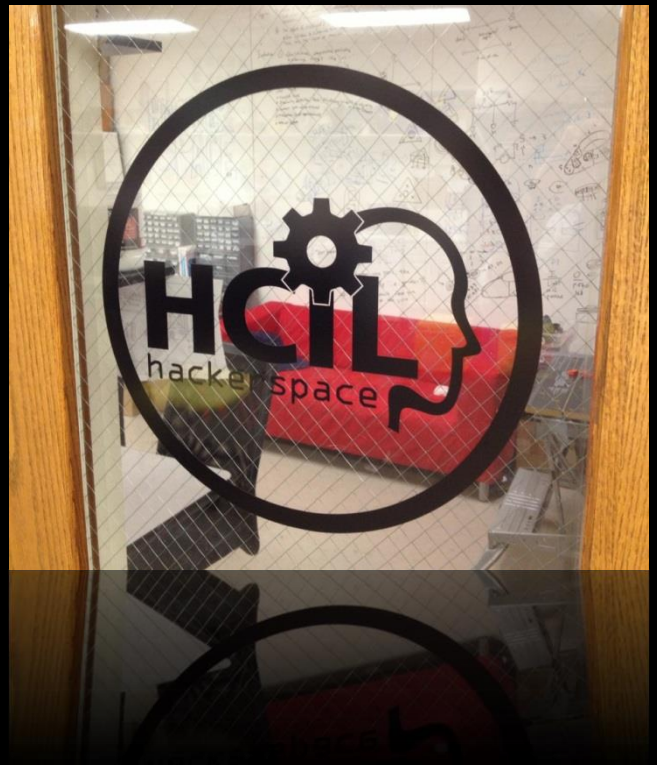
3. **Interaction with maker community:** Instructables provided a forum for students to interact w/makers

4. **Intrinsic satisfaction:** The above three things served to increase student's sense of accomplishment & satisfaction

Rise of Maker/DIY Movement



Making & Makerspaces at UMD



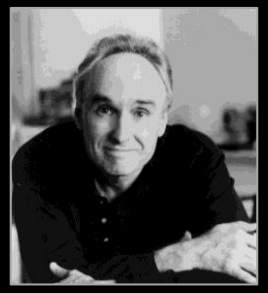
'Making' in the Classroom

We are creatures who **need to make**.

Frank Bidart

Poet

Quote from: Wilkinson & Petrich, *The Art of Tinkering*, 2014



social

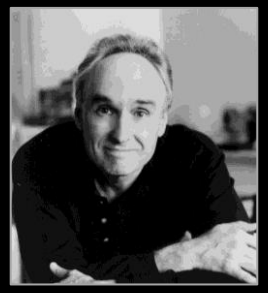
We are creatures who **need to make**.

learn, & share together

Frank Bidart

Poet

Quote from: Wilkinson & Petrich, *The Art of Tinkering*, 2014



Upcoming ‘Maker’ Talks Today

1:05PM

BodyVis: Body Learning Through Wearable Sensing & Visualization

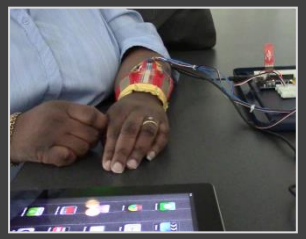
Leyla Norooz & Jon Froehlich

1:19PM

Social Fabric Fitness: The Design & Evaluation of Wearable E-textile Displays to Support Group Running

Matt Mauriello, Jon Froehlich, Michael Gubbels

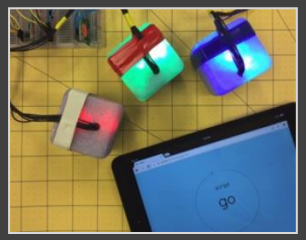
1:47PM



Current and Future Mobile and Wearable Device Use by People with Visual Impairments

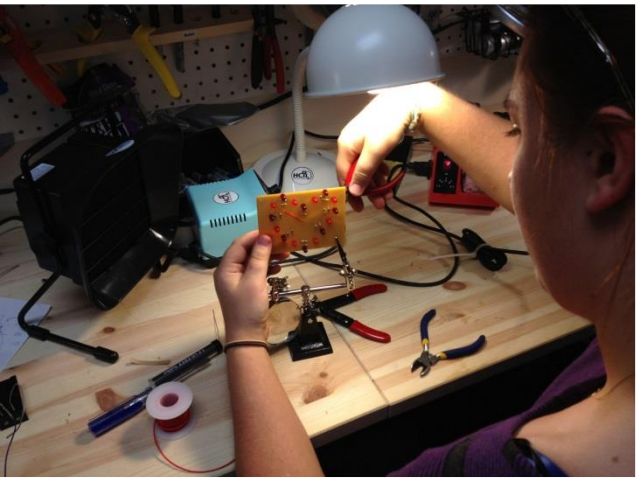
Hanlu Ye, Meethu Malu, Uran Oh, Leah Findlater

2:15PM

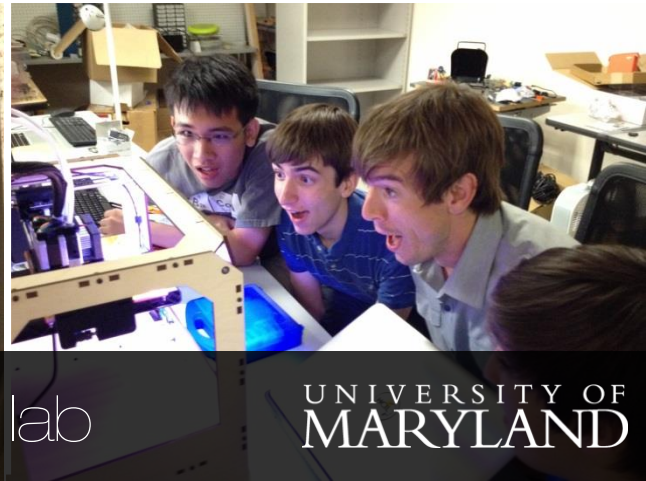


Physically Computing Physical Computing: Creative Tools for Building w/Physical Materials & Computation

Michael Gubbels & Jon Froehlich





Making in the HCIL

31st HCIL Symposium
May 29, 2014
@jonfroehlich

Human Computer Interaction Laboratory

COMPUTER SCIENCE
UNIVERSITY OF MARYLAND

makeability lab

UNIVERSITY OF MARYLAND

Icon Credits

Quadcopter
by Nithin Davis Nanthikkara
http://thenounproject.com/term/quadcopter/22061/

Bearded Man
by Riccardo Greg
http://thenounproject.com/term/bearded-man/36280/

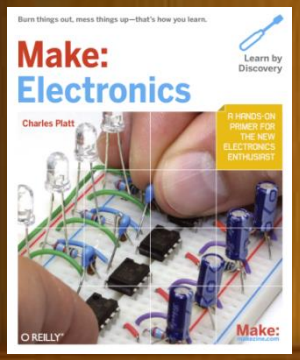
Students
by Hadi Davodpour
http://thenounproject.com/term/students/28126/

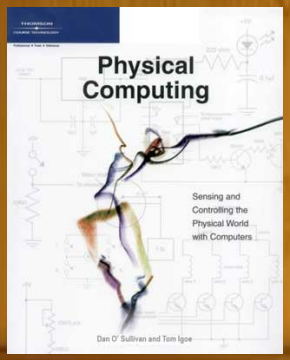
Eye
by Michael Rowe
http://thenounproject.com/term/eye/19791/

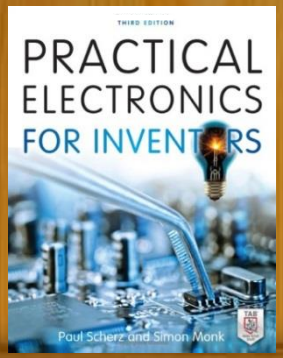
Heart
Public Domain
http://thenounproject.com/term/heart/219/

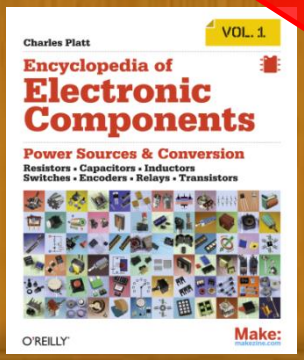
Book Resources

More on website

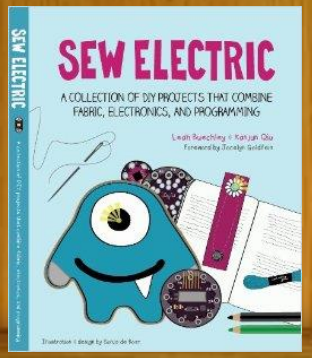






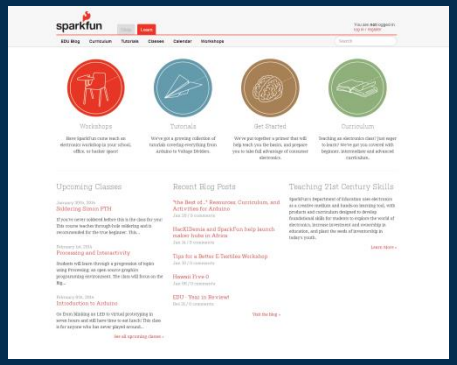


Electronic Books ↑

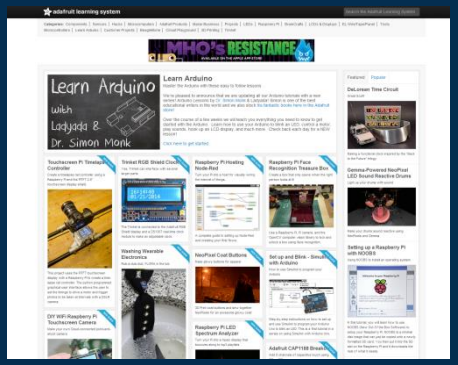


E-Textiles ↑

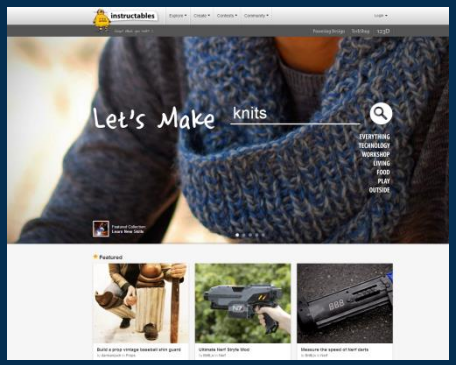
Some Online Resources



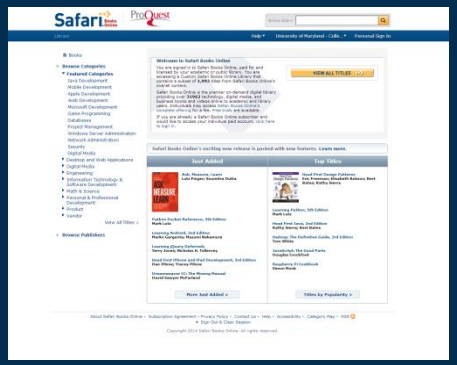
http://learn.sparkfun.com



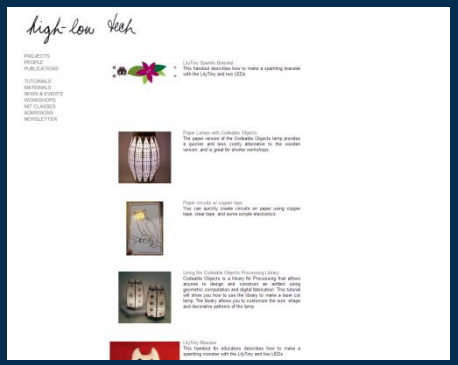
http://learn.adafruit.com/



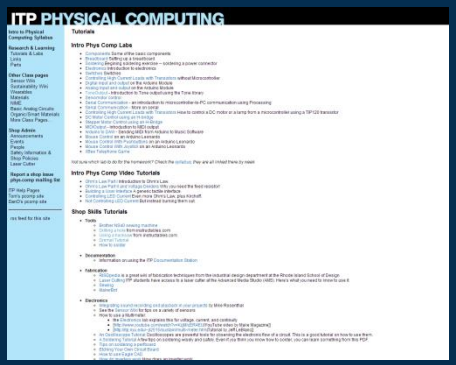
http://www.instructables.com/



proquest.safaribooksonline.com/



http://highlowtech.org/



itp.nyu.edu/physcomp/Tutorials

Making MakerSpaces Resources

PRODUCTS

New Products [99]

Android (6)
▼Arduino (63)
Boards & Packs [17]
Shields [34]
Accessories [12]
BeagleBone (23)
Bunnie Studios (9)
FLORA (25)
FPGA (1)
mbed (12)
NETduino (14)
▶Raspberry Pi (84)
XBee (9)
▶More Dev Boards (30)

BoArduino (8)
Brain Machine (1)
Clocks & Watches (18)
Drawdio (4)
Game of Life (1)
Microtouch (5)
MiniPOV (3)
MintyBoost (2)
SIM reader (3)
SpokePOV (4)
TV-B-Gone (2)
▶More DIY Kits (16)

Discover Electronics (2)
littleBits (3)
MaKey MaKey (3)
Project packs (10)
Snap Circuits (4)
Tweet-a-Watt (5)
Young Engineers (41)

▶Batteries & Power (55)
Breakout Boards (38)
▶Cables (67)
▶Components & Parts (70)
▶EL Wire/Tape/Panel (76)

HOME ⇒ Blog

How To Start A Hackerspace: Part 2 – A Place To Hack All The Things

Photo by Tomi Knuutila

Now that you have a concrete idea of who your hackers are, you also know what kind of space needs they'll have. Next, narrow down what will be done in the space. Don't forget: there's plenty of room to grow your space to include many different kinds of hackers as your Hackerspace matures (covered in later sections of this "How To").

Talk to the people you're starting the space with and make the most detailed list in a shared spreadsheet of what different hackers need to do their hacking (and keep in mind that you'll probably be adding to this list as you get into your space).

Here's an example of physical needs you may have on your list:

- 220 power
- Running water
- Ventilation
- Concrete floor
- Natural light
- Darkroom and darkroom supplies (have your photo hacker make a list)
- Air conditioned room for servers
- Area for physical hack projects
- Sound proof room for audio/video recording/editing
- 24/7 Access
- Spray paint booth
- Place to put a car lift
- Etc, Etc, Etc...

Once you have your list now you'll need to go to the next step: **How To Start A Hackerspace: Part 3 – A Home For Your Hackerspace** Stop back tomorrow!

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motorshield
protoshield
waveshield
arm development
art
ask-an-engineer
atoz
avr development
batteries & power

Makerspace Playbook

By Michelle "Binka" Hlubinka On May 1st, 2012 ∑ 16 Comments

Take a peek our current draft of the *Makerspace Playbook*, intended to offer some guidance to those who are hoping to start a Makerspace at their school or in their community. **We welcome your feedback** on the kinds of things we should add to this Playbook, what you think we got right and wrong, and any changes you'd make in general. We already know we'd like to add things like sample letters to garner support from administration and potential funders, more spotlights of teachers doing this kind of making with their students, and more detail about what the new roles for teachers, mentors, and shop hosts might entail. What do you need to know to get your Makerspace up and running?

Besides this draft of the *Makerspace Playbook*, we've also made some progress on the companion document– *High School Makerspace Tools & Materials*, so we have a new draft of that to share with you , too.

- Makerspace Playbook (April 2012)
- High School Makerspace Tools & Materials (April 2012)

Eventually, we'd like both of these documents to exist online in a form via which we can all freely contribute to the information and refine what we have learned about running Makerspaces. For now, you can send your feedback to us using the form below.

Name (required)

Email (required)

Comment (required)

Want to make a makerspace?

Check out our playbook. It covers many of the challenges involved in creating a space.

Makerspace News

Makerspace conversation brings minds together - Monadnock Ledger Transcript

Yorlt gives $20K to makerspace Working Class - York Dispatch

Yoga for kids and family makerspace at Medfield Library - Wicked Local Medfield

Peterborough talk on makerspaces, creative spaces planned - The Union Leader

The Shop: Toronto's new inclusive makerspace - Boing Boing

Makerspaces, where people come together to design and create new things ... - Economic Times

High-Tech Maker Spaces: Helping Little Startups Make It Big - OPB News

JaxHax Opens Makerspace For Artists, Inventors, And Entrepreneurs - WJCT NEWS

[PHOTOS] Realize Your Creative Ideas At Staten Island's Makerspace - NYU Local

Main Library's Maker Space Lets Public Design


d.
HASSO PLATTNER
Institute of Design at Stanford
make space
How to Set the Stage for Creative Collaboration
Scott Doorley and Scott Witthoft
with a foreword by David Kelley