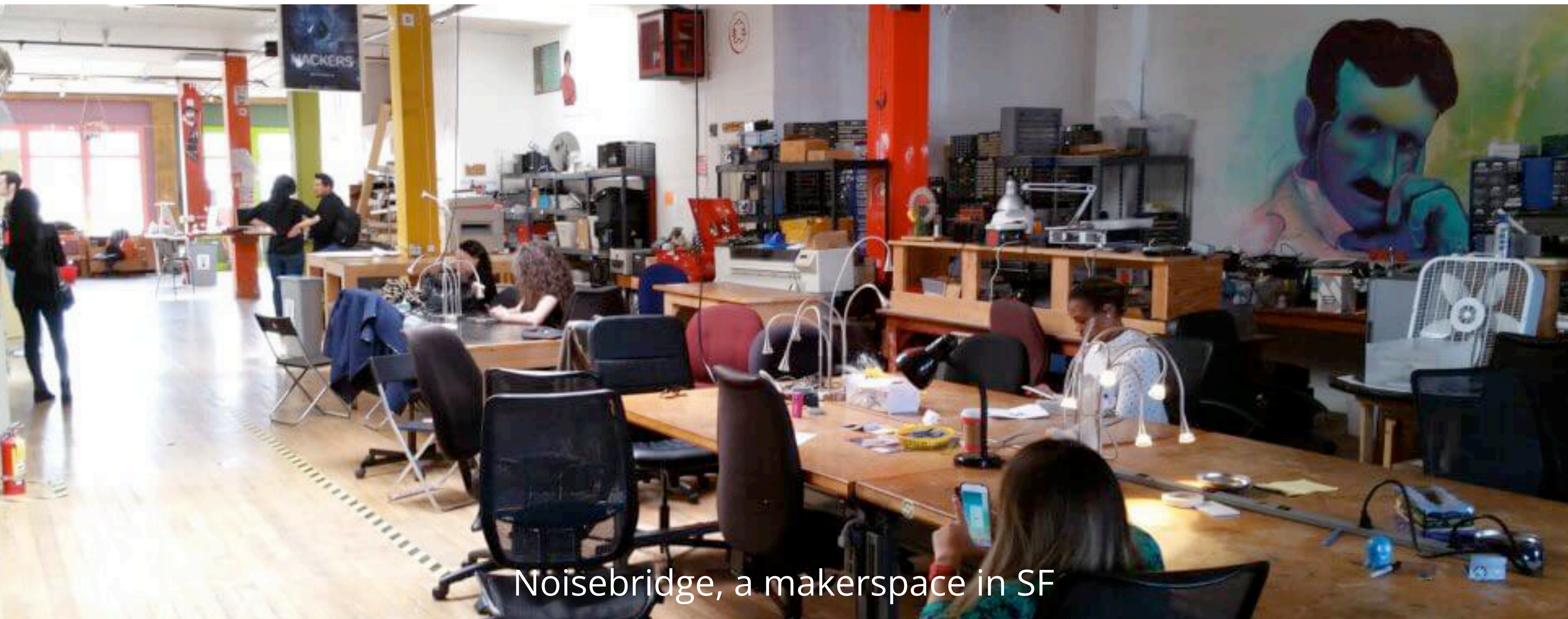


CS181DT Class 2: Making & hacking culture

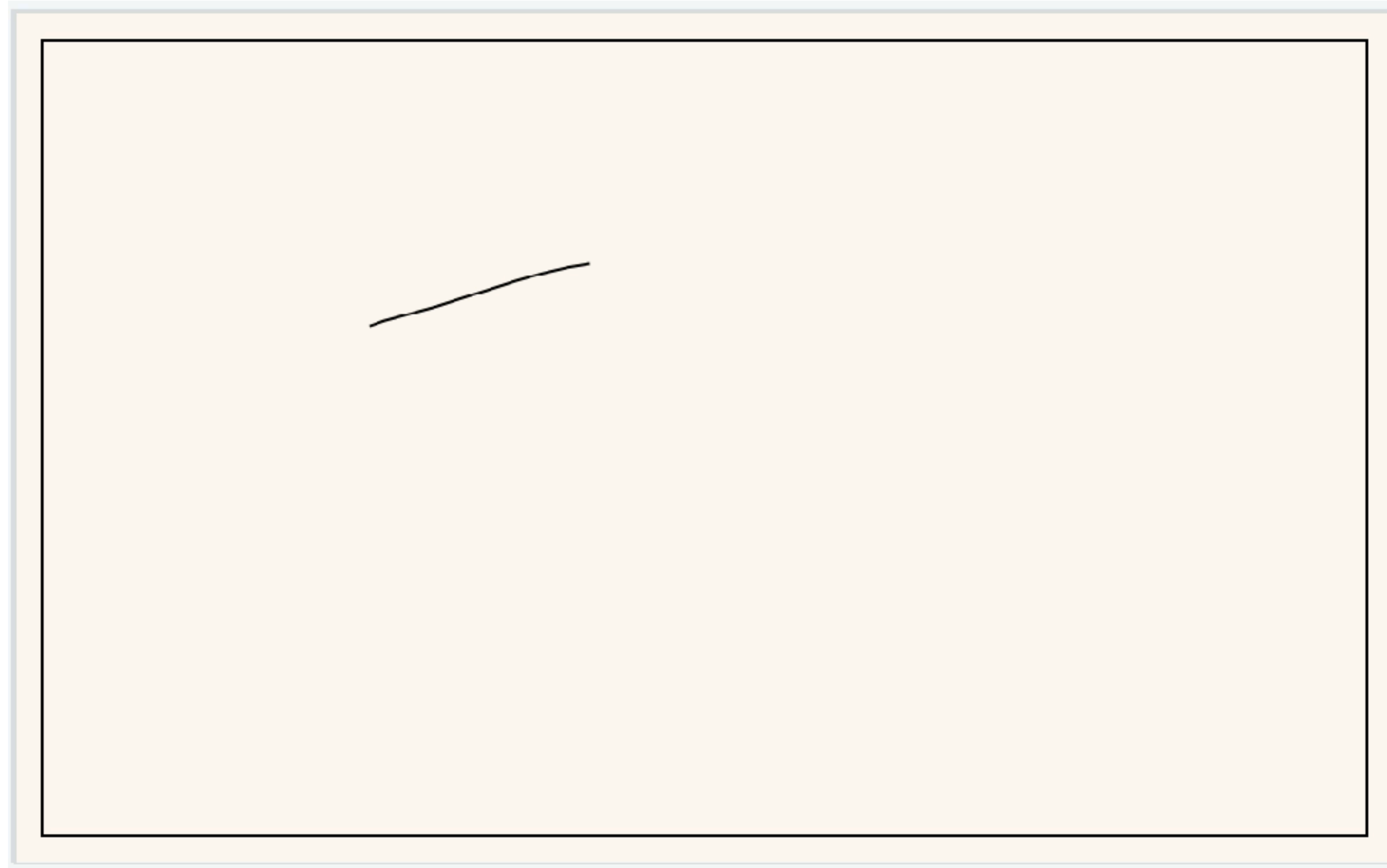


Noisebridge, a makerspace in SF

Class 2 agenda

- Zipcrit sample from me
- Lecture: A history of making and hacking culture
- Course norms
- Break (with a surprise?!)
- Seminar

Zipcrit: Fishdraw <https://fishdraw.glitch.me/>



```
usage

basic

node fishdraw.js > output.svg

specify seed (from a string), speed of drawing and output format:

node fishdraw.js --seed "Biggus fishus" --format smil --speed 2 > output.svg

• the seed string is used as the name of the fish (printed in the drawing). If unspecified, a random pseudo-Latin name will be auto generated.
• the speed number is used to control the speed of drawing animation. Larger the number is, faster it draws. This option works only with format smil .
• format options: svg (regular svg), smil (animated svg), csv (each polyline on a comma-separated line) and json .



use as JS library:

const {fish,generate_params} = require('./fishdraw.js');
let polylines = fish(generate_params());
console.log(polylines);
```

What degree of interactivity is required for a human to feel like they're "making art"?

How would you add more control to Fishdraw?

Submit your slides for zipcrit and seminar on Canvas:

Zipcrit/Seminar slides upload		✓	+	⋮
⋮	 Zipcrit 100 pts	✓		⋮
⋮	 Seminar lead 100 pts	✓		⋮

Day	Presenter
1/23	Vitor
1/25	Miriam
2/1	Summer
2/6	Katiana
2/20	Evelyn
2/22	Shuyan
2/29	Kayleah
3/5	Keya
3/7	Ariel
3/19	Colin
3/21	Ryan
3/26	David
3/28	Vivian
4/2	Abrar
4/4	Larry
4/11	Angie
4/16	Kovit
4/23	Rohan
4/25	Selim

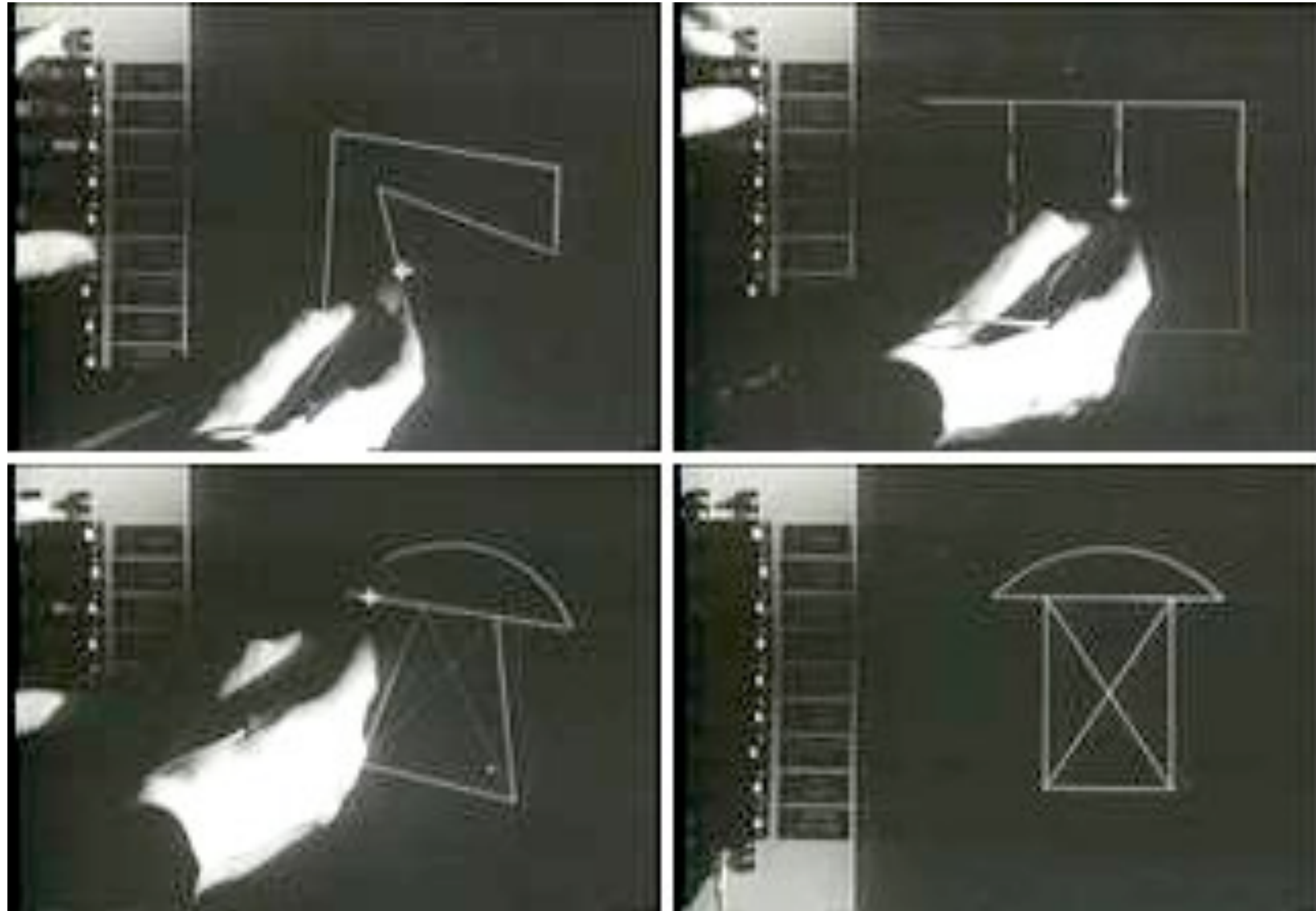
Zipcrit schedule (sorry, all of you wanted to go earlier!)

Day	Topic	Presenters		
1/23	Design fiction, design activism	Colin	Miriam	
2/15	Design tools for digital fabrication	Larry	Katiana	
2/20	Creativity support tools	Kayleah	Selim	
2/20	Creativity support tools (second seminar)	Rohan	Evelyn	
3/7	Sociotechnical principles & theories of creativity	Angie	David	
4/2	Critical design, feminist design, design noir	Shuyan	Keya	
4/2	Critical design, feminist design, design noir (second semianr)	Vivian	Abrar	
4/4	Materials	Kovit	Summer	Vitor
4/16	Power, art, politics	Ariel	Ryan	

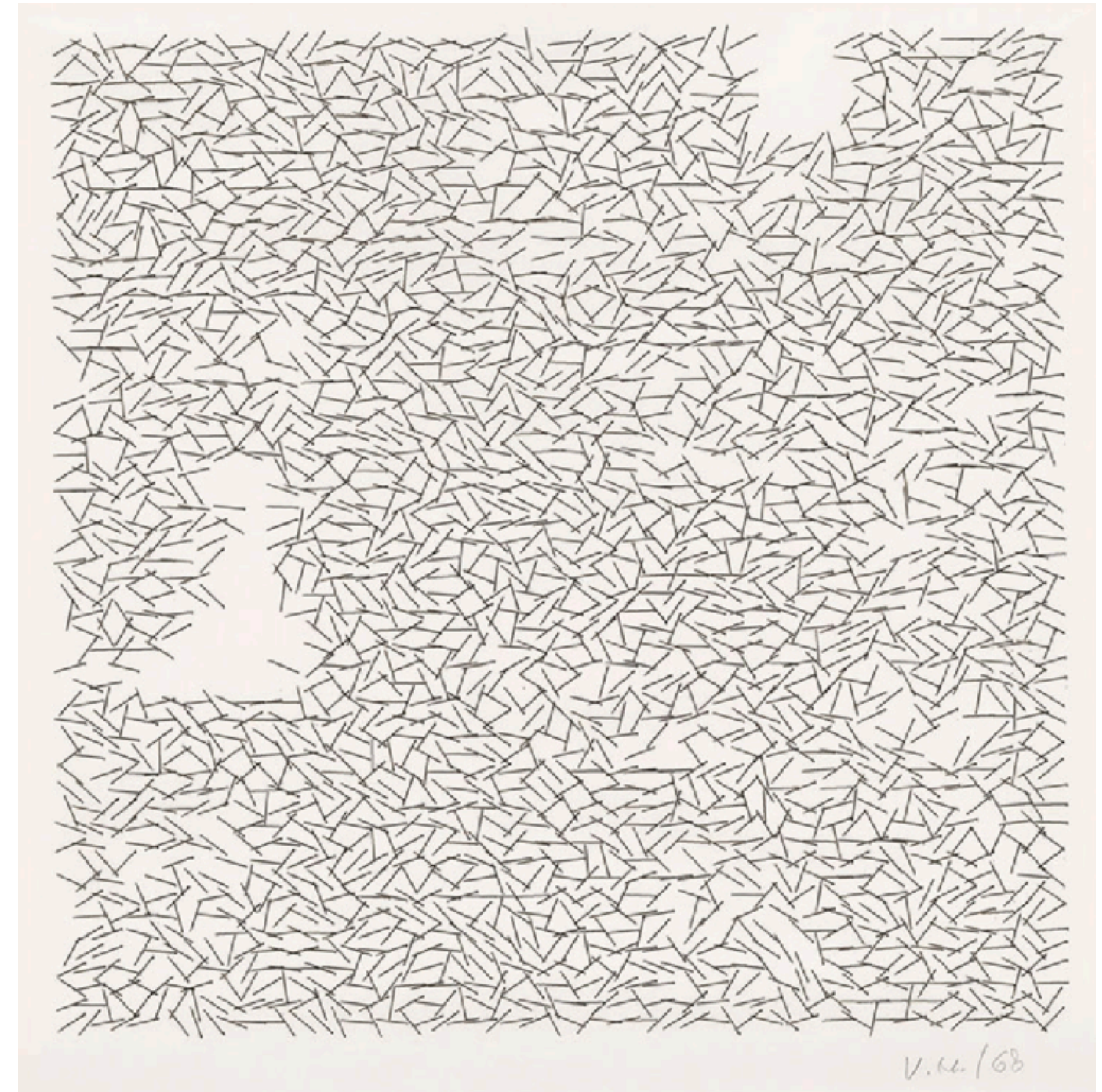
Seminar schedule (sorry, all of you wanted CSTs!)

A history of making and hacking culture

People have been making things with computers for a long time.



Ivan Sutherland, Sketchpad (1963)



Vera Molnar, Interruptions (1968)

People have been making things with computers for a long time.



Nam June Paik, Magnet TV, 1965

“Someday artists will work with capacitors, resistors, and semiconductors as they work today with brushes, violins, and junk.”

– Nam June Paik, 1965

2010s: Maker movement zeitgeist

COLLEGE MAGAZINE
Pomona

Home Features ▾ Letters ▾ Pomona Today ▾ Daring Minds ▾ Class Acts ▾ /

What Is the Hive? (And Why Is Everyone Buzzing About It?)

What is creativity? How does it happen? Is it inborn or can it be taught?

December 2, 2015 by Mark Wood

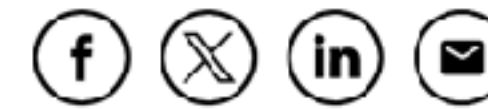


Photo by Mark Wood

HMC Celebrates Groundbreaking of New Computer Science Center

October 7, 2019

SHARE STORY



by Liam Chalk '23

Harvey Mudd College held a groundbreaking ceremony on Sept. 28 for the new McGregor Computer Science Center, which will include a Makerspace, recording studios and other community resources. The new building's three stories and 36,000-square-foot structure should also help alleviate some of the strain placed on the school's expanding computer science department.

2010s: Maker movement zeitgeist



Make: Small 3D Printer **HUGE JOBS** 12 foot tall

BACK TO OUR ORIGINAL SIZE!

WE CAN'T QUIT YOU

28 OUT-THERE PROJECTS:

- Teeny-Tiny Motorboat
- CNC Paddleboard
- Smart Birdhouse
- Backyard Pump Track
- AND MORE

ROBOT WORKSHOP:

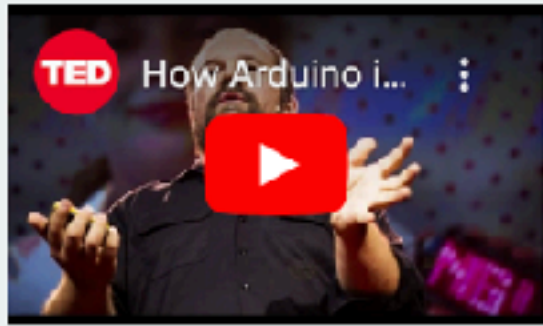
- Move Over, BigDog
- Meet Nybble, Your Quadruped Pet Kitten
- Dancing Makey Biped
- Soap-Vomiting Unicorn
- DIY Robocar Racing

Tools for Community Science from Public Labs • Hack a Radio into a Guitar Amp

makezine.com | make.co | makerfaire.com

VOLUME 70 Oct/Nov 2019





WHAT IS ARDUINO?

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects.

[Learn more about Arduino](#)



ARDUINO BOARD

Arduino senses the environment by receiving inputs from many sensors, and affects its surroundings by controlling lights, motors, and other actuators.

[Discover the official Arduino boards](#)



ARDUINO SOFTWARE

You can tell your Arduino what to do by writing code in the Arduino programming language and using the Arduino development environment.

[Download the Arduino Software](#)

CLOSE

BUY AN ARDUINO

LEARN ARDUINO

DONATE

ARDUINO IN THE CLOUD

CAREERS

Develop your code in the cloud and build smart IoT projects!

ELECTRONICS FUNDAMENTALS
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BLOG

BLOG

OPEN SOURCE REPORT 2023

Young Engineers

- [Overview](#)
- [Beginner Kits](#)
- [Intermediate Kits](#)
- [Wearables](#)
- [Creative Fun](#)
- [Books & More](#)
- [Crickit - Creative Robotics](#)
- [Learn Guides from the Adafruit Learning System](#)



There's no better way to get your kid started with electronics than the Adafruit Young Engineers category. These kits, packs, and toys all offer introductions into the world of electronics for aspiring engineers.

A number of Adafruit's beginner kits are also perfect for engineers of all ages. We carry kits like the [Drawdio](#) - which turns your pencil into a theremin through conductive tape. Whether you're young, or young at heart, the [Adafruit Young Engineers category](#) is perfect for your all your electronics needs!

Beginner Kits



Adafruit Beginner LED Sewing Kit
\$13.95

Add to Cart



TV-B-Gone Kit
\$19.50

Add to Cart



Circuit Playground Express - Base Kit
\$29.95

Add to Cart

Yours for the making

Instructables is a community for people who like to make things. Come explore, share, and make your next project with us!



Step-by-step

We make it easy to learn how to make anything, one step at a time. From the stovetop to the workshop, you are sure to be inspired by the awesome projects that are shared everyday.

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Explore Projects

Circuits >



Planet Locating 'Cosmic Clock' by richstevens1000 in Arduino



AI-driven Interactive Lab Assistant W/ OpenCV & ChatGPT by Kutluhan Aktar in



Pico | Dazzling Desk Display by Mukesh_Sarkhla in LEDs



DIY Electric Kayak by BradenSunwald in Electronics

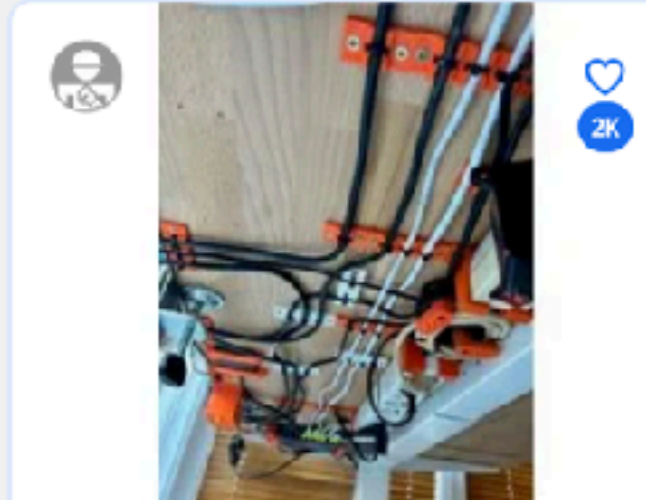
Popular Last 32 Days

All Things

Filter by



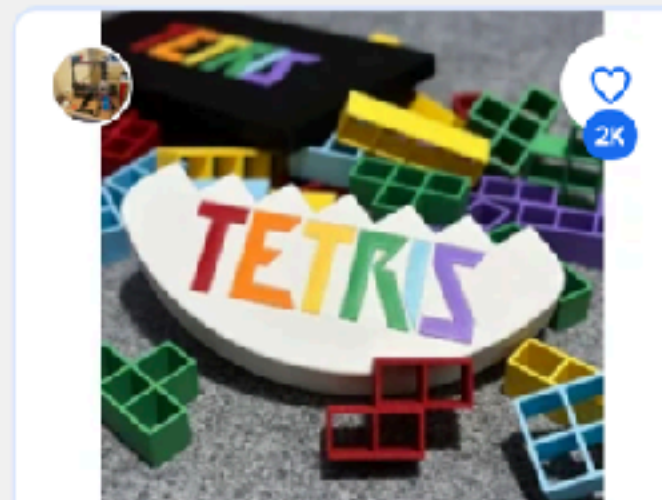
6-Shot Disc Shooter



Under Desk Cable Management



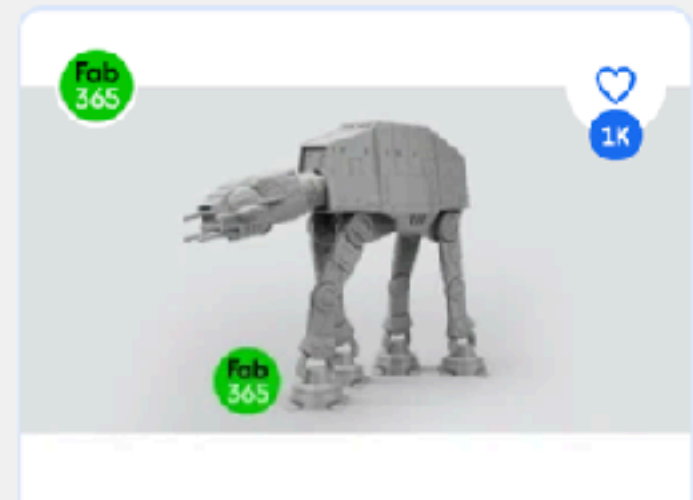
egg peeler



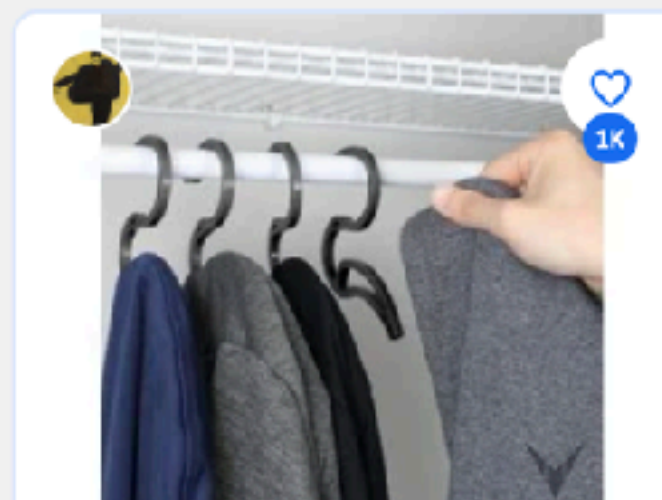
Balance Tetris



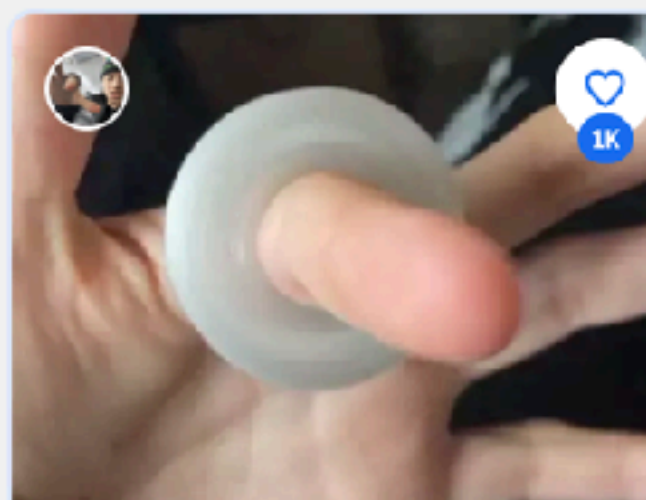
Under Desk Drawer



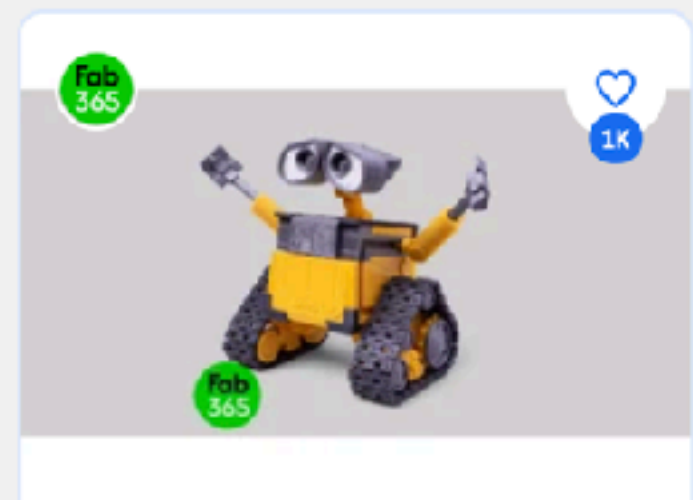
Articulated Starwars ATAT



Venali Hook

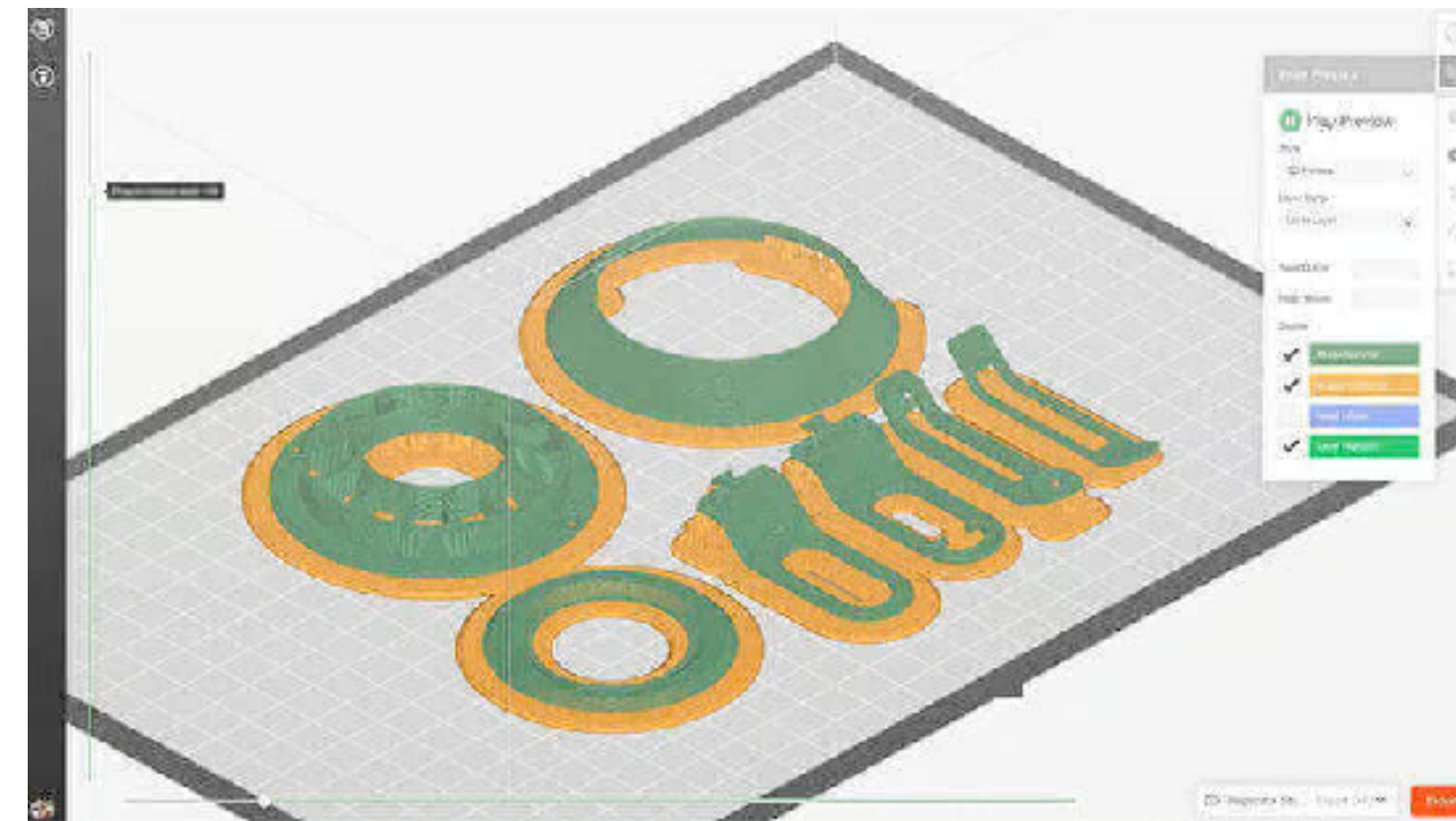
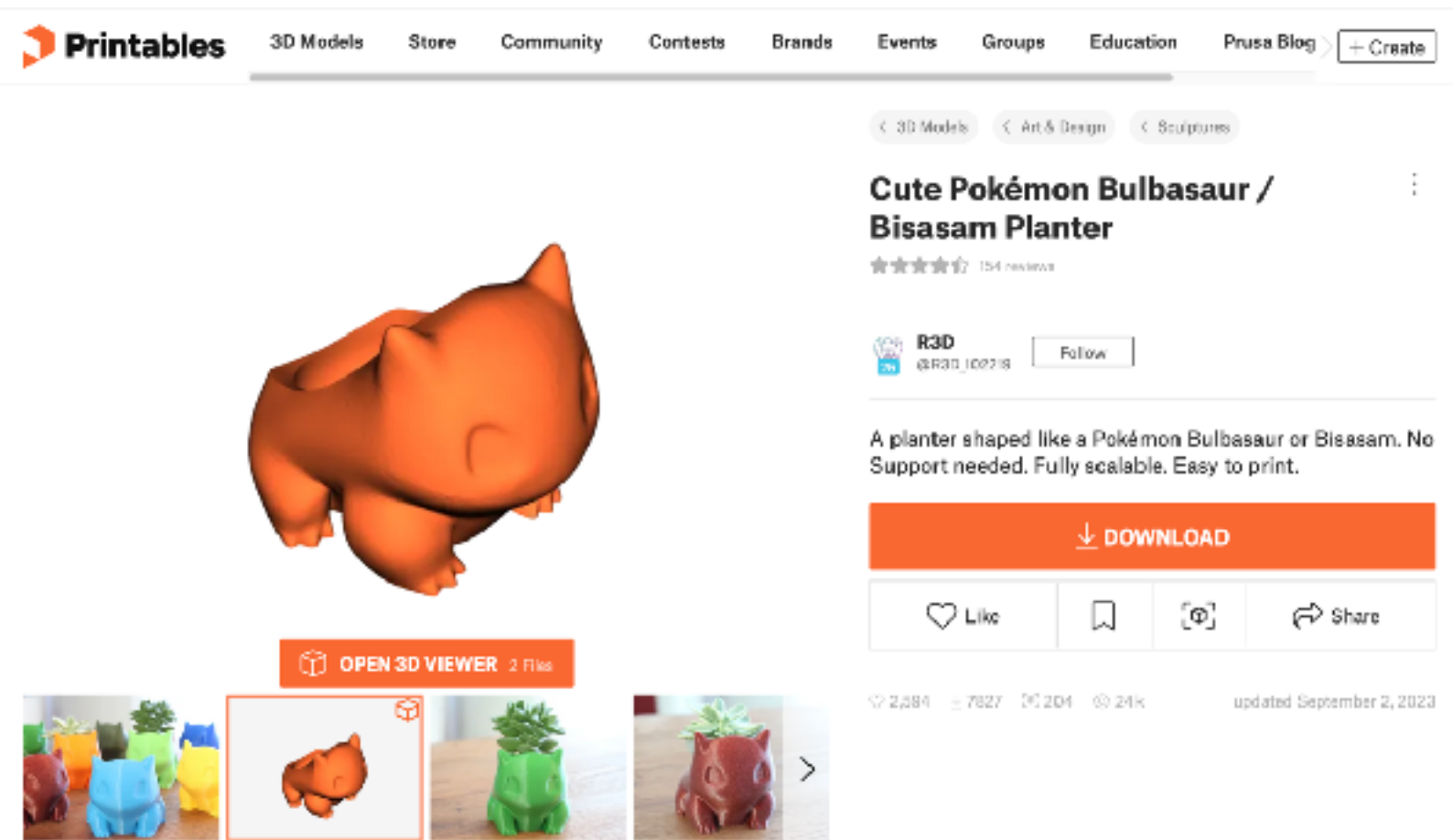


Print In Place Ball Bearings



Wall-E Foldable

Digital fabrication: 3D printing



Download (or make)
software 3D model

**Computer-aided design
(CAD)**

Load model into slicing
software that will
generate machine paths

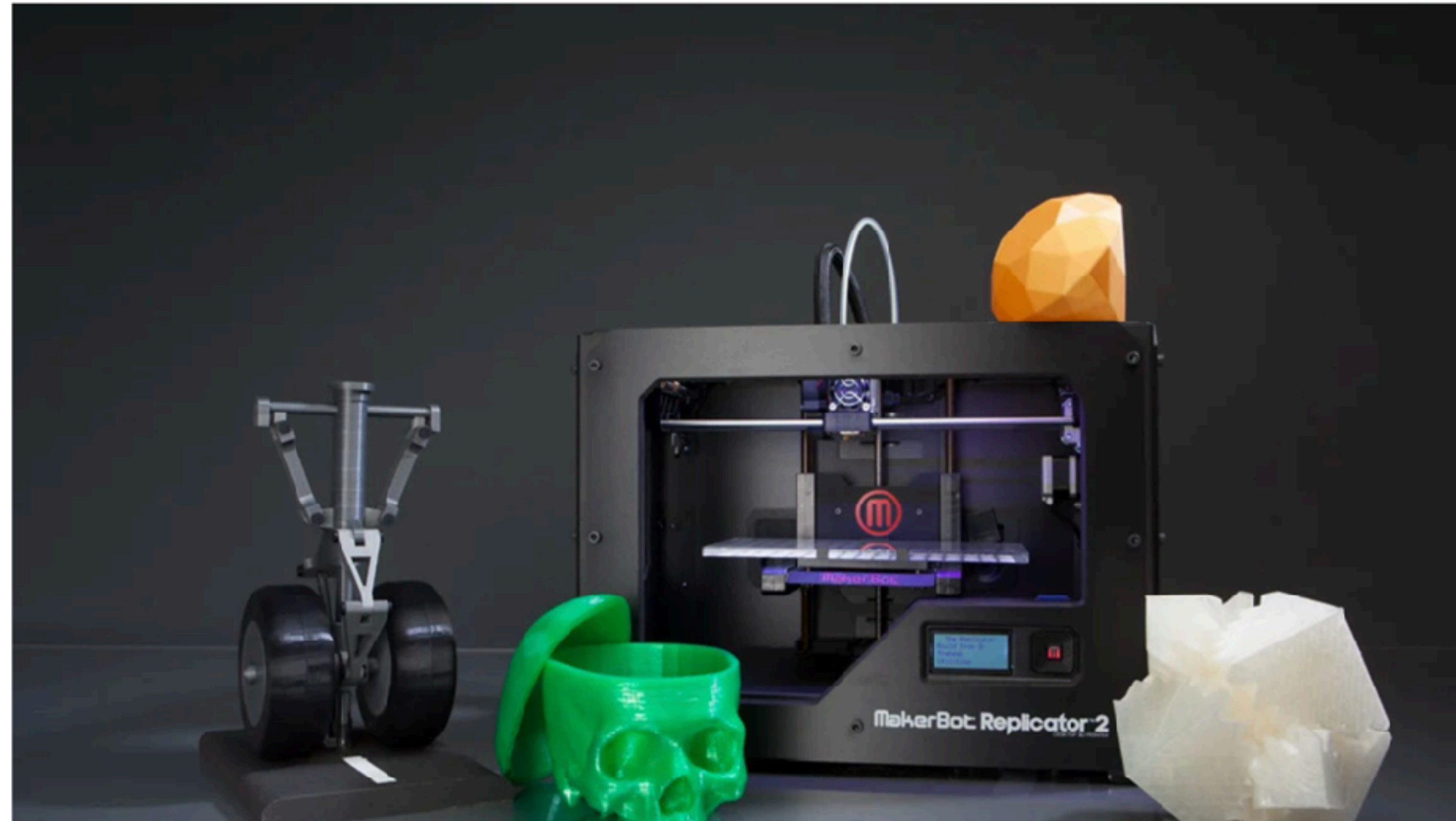
**Computer-aided
manufacturing (CAM)**

Hit print & wait

Obama's speech highlights rise of 3-D printing

Doug Gross, CNN

4 minute read · Published 3:22 PM EST, Wed February 13, 2013



MakerBot

Consumers can own their own 3-D printer for the home, such as this MakerBot Replicator 2.

The burgeoning field of 3-D printing got a big boost Tuesday night when President Obama highlighted it as something that could fuel new high-tech jobs in the United States.

The shout-out in Obama's State of the Union address was perhaps the biggest public endorsement so far of a technology that has its roots in the 1970s, but has recently begun to boom on two fronts – as an increasingly accessible consumer product and

What are some reasons you speculate that, in 2023, every household does not yet have a 3D printer (even though they cost less than laptops now)?

Criticisms of the maker movement

- Elitist culture

In many ways ‘hackerspace’ is an elitist name for middle-class white guys screwing around with computers and making a big deal out of it. Come on. Every other block in this town has an auto body shop where more hacking takes place than y’all can imagine, and people have their own networks of friends and family and colleagues who learn stuff and create things. Nobody’s writing about that in Wired. That has to set off your bullshit detector a little.

—Liz Henry, “The Rise of Feminist Hackerspaces and How to Make Your Own”

- Not gender inclusive

Hackerspaces

- [Double Union](#) ([wikia](#), [Facebook](#), [Twitter](#)), San Francisco, CA, USA
- [Mothership HackerMoms](#) ([wikia](#), [Facebook](#), [Twitter](#)), Berkeley, CA, USA
- [Seattle Attic](#) ([wikia](#), [Twitter](#)), Seattle, WA, USA
- [Women's Center for Creative Work](#), Los Angeles, USA (art, tool library)
- [Hacker Gals](#) ([Facebook](#), [Twitter](#)), Kalamazoo, MI, USA (in formation)
- [Spanning Tree](#) ([Twitter](#)), Washington DC, USA (in formation)
- [Le Reset](#) ([Twitter](#)), Paris, France
- [Pechblenda Lab](#) (Catalonia), Spain

Late 2010s: maker movement crash

KQED Inform. Inspire. Involve.

News Politics Science Education Housing Immigration Criminal Justice Silicon Valley Forum

NEWS

Company Behind Popular Maker Faire Closing Down Due to Financial Struggles

By Vianey Alderete Contreras Jun 8, 2019 Save Article



This article is more than 4 years old.



A young maker lounges inside a Tinkardrop trailer in the tiny homes display area of the 2018 Bay Area Maker Faire. (Tara Siler/KQED)

Maker Media, the company behind Make: magazine and Maker Faire, the do-it-yourself science and art family events, is closing down after 15 years.

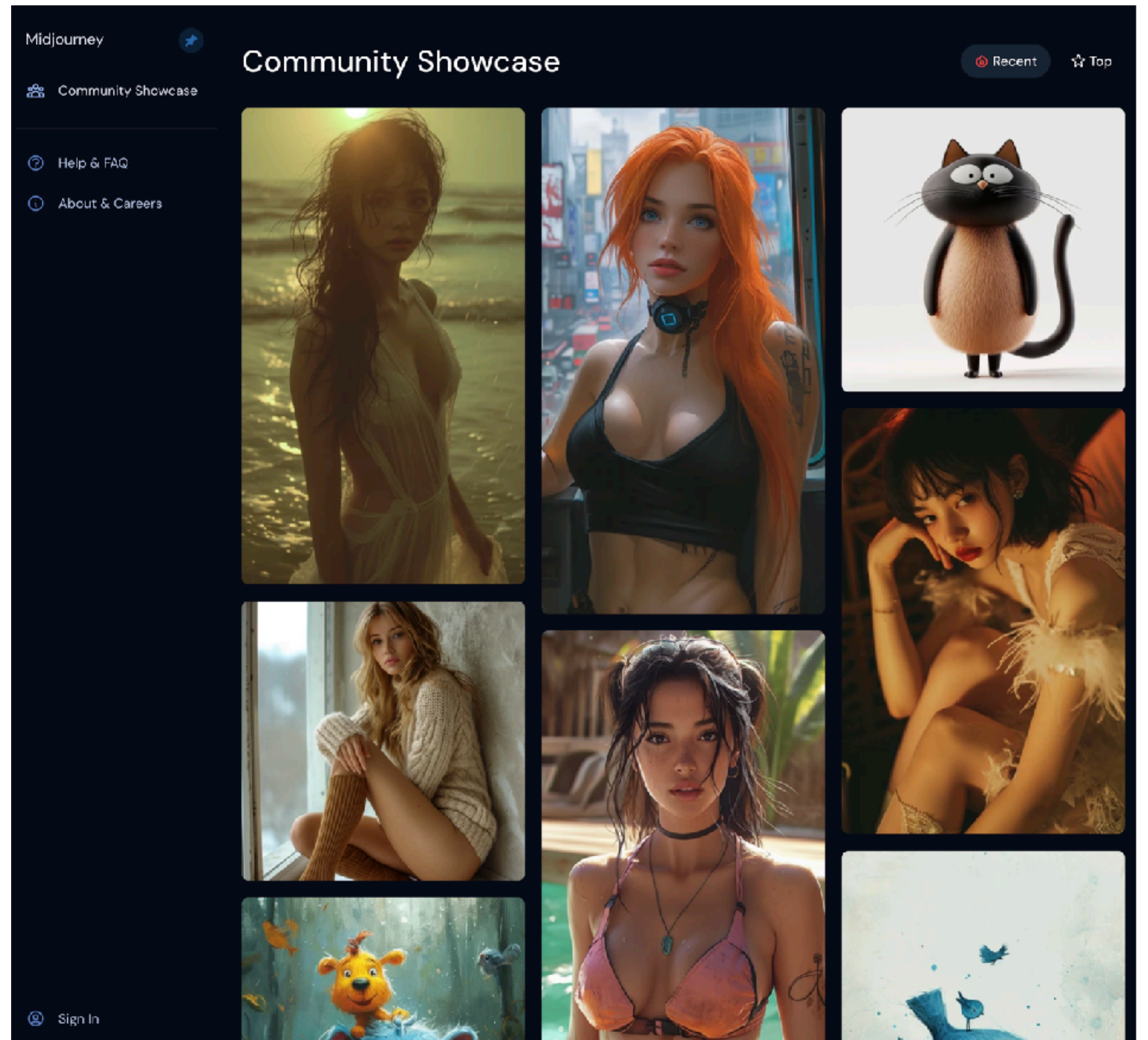
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Company Directory ID Jobs Awards Blog G

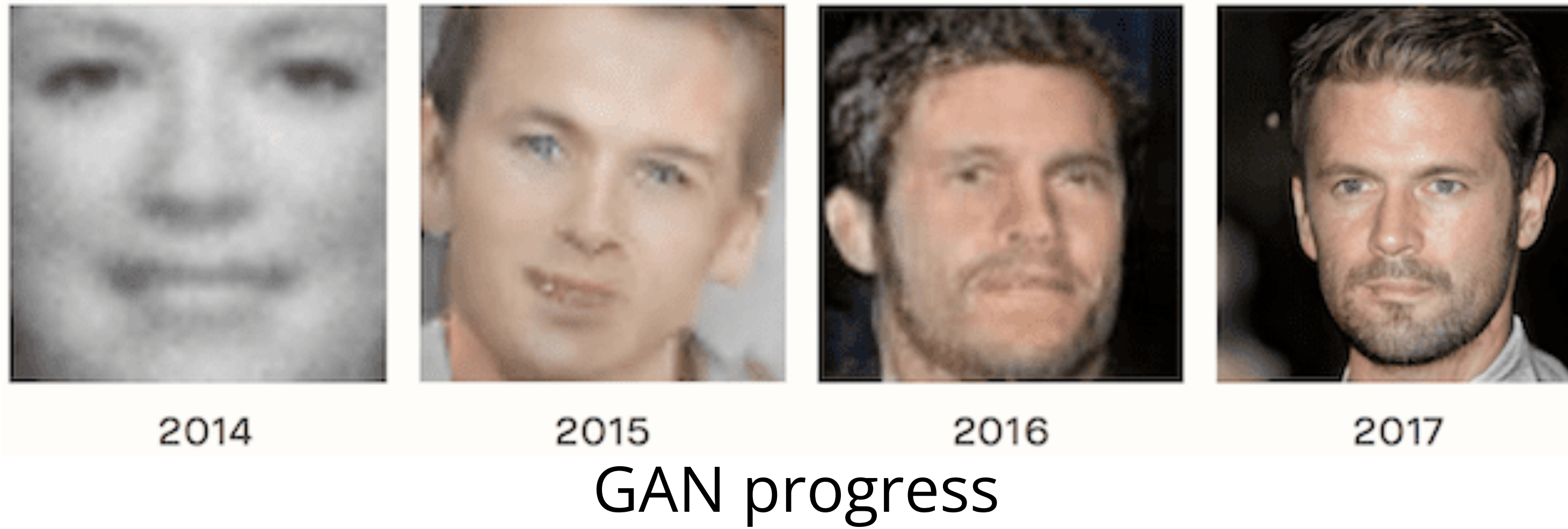
Why are Makerspaces Dying? Can Designers Bring them Back to Life?

By Paul Sohi - March 28, 2019 in Essay

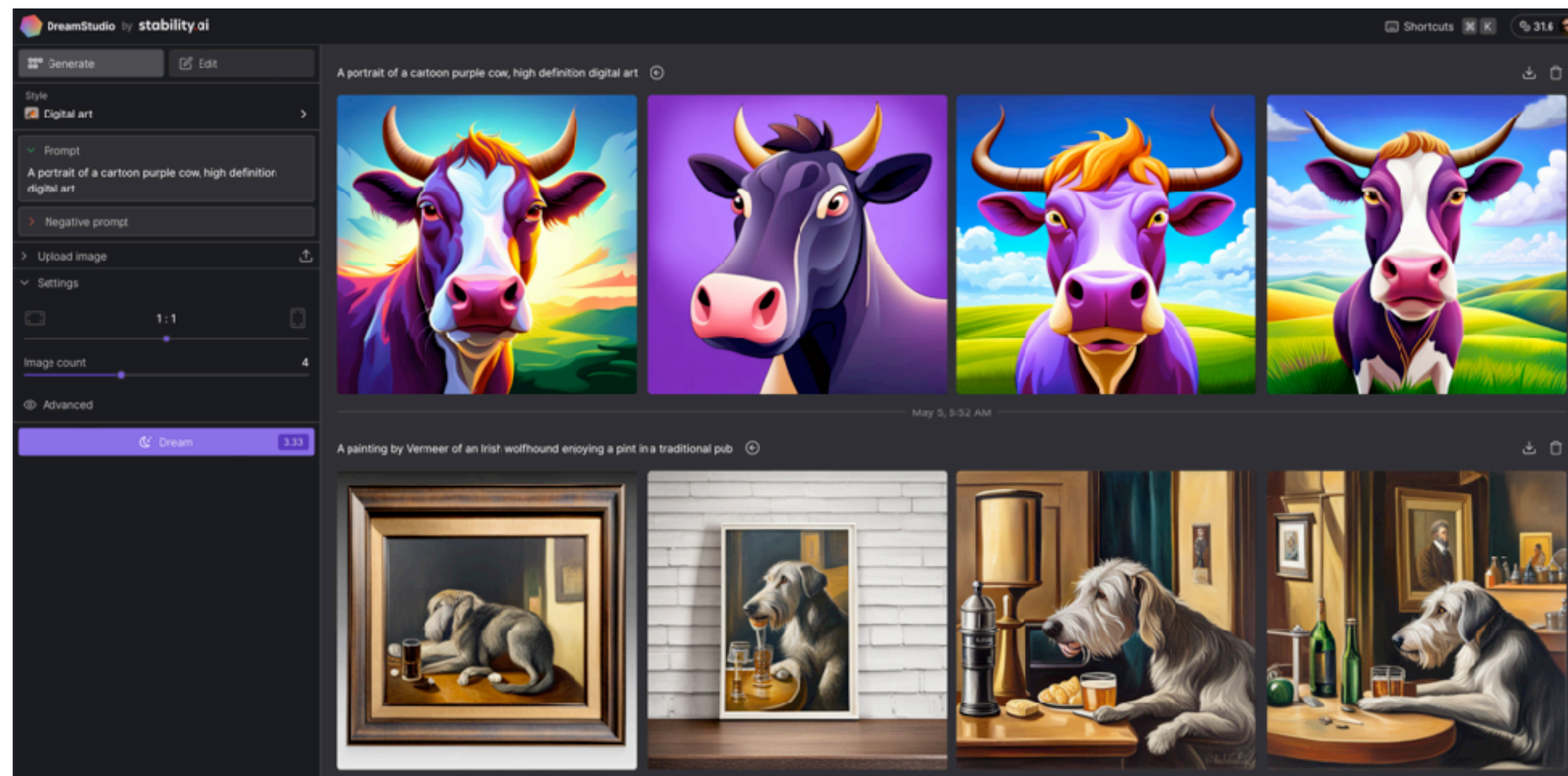
Instead...2020s: Generative AI craze



From GANs to diffusion models



CLIP from OpenAI (2021)



Stable Diffusion from StabilityAI (2022)

CS + Military close relationships

The Company & its Products | Bloomberg Terminal Demo Request | Bloomberg Anywhere Login | Customer Support

Bloomberg ☰

Davos 2024: Davos Live | Guide to Economic Risks | "The Boss" Behind Milei | Lagarde on Trump | Blinken Stranded | Where to Eat >

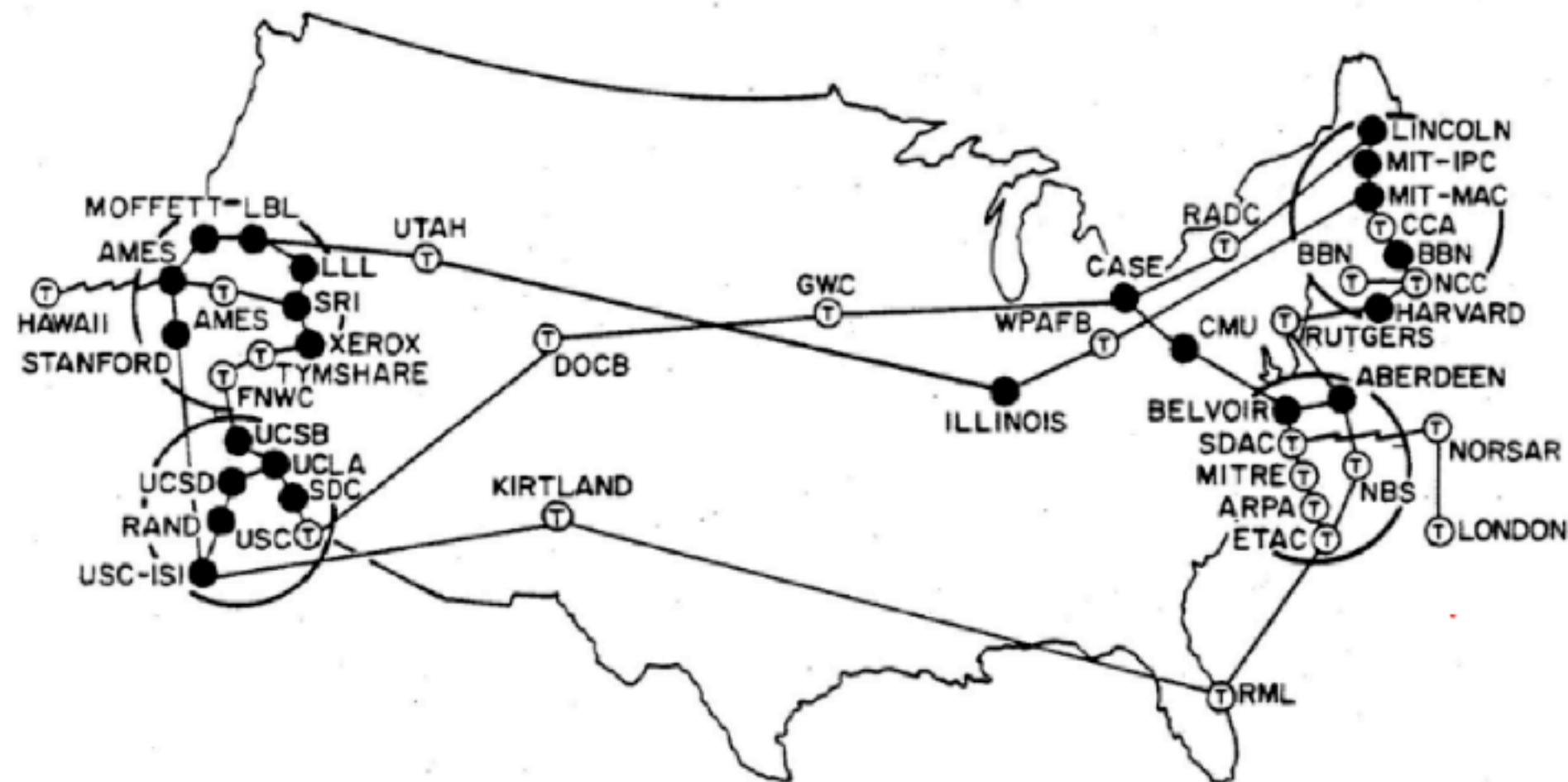
Technology | Cybersecurity

OpenAI Is Working With US Military on Cybersecurity Tools

- ChatGPT maker sees merit in working with defense department
- Company's terms still prohibit using tech for weapons



By Brad Stone and Mark Bergen
January 16, 2024 at 5:03 PM UTC
Updated on January 17, 2024 at 7:21 AM UTC

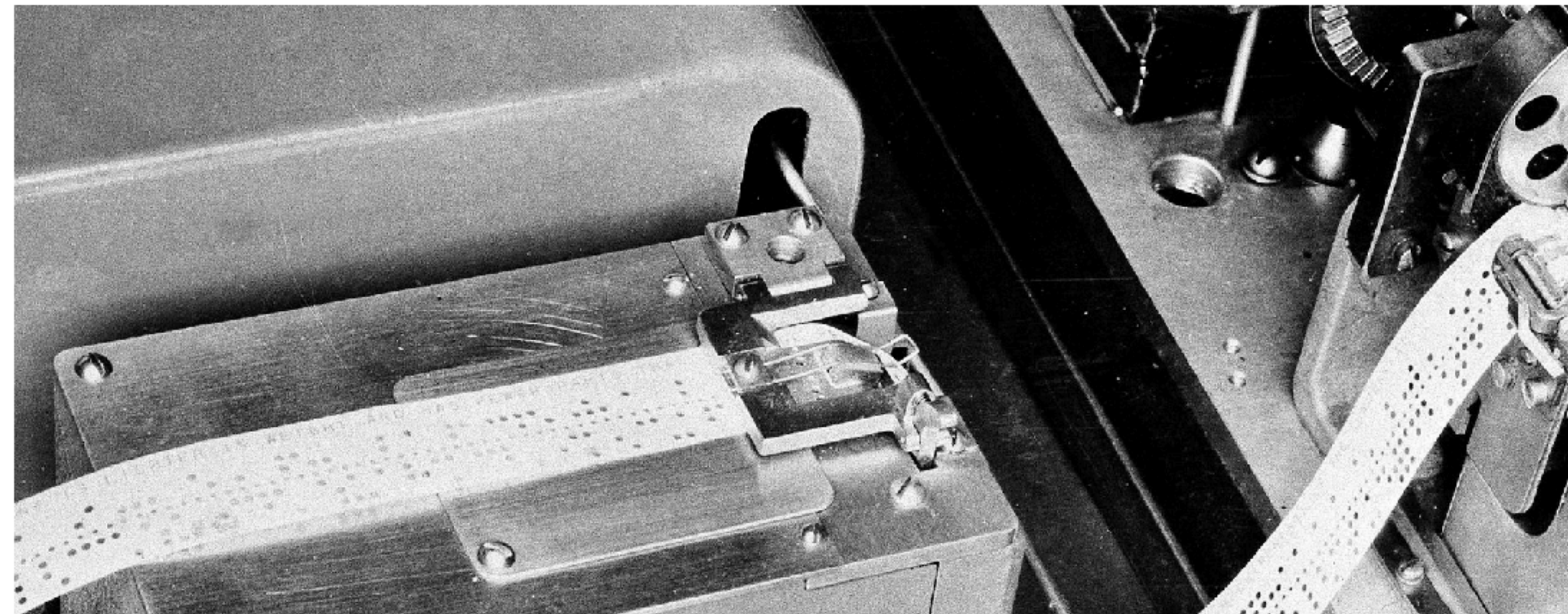


TECHNOLOGY

As We May Think

“Consider a future device ... in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory.”

By Vannevar Bush



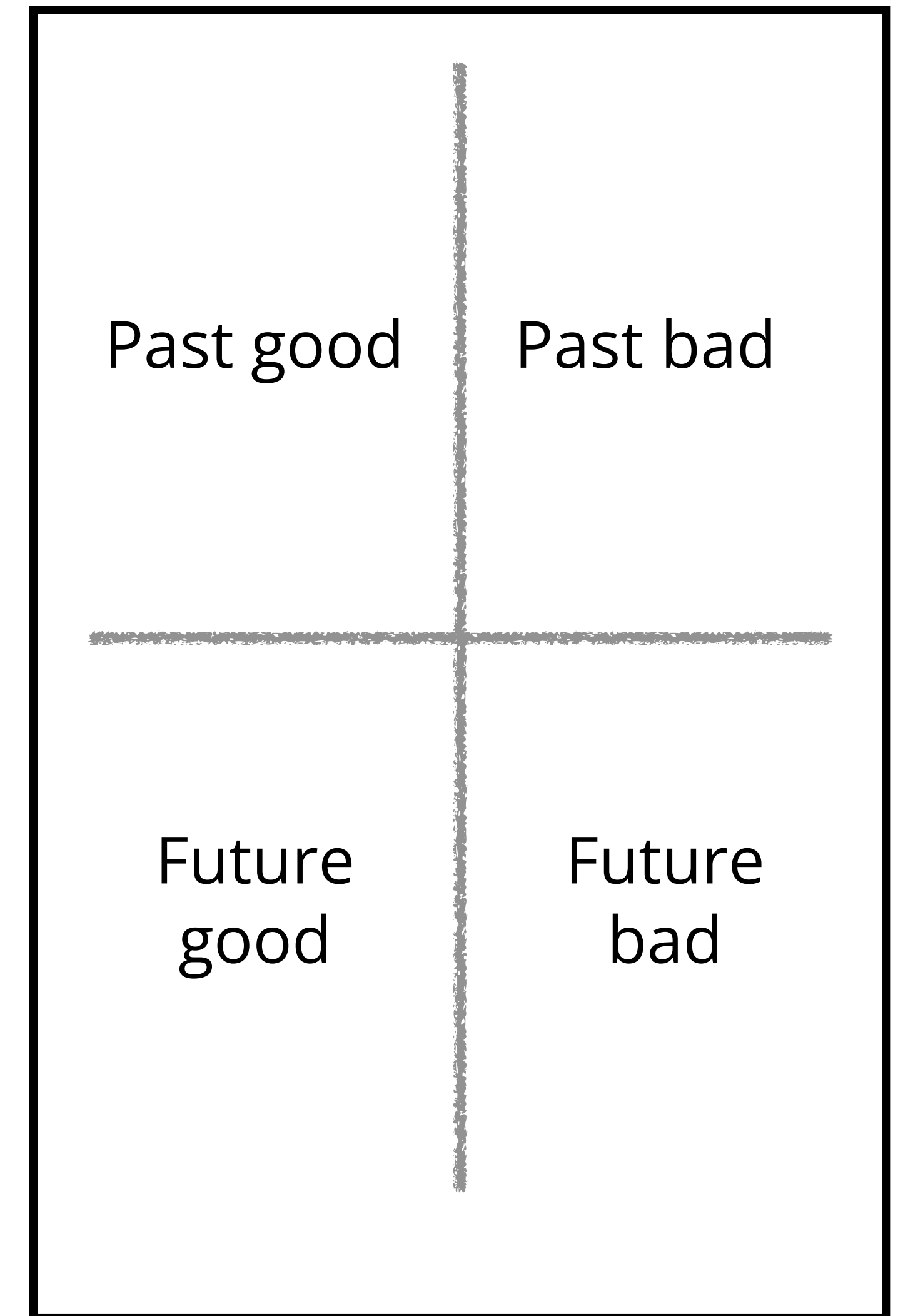
Course norms

Human-centered design methods	Sketching	Graphic/visual design	Making physical 3D forms	Computer-aided design (CAD) / 3D printing	Laser cutting	Electronics (like Arduino)
Some experience,	Some experien	Some exper	Barely any expe	Some experien	Barely any expe	More than a no
No experience	Some experien	Barely any e	Barely any expe	No experience	No experience	Barely any exp
Barely any experie	Some experien	More than a	More than a nov	Some experien	More than a nov	Barely any exp
Barely any experie	Barely any exp	Barely any e	More than a nov	Barely any exp	Barely any expe	Barely any exp
Barely any experie	Some experien	Barely any e	Some experienc	No experience	No experience	Some experien
Barely any experie	Some experien	Some exper	Some experienc	Barely any exp	No experience	No experience
Some experience,	More than a no	Some exper	More than a nov	Barely any exp	Barely any expe	No experience
Barely any experie	More than a no	Some exper	Some experienc	Some experien	More than a nov	Barely any exp
More than a novice	More than a no	Barely any e	More than a nov	Some experien	No experience	No experience
Some experience,	Some experien	More than a	More than a nov	Some experien	Some experienc	Some experien
No experience	No experience	Barely any e	Barely any expe	Some experien	No experience	No experience
I'm an expert	Some experien	Some exper	More than a nov	Barely any exp	Barely any expe	Some experien
No experience	More than a no	More than a	No experience	No experience	No experience	No experience
No experience	Some experien	Some exper	No experience	Barely any exp	No experience	No experience
No experience	Some experien	Barely any e	Some experienc	Some experien	No experience	Barely any exp
More than a novice	More than a no	Some exper	No experience	No experience	No experience	No experience
No experience	Barely any exp	Barely any e	Some experienc	No experience	No experience	No experience
No experience	No experience	No experien	No experience	No experience	No experience	No experience
More than a novice	Some experien	Barely any e	Some experienc	Barely any exp	No experience	No experience

Giving feedback in studio critiques	Making project videos	Making mobile apps	Making interactive websites	Making interactive physical objects	Using external APIs and libraries	Designing large software systems	CS research
More than a novice	More than a novice	Barely any experience	Some experience	Some experience	I'm an expert	Some experience	Barely any experience
Barely any experience	Some experience	No experience	Some experience	Barely any experience	Some experience	Barely any experience	Barely any experience
Barely any experience	Some experience	More than a novice	More than a novice	Some experience	More than a novice	No experience	Barely any experience
More than a novice	Some experience	No experience	Barely any experience	More than a novice	Barely any experience	No experience	Barely any experience
Barely any experience	Some experience	No experience	Barely any experience	Barely any experience	Some experience	No experience	No experience
No experience	Some experience	Some experience	Some experience	Some experience	Some experience	Some experience	Barely any experience
More than a novice	More than a novice	No experience	No experience	More than a novice	Barely any experience	Barely any experience	Some experience
More than a novice	Barely any experience	Some experience	Some experience	Some experience	Some experience	Some experience	Barely any experience
Some experience	Some experience	Some experience	Some experience	More than a novice	Barely any experience	No experience	Barely any experience
Barely any experience	More than a novice	More than a novice	Some experience	Some experience	Some experience	Some experience	Barely any experience
No experience	No experience	No experience	No experience	No experience	No experience	No experience	No experience
I'm an expert	I'm an expert	Barely any experience	More than a novice	More than a novice	No experience	Barely any experience	Some experience
Some experience	More than a novice	No experience	No experience	No experience	Some experience	No experience	Barely any experience
Some experience	Barely any experience	No experience	No experience	No experience	No experience	No experience	Some experience
More than a novice	More than a novice	More than a novice	Some experience	Some experience	I'm an expert	Some experience	No experience
Some experience	Barely any experience	Some experience	Barely any experience	Some experience	Barely any experience	No experience	Barely any experience
No experience	Some experience	Some experience	Barely any experience	Barely any experience	Some experience	Some experience	Barely any experience
No experience	No experience	No experience	No experience	No experience	No experience	No experience	No experience
No experience	Barely any experience	Some experience	Some experience	Barely any experience	Some experience	Barely any experience	More than a novice

Collective reflection time on norms (10 min)

- On one of the four big sheets...
 - Each person should share one time they felt safe and included in a classroom (at any point in their education), and one time they felt ashamed or discouraged.
 - Are there patterns to what makes past discussions good or bad?
 - After sharing and recording the past, brainstorm the future. What would you like to see in a positive learning environment? What would really destabilize you?
 - The person with the best handwriting can scribe :)



CS181DT course norms

- DOs:
 - Be respectful of everyone
 - Strive for an inclusive environment
 - Positive feedback
 - Personal relationships
 - Be open minded of people's opinions!
 - Unless they're racist, sexist, etc.
- DON'Ts:
 - Feeling excluded
 - Being cold called
 - Don't interrupt people, don't be condescending, don't dominate the discussion

Break

ANIMAL

DANCE

&

FREEZE

Seminar

Making or Making Do?

- “**Making do**: using the materials and competencies on hand to create objects or processes that aid in everyday life, with creativity and innovation countering precarity and marginalization”
- The origins of hacking & making follow Western notions of individual liberty, innovation in defiance of authority and searching for utopia - like the cowboy 🤠 (think: American dream, pull yourself up by your bootstraps, etc.)
- Yet in other parts of the world, “making and hacking were less about these kinds of radical transformations and more sites for **‘making do’ without challenging larger institutional changes**”
- “We argue that **all practices of making and hacking**, even ones that appear to conform to utopian rhetoric, **are in fact ‘making do’**”



nu

← BSTI Rd

Dhaka, Dhaka Division

Google Street View

Mar 2013 See latest date

Begunbari neighborhood of Dhaka, Bangladesh

 AO Edited

Treasure Hill

Taipei City, Taiwan

This densely-packed cluster of buildings was saved from the wrecking ball and turned into an art community.



39





**Shenzhen, China
Makerfaire**



- Focused on translating code to English and evangelizing open source software values rather than contributing software
- Felt left out of the global stage and unrecognized



- Larger concerns, like material conditions of life
- Emphasis not on coding but on learning English (e.g., to type “print”)
- Winners of a hacking competition came from a highly resourced private school

Takeaways

- Making was defined by US consumer markets (e.g., Make magazine, Adafruit) and focuses on a **finished result**.
- "Making do" is **never complete**: includes repair and repurposing.
- "By 'making do' we do not mean a world set apart, but an **alternative configuration** that accompanies other forms of production and exchange."
 - What would this alternative configuration look like? What would be your utopia of "making do?"
 - What would a world where making is not commoditized or mythologized look like? Making that aligns with your core values? What's your ideal making context? For what community are you making?
 - *Activity*: Sketch out your vision with markers on the printer paper. (5 minutes)


AI art & its impact on artists


- Image generators are not artists since art is a uniquely human endeavor connected to **culture** and experience
- Aesthetic versus art: generated images can be appreciated because they look nice, but because they merely imitate the *technical* process in the training data, it has no cultural goals, understanding, communication




Goals of humans using image generators often commercial, not cultural


Results


 **Dinosaur AI Coloring Book: Dinosaur AI Generated Coloring Book for ages 11 and up (AI generated coloring books for all ages and skill levels)**
Related to: AI generated coloring books for all ages and skill levels | by Nathan Reed Truesdell | Jun 13, 2023
★★★★★ - 1
Paperback Ages: 11 years and up
\$9.95
Prime FREE delivery Tue, Jan 23 on \$35 of items shipped by Amazon
Or fastest delivery Sat, Jan 20


 **A.I. magination: A Children's Book of Imagination - AI generated art**
by E. Larson | Dec 24, 2022
★★★★★ - 7
Paperback
\$12.20
Prime FREE delivery Tue, Jan 23 on \$35 of items shipped by Amazon
Or fastest delivery Sat, Jan 20


 **Chickens on the Farm (AI Generated Children's books)**
Part of: AI Generated Children's books (1 books) | by Neeran Gul | Jul 11, 2023
Kindle
\$6.00 Available instantly
Paperback \$8.00
Prime FREE delivery Tue, Jan 23 on \$35 of items shipped by Amazon
Or fastest delivery Sat, Jan 20

More results

 **ai generated picture book : AI art that I have generated by using my own art style that was added in the art generator**
by Roy Bowling II | Nov 19, 2023
★★★★★ - 1
Kindle Edition Ages: 5 years and up
\$0.00 Unlimited
Free with Kindle Unlimited membership. Join Now
Available instantly
Or \$3.99 to buy

 **Fighting Machines AI Coloring Book: Fighting Machines AI Generated Coloring Book for ages 12 and up (AI generated coloring books for all ages and skill levels)**
Related to: AI generated coloring books for all ages and skill levels | by Nathan Reed Truesdell | Jun 23, 2023
Paperback Ages: 12 years and up
\$9.95
Prime FREE delivery Tue, Jan 23 on \$35 of items shipped by Amazon
Or fastest delivery Sat, Jan 20

 **AI Image Generated Coloring Book For Kids: Robots, Robots, Robots**
by Rickie O. Pauley | Dec 28, 2022
★★★★★ - 3
Paperback Ages: 6 - 12 years
\$9.95
Prime FREE delivery Tue, Jan 23 on \$35 of items shipped by Amazon
Or fastest delivery Sat, Jan 20

 **Monster Trucks Colouring Book AI Generated with Midjourney**
by Kristin A. Gehlbach | Jan 8, 2024

Netflix Made an Anime Using AI Due to a 'Labor Shortage,' and Fans Are Pissed

A new short film called 'The Dog & The Boy' uses AI-generated art for its backgrounds.

By Samantha Cole

February 1, 2023, 8:15am Share Tweet Snap

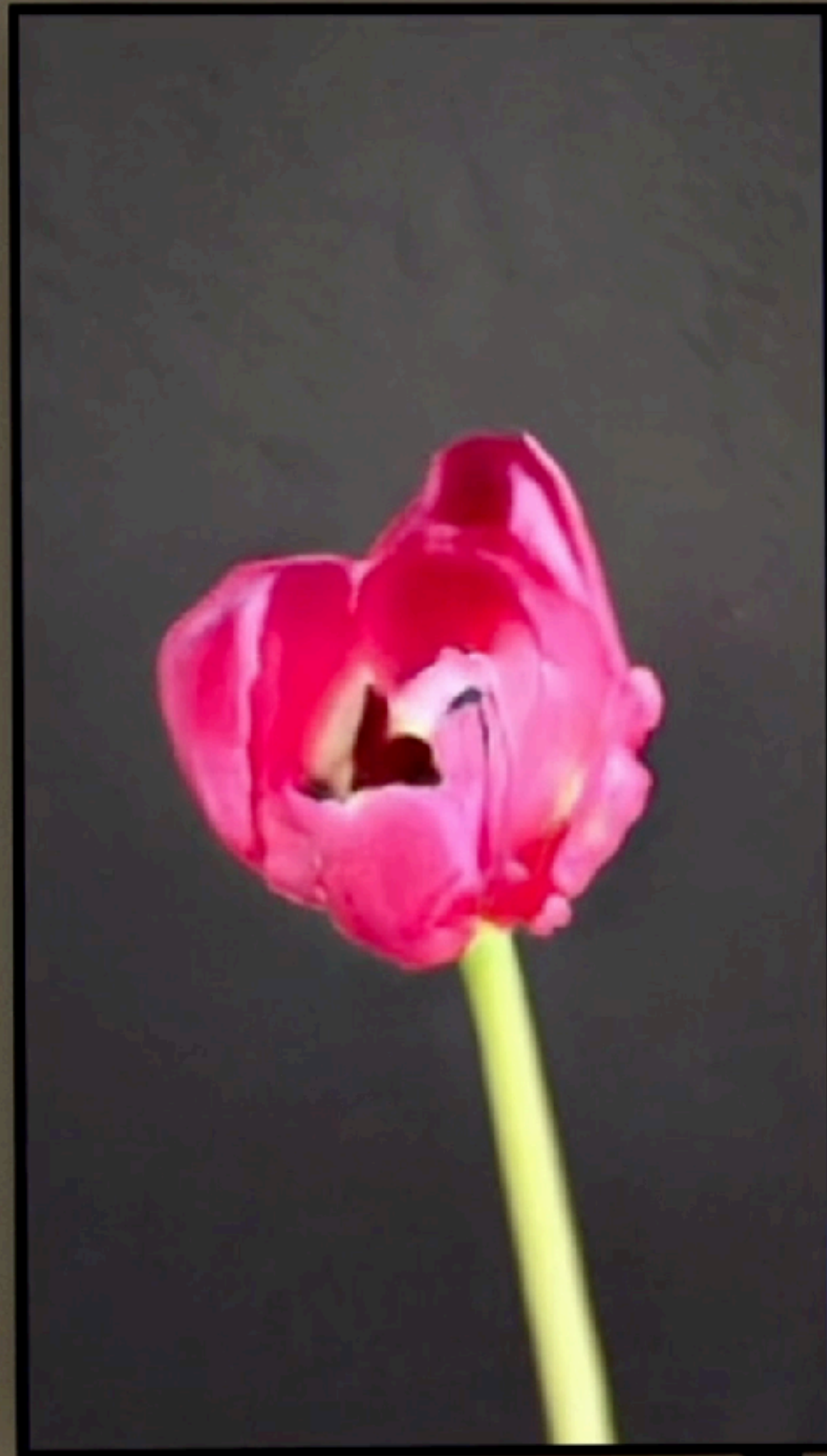
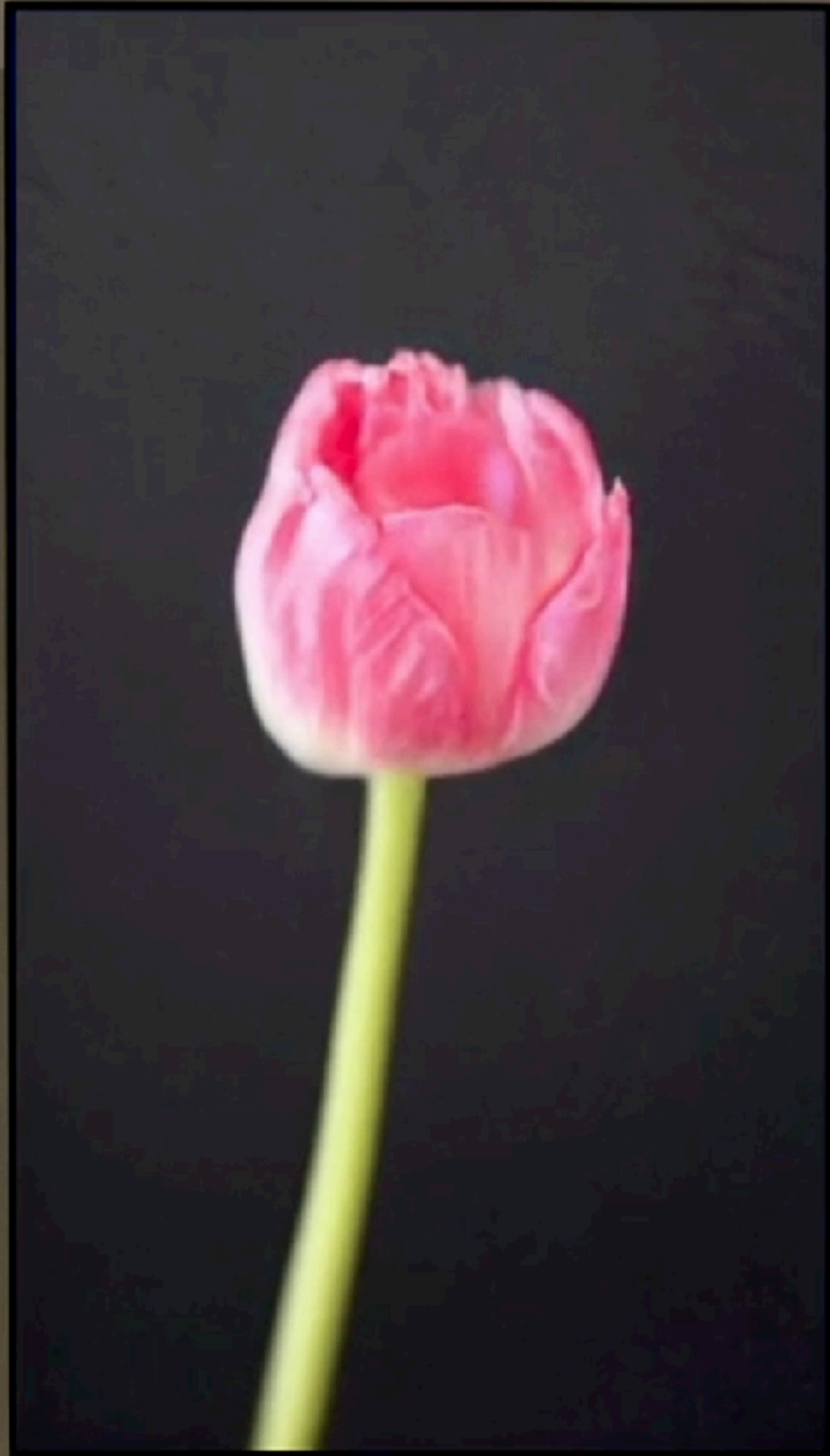


IMAGE VIA NETFLIX

“Contrary to ‘democratizing art,’ this reduces the number of artists who can share their works and receive recognition.”

Impact on artists & suggestions for researchers

- When we think image generators have agency, it (1) diminishes the complexity of human creativity, (2) steals credit and \$ from artists, (3) gives organizations behind image generations less accountability
- What can we do?
 - No finished AI works - AI works as references in larger workflows only
 - Metric of degree of human interaction (at least 25% human to be copyrighted)
 - Not just individual burdens, need structural protections



Mosaic Virus by Anna Ridler

What about a tooling perspective?

- Image generators are largely text to image: this is not how humans are used to creating images (i.e., by drawing and sketching)
- If we do use image generators as *tools* in our artistic practices, what are ways we can add more agency?
 - ControlNet demo
- Turn to the person next to you: what are some other ways, if you didn't have any technical limitations, you would like to add agency to image generators?

Prof Li's note: I was going to do this slide, but I ran out of time.

Class 2 recap

- TODOs:
 - By **next Tuesday's** class:
 - PM1 - Hacking Zine - remember to bring to class!
 - 2 sketchnote readings (Design fiction & Disobedient objects)
 - Vitor to present Zipcrit, Colin & Miriam to lead seminar
- Exit ticket: <http://tiny.cc/cs181dt-week1>

CS181DT Exit Ticket: Week 1

[Sign in to Google](#) to save your progress. [Learn more](#)

* Indicates required question

Name (optional)

Your answer

How many hours of work, not including class time, did you spend on CS181DT this week? *

Your answer

How does the current workload align with your expectations for the class? *
I'm aiming for around 8-10 hours/week not including class time.

1 2 3 4 5

This is way less work than I expected. Give me a challenge!

I am spending way too much time! Please dial it back.

What was the most important thing you learned this week? *

Your answer

What are you currently confused about? (Logistics, assignments, course content, etc.)