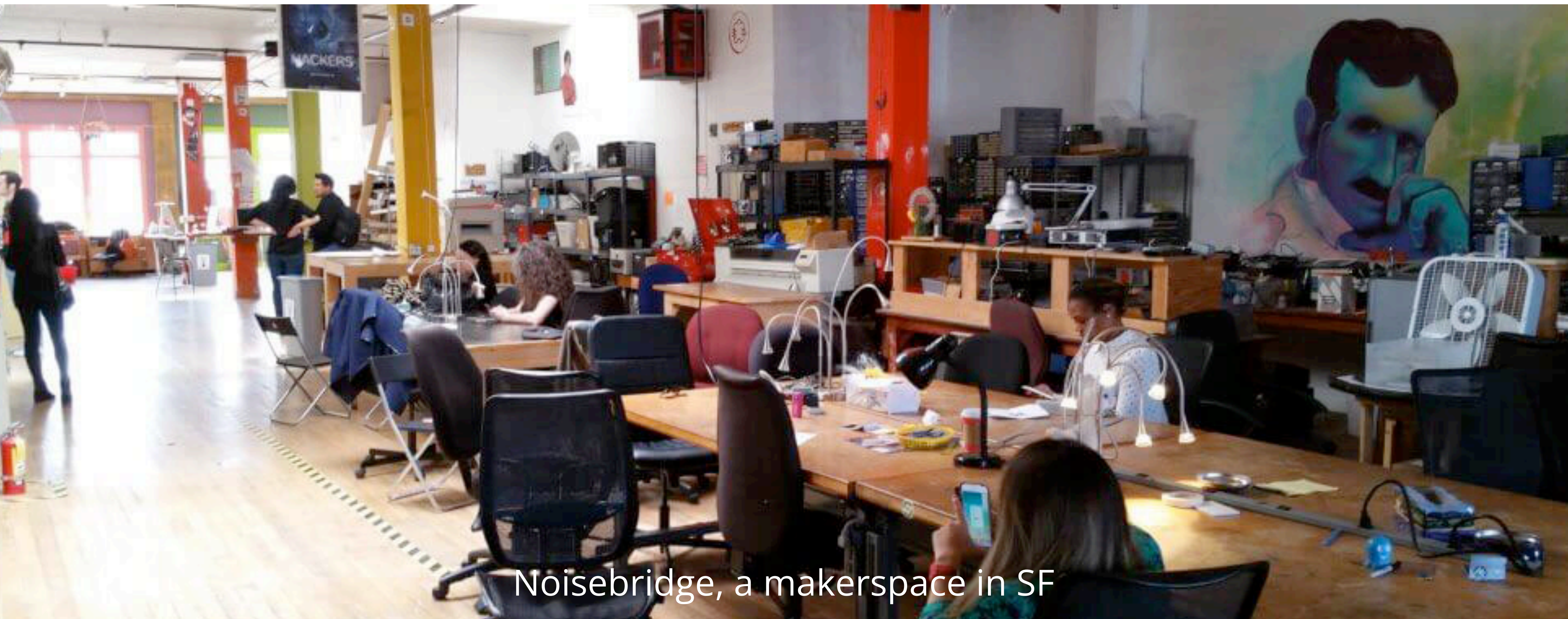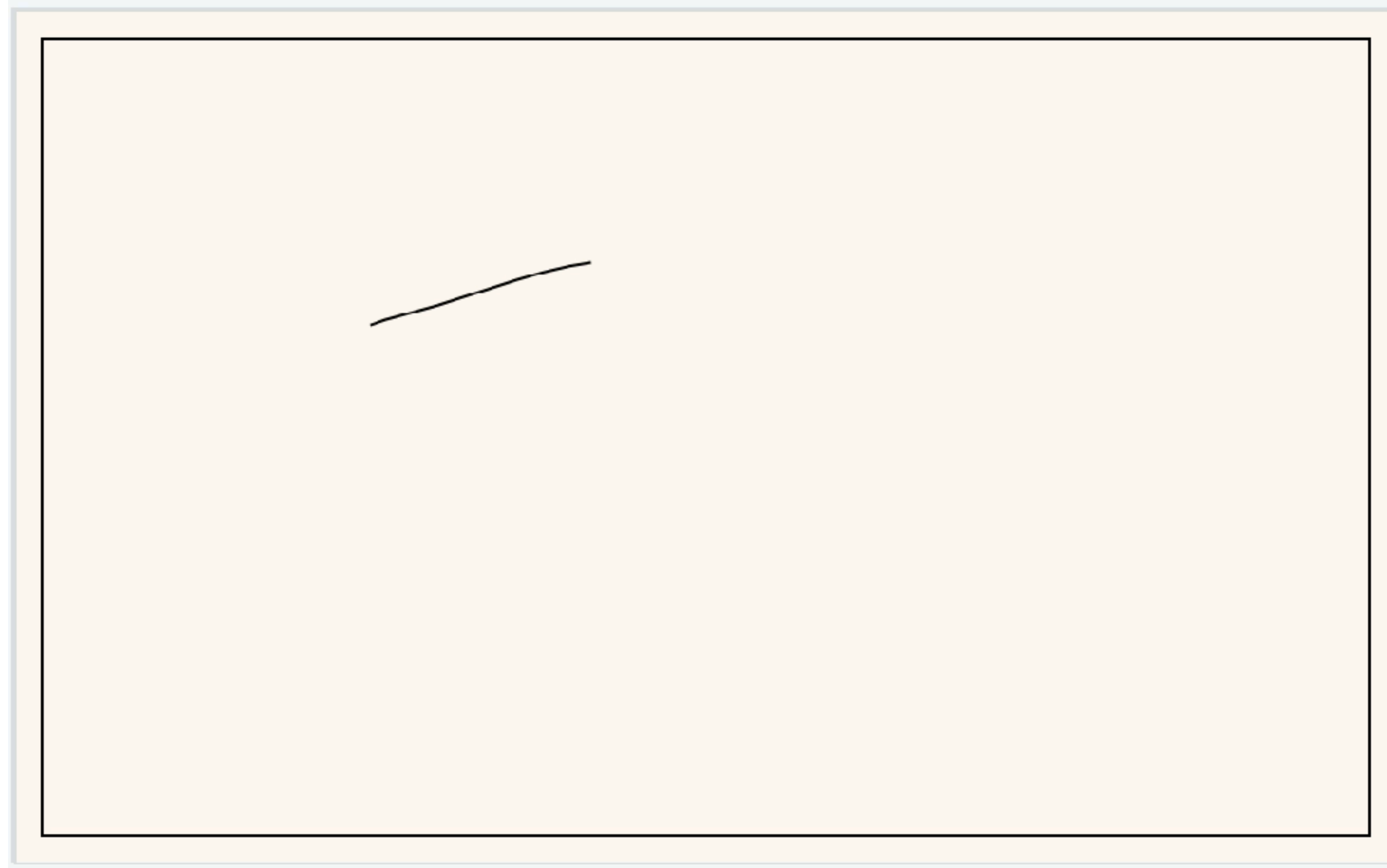# CS181DT Class 2: Making & hacking culture

Noisebridge, a makerspace in SF

Class 2 agenda

- Zipcrit sample from me

- ZC/seminar assignments

- Lecture: A history of making and hacking culture

- Course norms

- Break

- Example seminar: Making & AI art

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 compare using Fishdraw to using text to image generators (e.g., Midjourney)? Control? Aesthetics? Goals?

Zipcrit schedule

Date	Person	Person
9/4	Emily	
9/11	Tanner	
9/16	Catherine	Stephany
9/23	Eshanya	
9/25	Chau	Deniz
9/30	Tara	
10/2	Omaru	
10/7	Ari	
10/16	Naima	
10/21	Pete	
10/28	EK	
10/30	Zariah	
11/4	Hannoh	
11/6	Angela	
11/11	Yunju	
11/18	Caleb	
11/20	Kaitlynn	Nico
11/25	Elshiekh	Alexandra
12/2	Jerry	Kerick

Topic	Date	Person	Person
Physical computing	9/11	Nico	Angela
Physical computing	9/11	Tanner	Zariah
Design for protest	9/23	Eshanya	EK
Design tools for digital fabrication	9/25	Naima	Hannoh
Creativity support tools	10/2	Kaitlynn	Yunju
Creativity support tools	10/2	Caleb	Emily
Sociotechnical principles & theories of creativity	10/21	Catherine	Omaru
Critical design	11/4	Jerry	Deniz
Critical design	11/4	Stephany	Tara
Accessibility & materiality	11/11	Chau	Elshiekh
Accessibility & materiality	11/11	Alexandra	Kerick
Power, art & politics	11/18	Pete	Ari

Seminar schedule
(no one wanted the first one!)

# Submit your slides for zipcrit and seminar on Canvas:

Mentor hours

- Abrar is hosting mentor hours **Fridays 1:15-3:15pm** in the Hive common space. Come with questions about your zine or just for general co-working!

- Ariel will be hosting assignment specific drop in hours **on Sundays** starting later (will be announced in lecture)

- They both will host sections to help with the programming part of your final project

- You'll meet them in person next Weds

A history of making and hacking culture

People have been making things with computers for a long time.
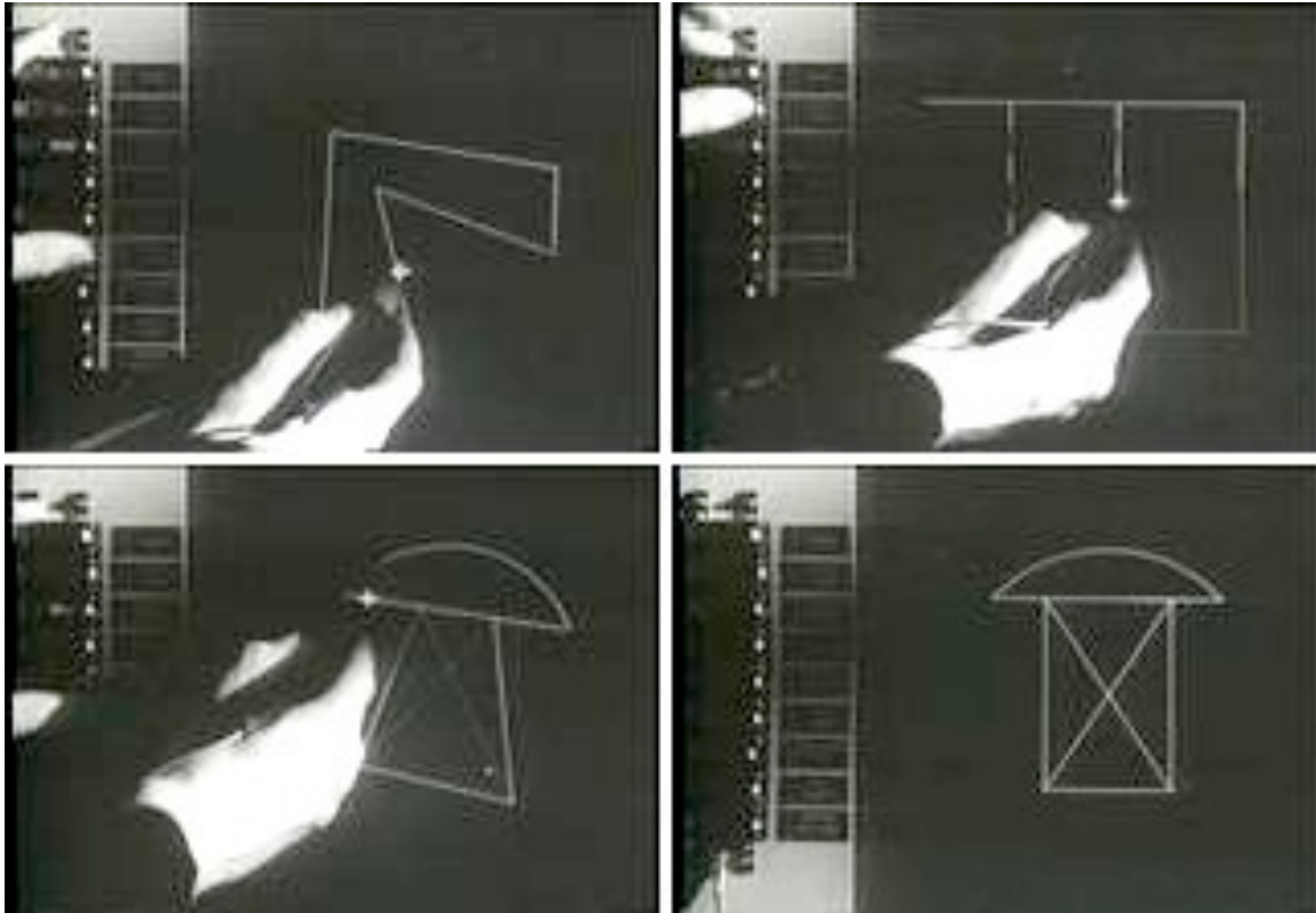
Ivan Sutherland, Sketchpad (1963)
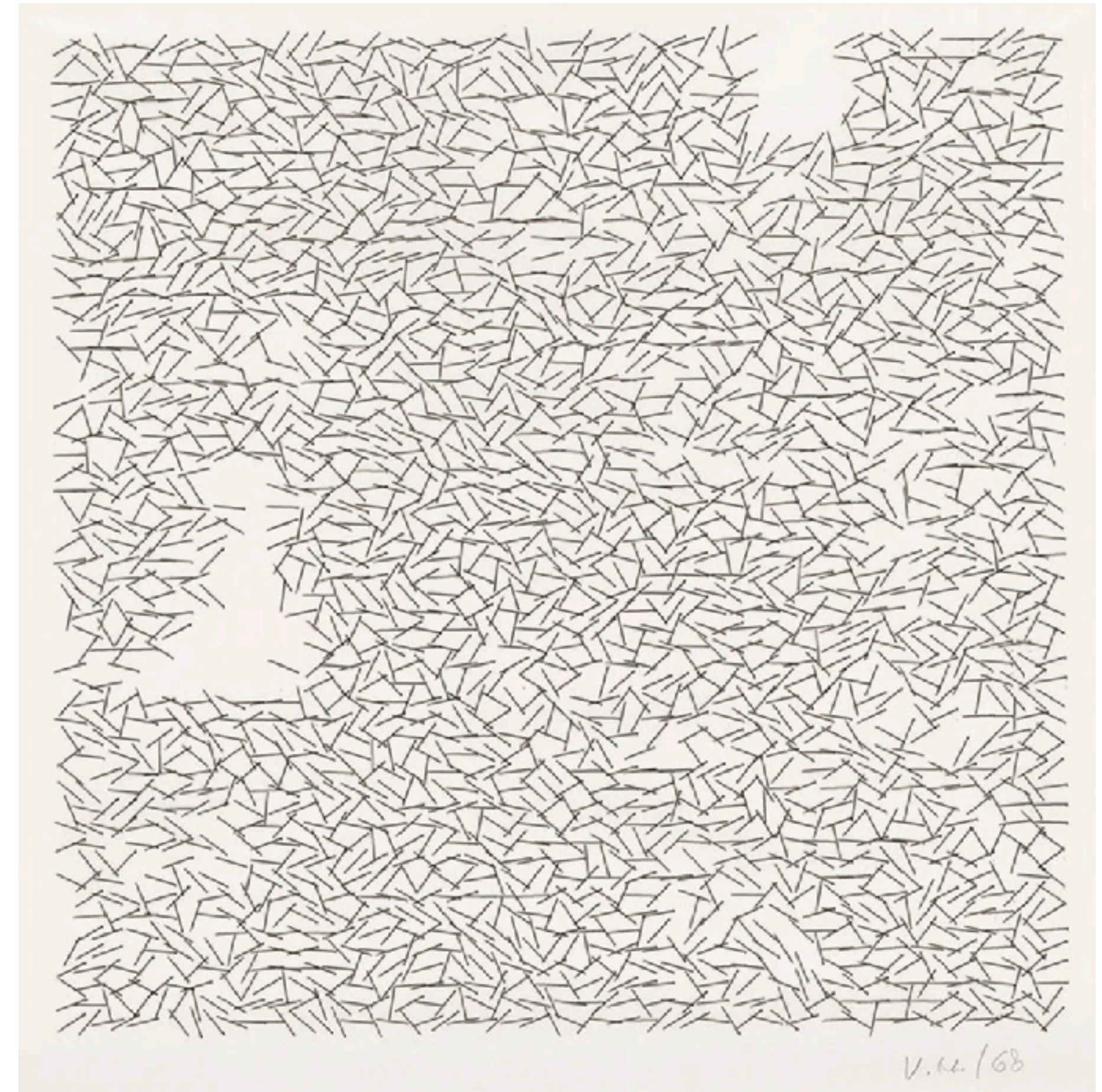
Vera Molnar, Interruptions (1968)

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?
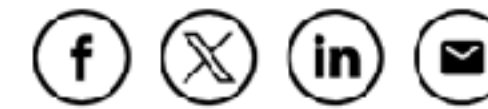
December 2, 2015   by Mark Wood

Photo by Mark Wood

HMC Celebrates Groundbreaking of New Computer Science Center

October 7, 2019

SHARE STORY

(f) (X) (in) (✉)

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
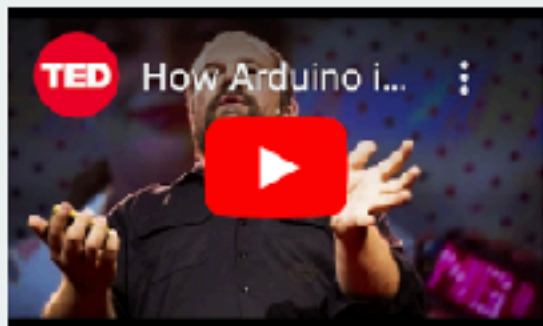
How Arduino i...

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

ARDUINO CLOUD

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

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☐ ENJOY A COMMUNITY
☐ PROGRAMMING

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OPEN SOURCE REPORT 2023

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adafruit   Products   Gift Ideas   What's New

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

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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

Pixo | Dazzling Desk Display by Mukesh_Sankhla in LEDs

DIY Electric Kayak by BradenSunwold in Electronics

UltiMaker Thingiverse

Search Thingiverse

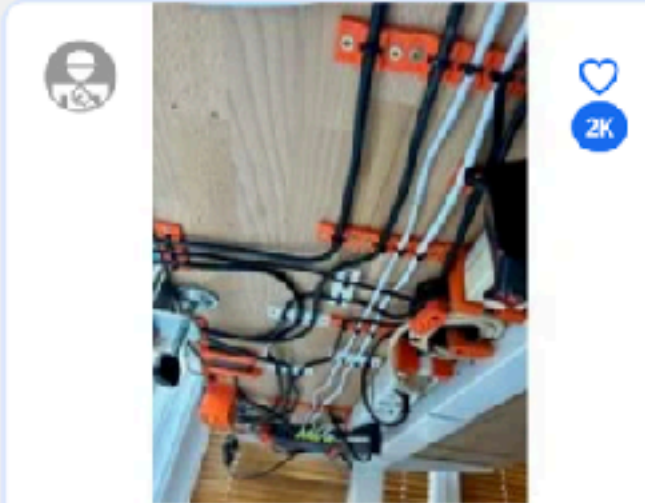Explore   Education   Create

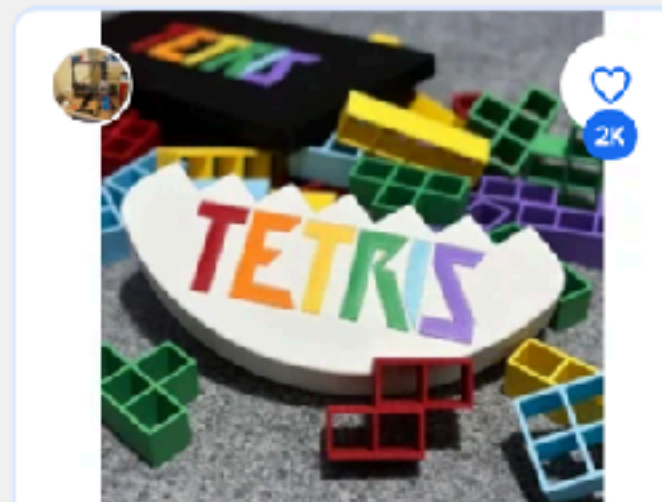Popular Last 32 Days   All Things   Filter by
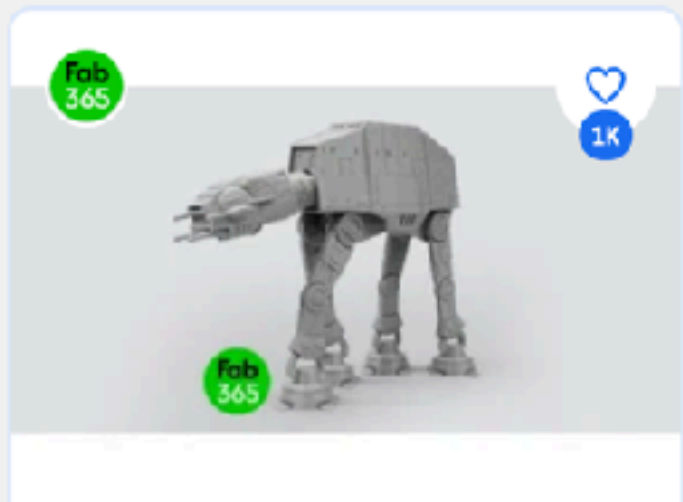
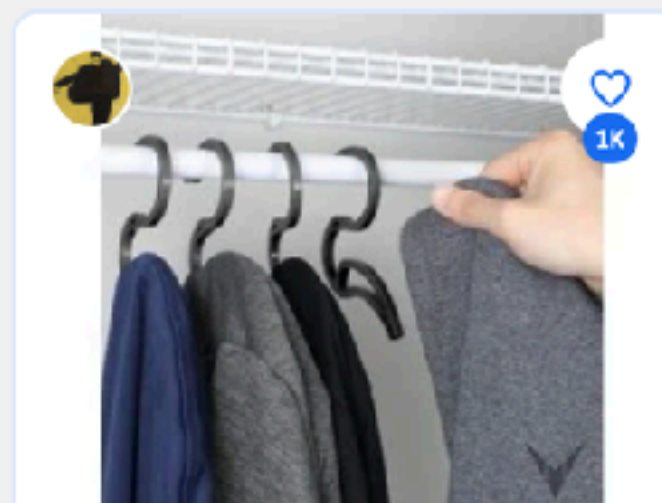6-Shot Disc Shooter
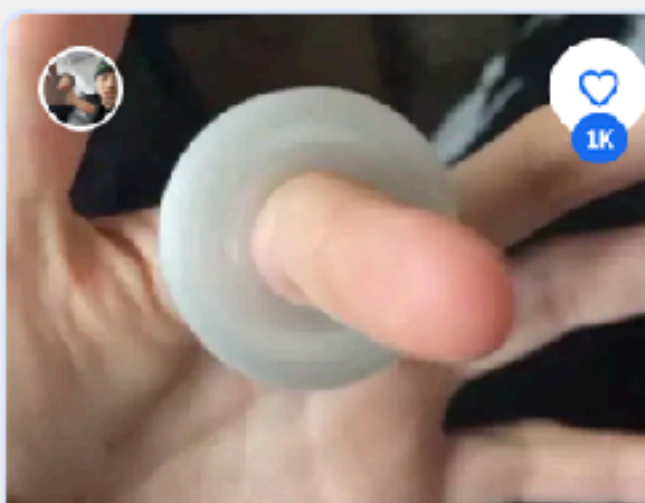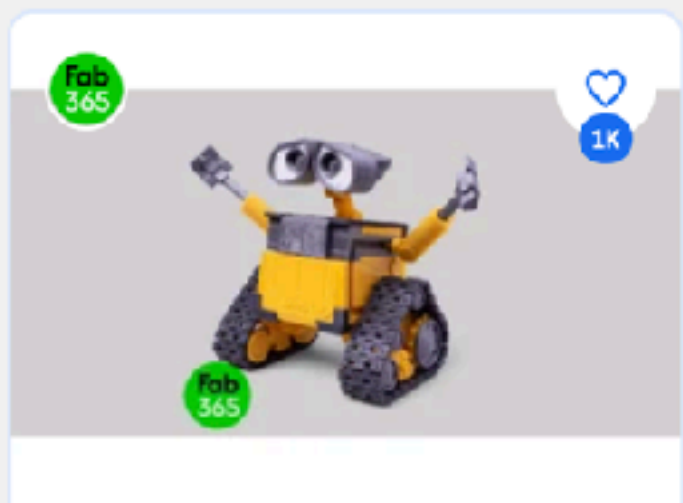
Under Desk Cable Management

egg peeler

Balance Tetris

Under Desk Drawer

Articulated Starwars ATAT
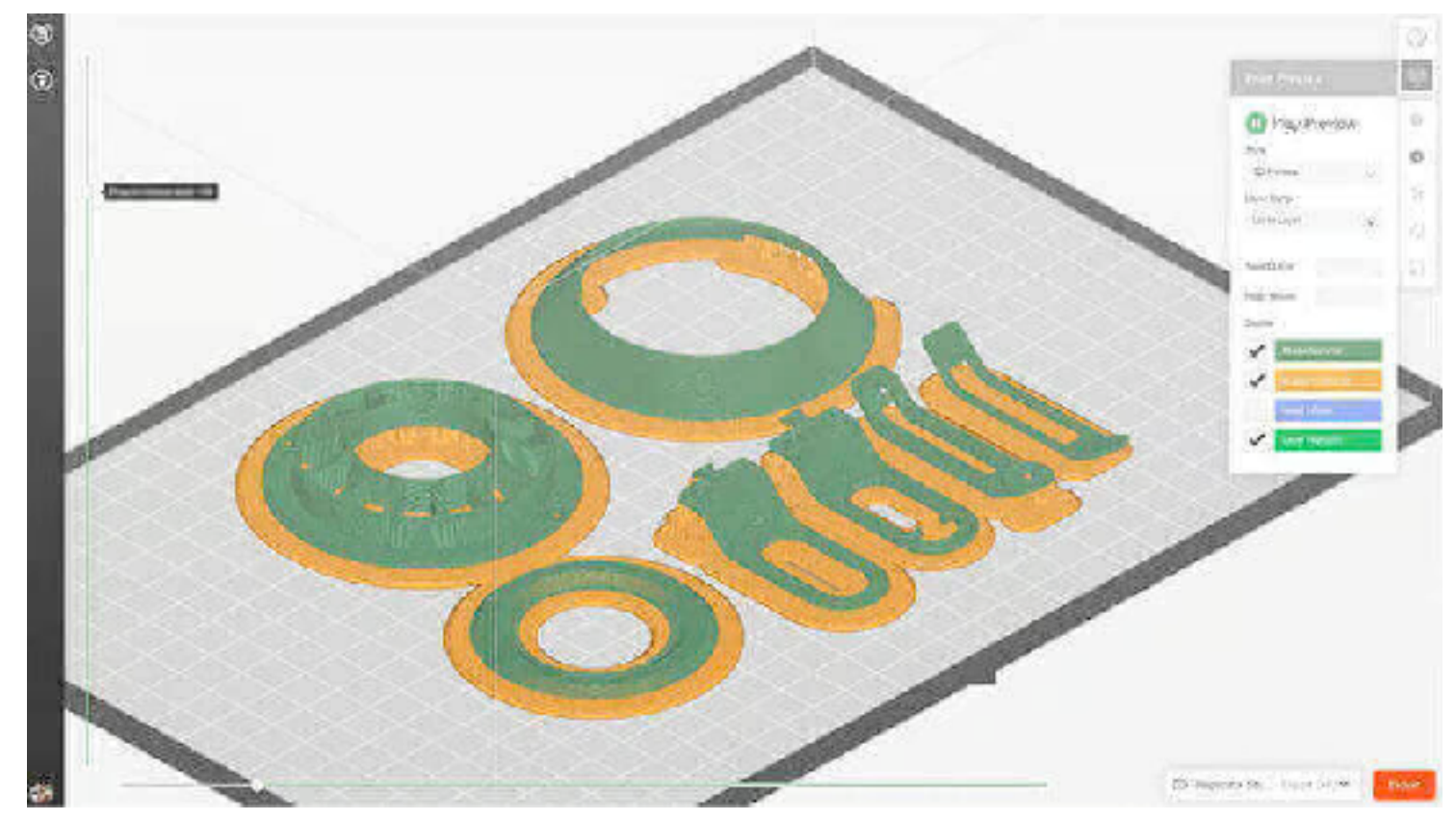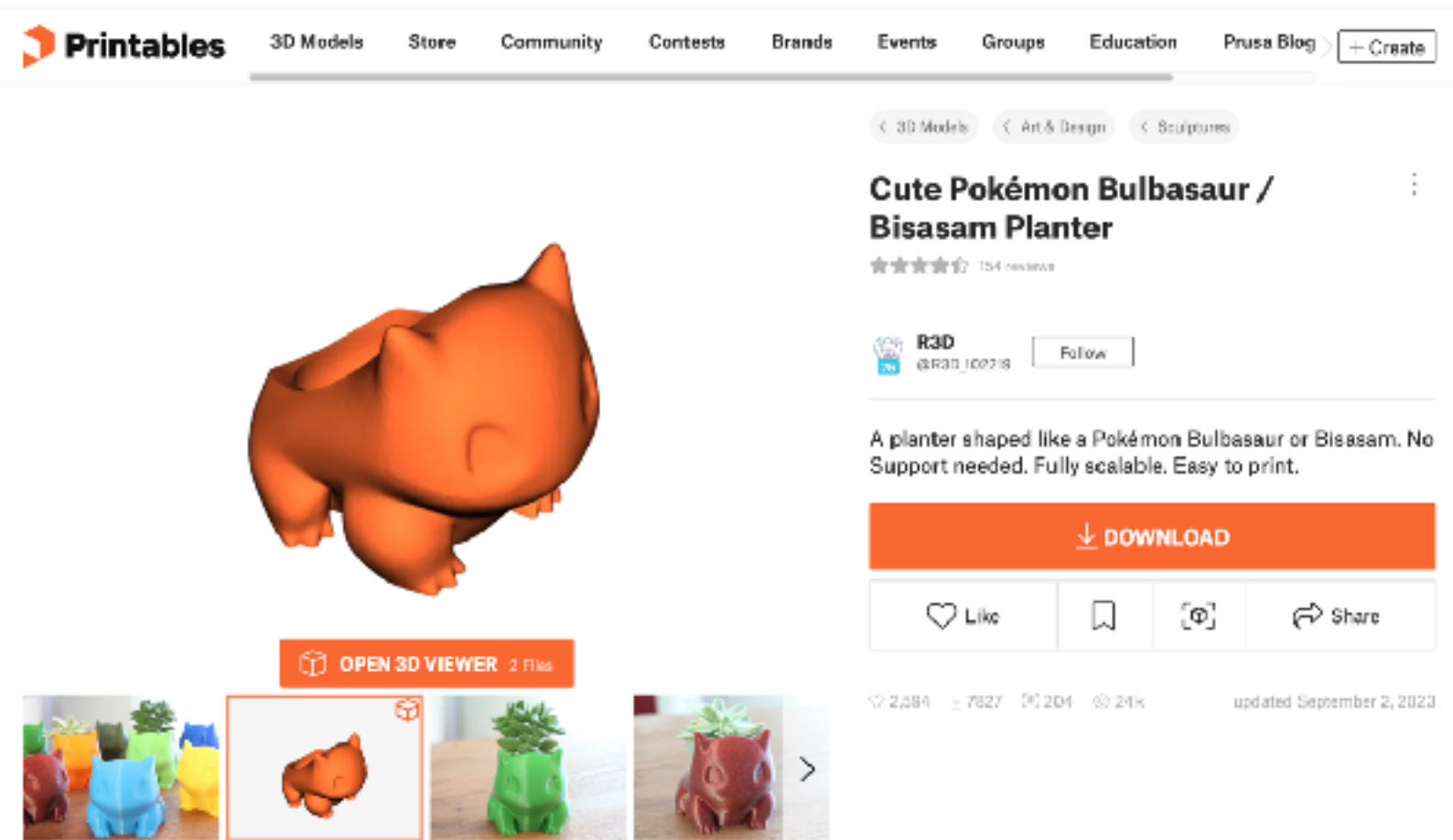
Venalli Hook

Print In Place Ball Bearings

Wall-E Foldable

Digital fabrication: 3D printing

Download (or make) software 3D model

Computer-aided design (CAD)

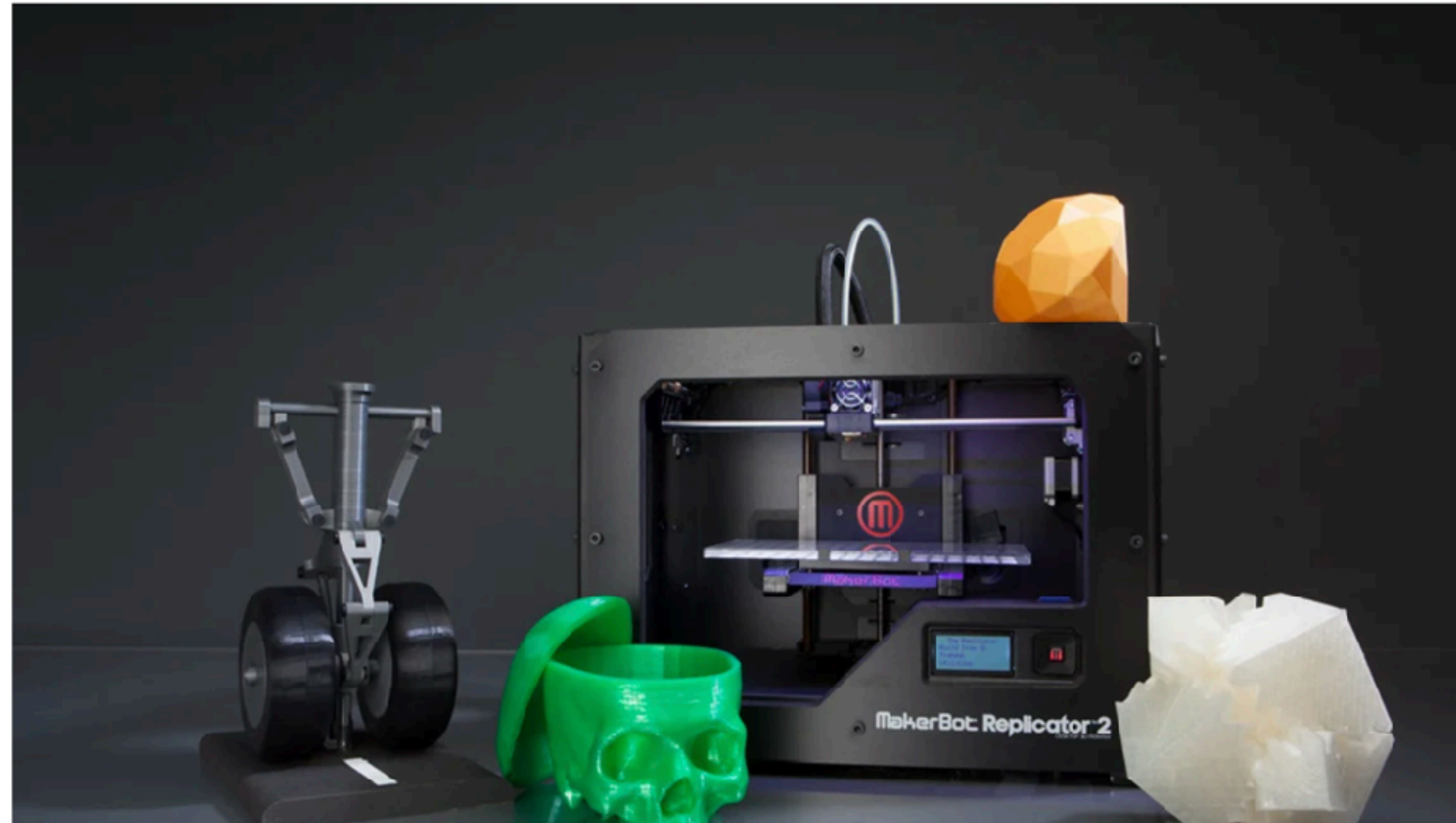Load model into slicing software that will generate machine paths

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

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

MakerBot

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 2024, every household does not yet have a 3D printer (even though they cost less than laptops now)?

Criticisms of the maker movement

- Elitist culture

- Not gender inclusive

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"

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.

D.I.Y. KIT
All-Aluminum
Assemble it yourself
450 pounds!
Bed is 76"x57"
(Small Queen)
Tow it with anything!
Kits start at $4800
Fully Insulated!

A young maker lounges inside a Tinkerdrop 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.
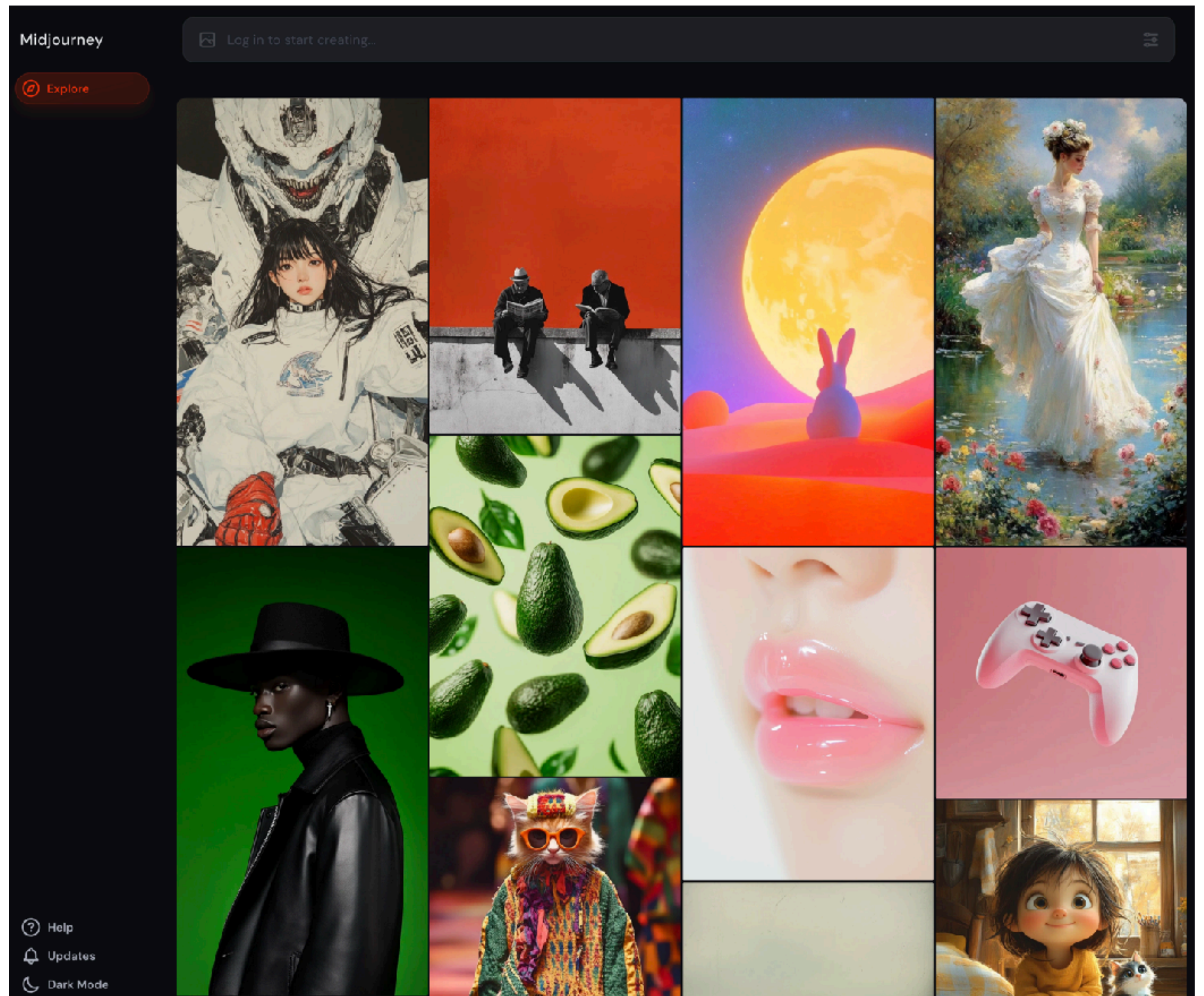
CORE77   Company Directory   ID Jobs   Awards   Blog
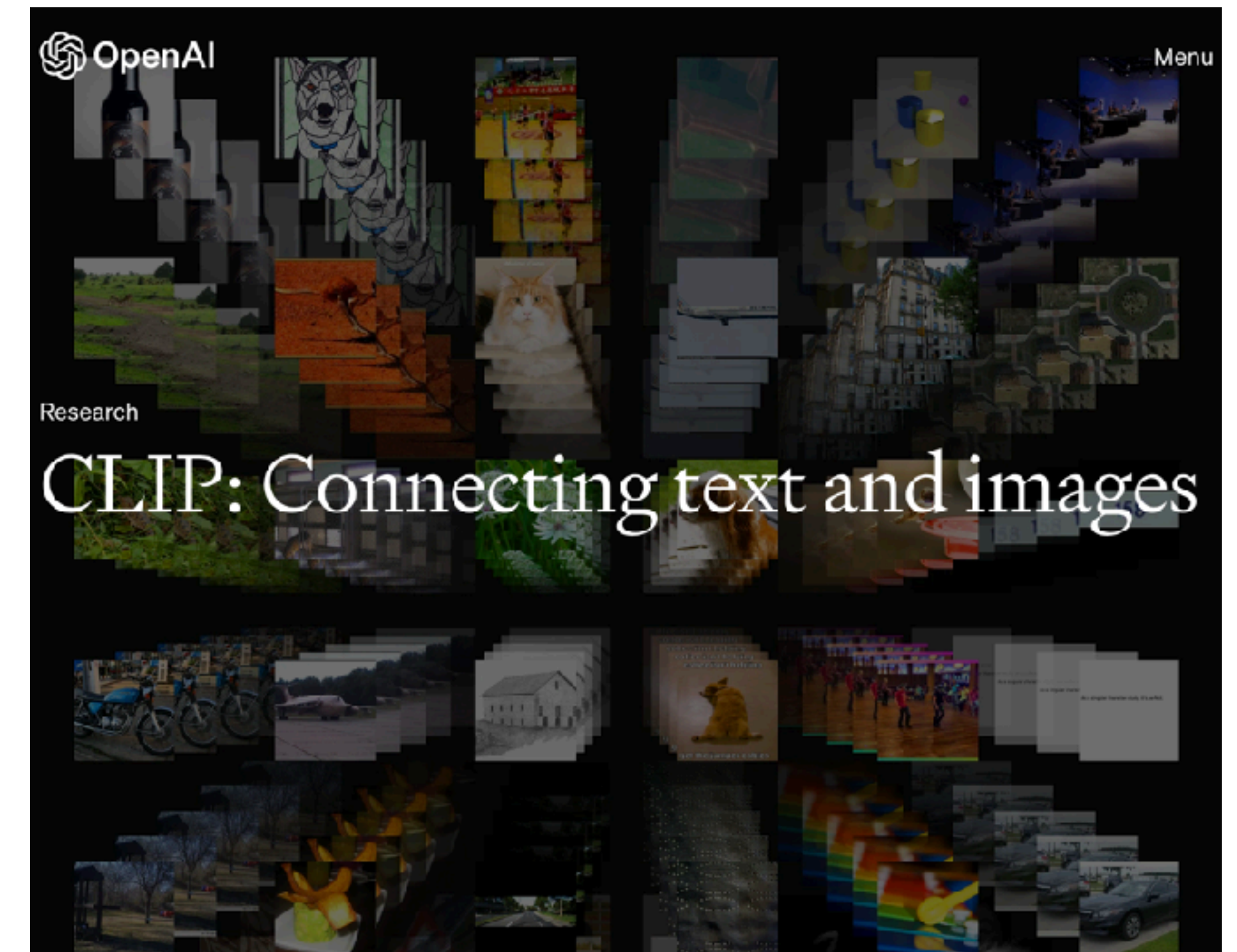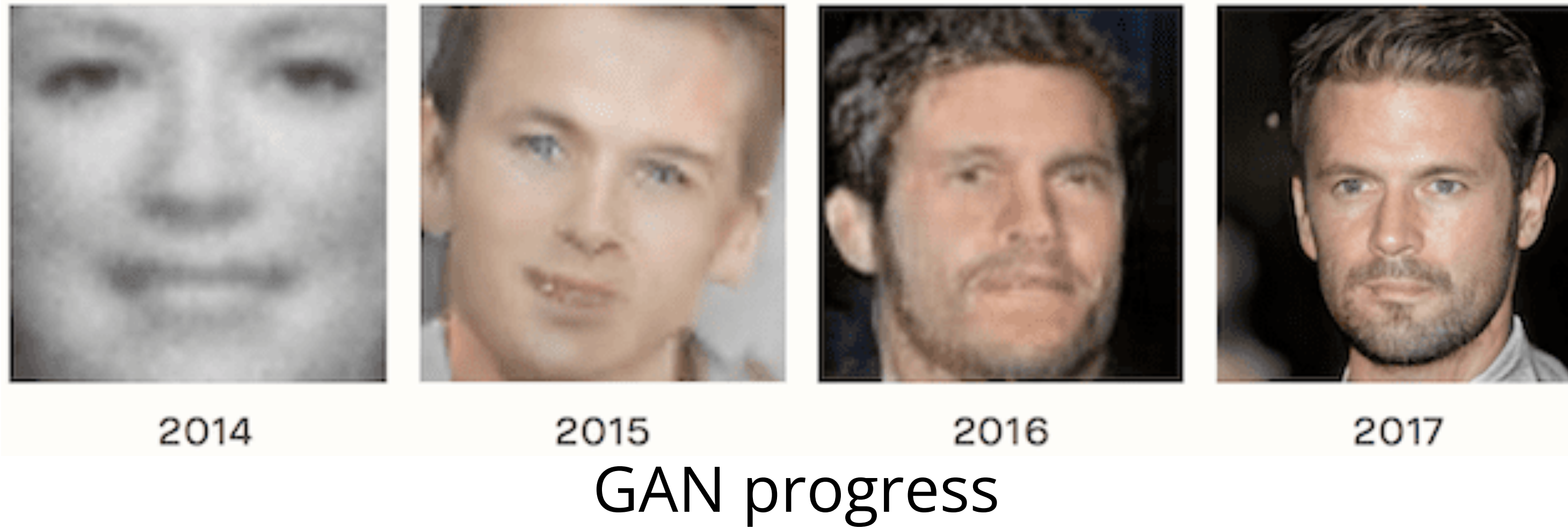
Why are Makerspaces Dying? Can Designers Bring them Back to Life?
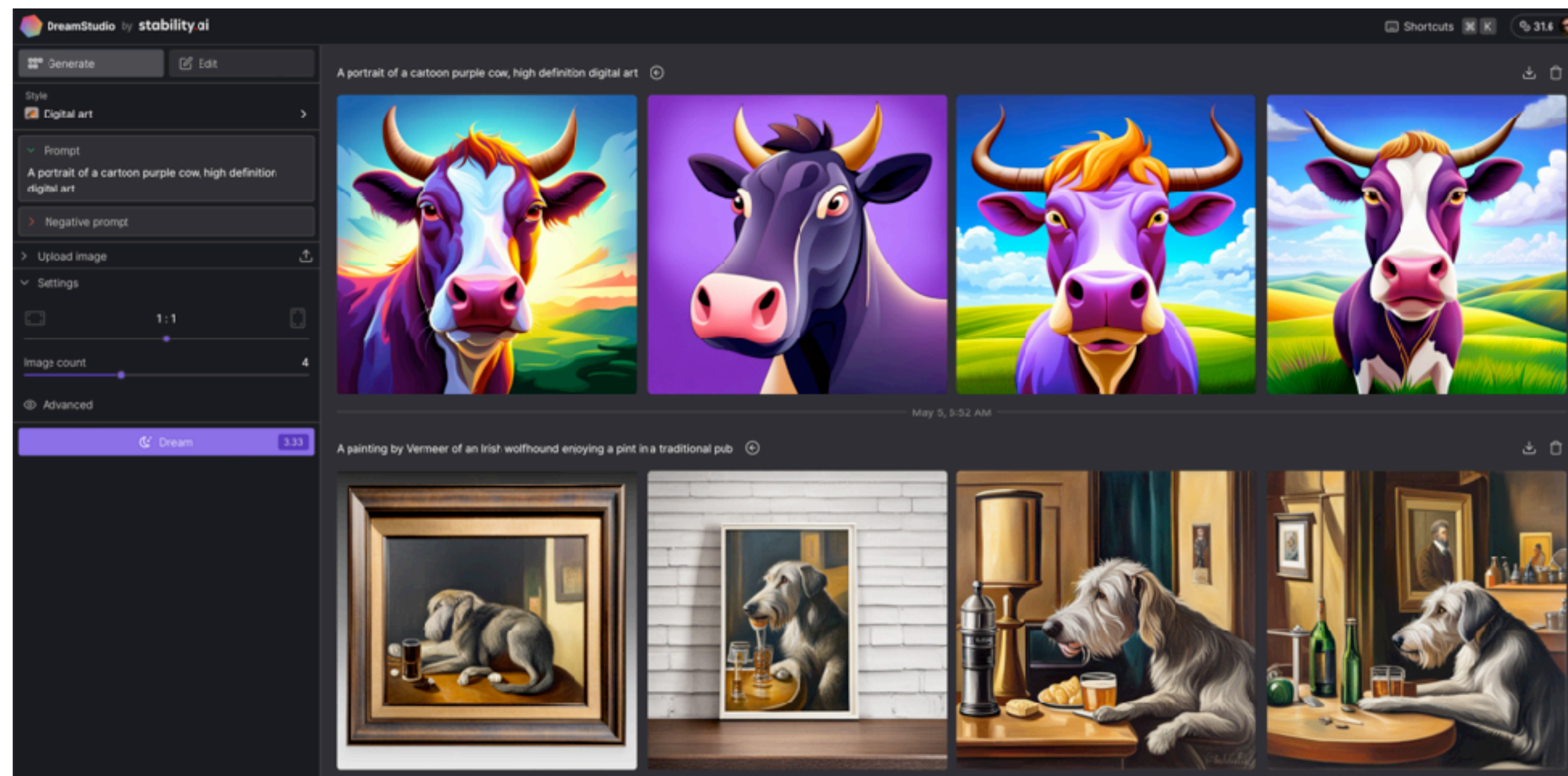
By Paul Sohi - March 28, 2019 in Essay

Instead...2020s: Generative AI craze

From GANs to diffusion models

GAN progress

Stable Diffusion from StabilityAI (2022)

CLIP from OpenAI (2021)
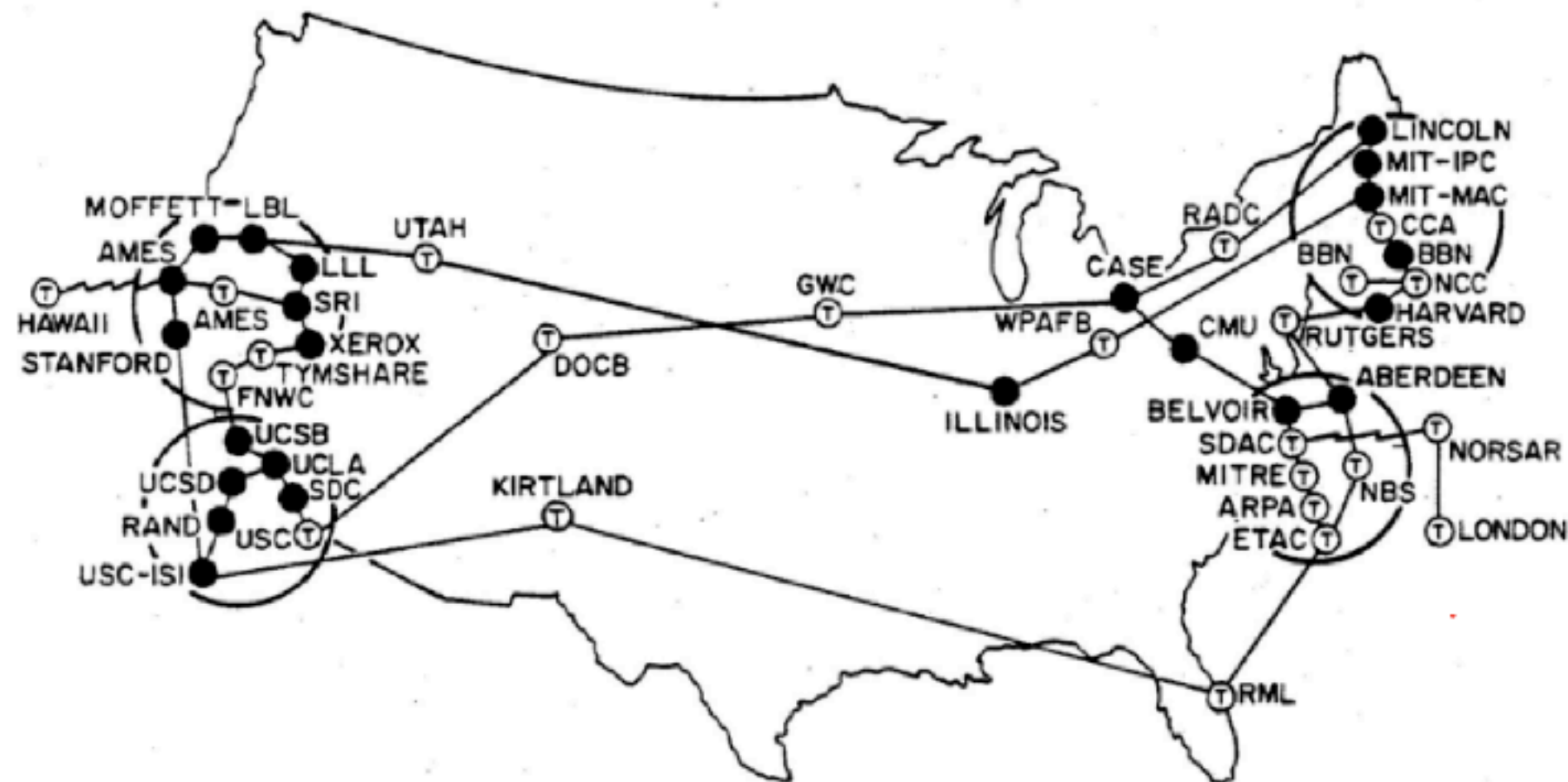
CS + Military close relationships

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
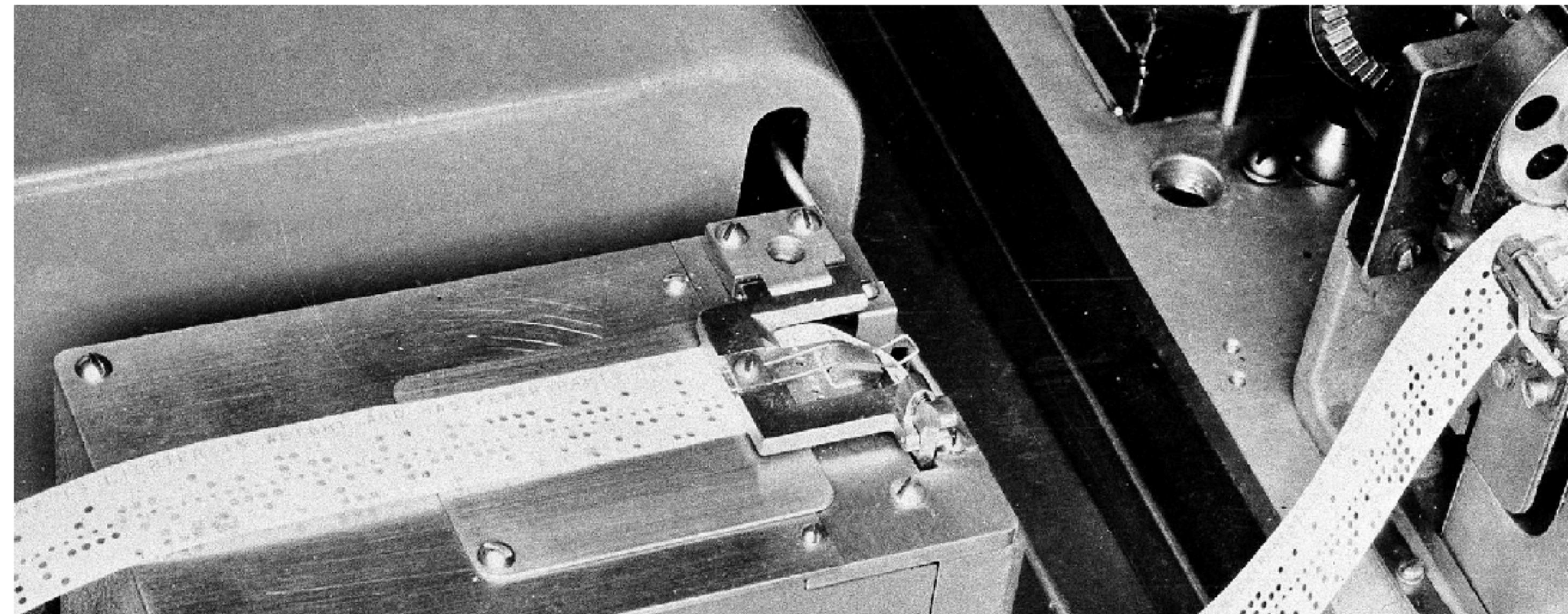Updated on January 17, 2024 at 7:21 AM UTC

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

Break

Course norms

Human-centered design	Sketching	Graphic/visual design	Making physical 3D for	Computer-aided design	Laser cutting	3D Printing
Barely any experience	Some experience, but do	Some experience, but do	Some experience, but do	Some experience, but do	No experience	No experience
Barely any experience	Some experience, but do	More than a novice, but	Barely any experience	Barely any experience	No experience	Barely any experience
Some experience, but do	No experience	No experience	Barely any experience	No experience	No experience	No experience
No experience	More than a novice, but	More than a novice, but	Some experience, but do	Some experience, but do	More than a novice, but	Some experience, but do
No experience	No experience	Barely any experience	No experience	No experience	No experience	No experience
Some experience, but do	Barely any experience	Some experience, but do	More than a novice, but	Barely any experience	More than a novice, but	Some experience, but do
More than a novice, but	Some experience, but do	Some experience, but do	Some experience, but do	More than a novice, but	Some experience, but do	Some experience, but do
Barely any experience	No experience	No experience	No experience	No experience	No experience	No experience
No experience	More than a novice, but	Some experience, but do	No experience	Some experience, but do	No experience	No experience
Barely any experience	Some experience, but do	Some experience, but do	Some experience, but do	Barely any experience	No experience	No experience
Some experience, but do	Some experience, but do	Barely any experience	No experience	No experience	No experience	No experience
I'm an expert	Some experience, but do	Some experience, but do	No experience	No experience	No experience	No experience
More than a novice, but	More than a novice, but	Some experience, but do	Some experience, but do	Barely any experience	Barely any experience	Barely any experience
Barely any experience	Barely any experience	More than a novice, but	Some experience, but do	Barely any experience	No experience	No experience
More than a novice, but	Barely any experience	No experience	No experience	No experience	No experience	No experience
More than a novice, but	Some experience, but do	I'm an expert	Some experience, but do	More than a novice, but	Some experience, but do	More than a novice, but
No experience	No experience	No experience	No experience	No experience	No experience	No experience
Barely any experience	Barely any experience	Some experience, but do	No experience	No experience	No experience	No experience
No experience	Some experience, but do	Barely any experience	Barely any experience	No experience	No experience	No experience
More than a novice, but	More than a novice, but	More than a novice, but	Barely any experience	Some experience, but do	No experience	Barely any experience
Barely any experience	Barely any experience	Barely any experience	No experience	No experience	No experience	No experience
No experience	More than a novice, but	Some experience, but do	No experience	Barely any experience	No experience	No experience

Giving feedback in art s	Making project videos	Writing design docume	Making interactive web	Using external APIs and	Designing large softwa	HCI research
No experience	Barely any experience	Barely any experience	Barely any experience	More than a novice, but	Barely any experience	No experience
Some experience, but d	Some experience, but d	Barely any experience	Some experience, but d	Some experience, but d	Barely any experience	Barely any experience
Some experience, but d	Some experience, but d	No experience	No experience	Some experience, but d	Barely any experience	No experience
More than a novice, but	Some experience, but d	Barely any experience	Barely any experience	Barely any experience	Barely any experience	More than a novice, but
More than a novice, but	Some experience, but d	Barely any experience	No experience	No experience	No experience	No experience
Some experience, but d	More than a novice, but	Barely any experience	I'm an expert	Some experience, but d	No experience	No experience
Some experience, but d	More than a novice, but	Some experience, but d	More than a novice, but	More than a novice, but	More than a novice, but	Barely any experience
No experience	Some experience, but d	More than a novice, but	Barely any experience	Barely any experience	Some experience, but d	No experience
I'm an expert	No experience	No experience	No experience	No experience	No experience	No experience
Some experience, but d	More than a novice, but	Some experience, but d	More than a novice, but	Barely any experience	Some experience, but d	No experience
No experience	Some experience, but d	No experience	Barely any experience	Some experience, but d	Barely any experience	Some experience, but d
Barely any experience	No experience	No experience	Barely any experience	Barely any experience	No experience	No experience
Some experience, but d	I'm an expert	Some experience, but d	I'm an expert	More than a novice, but	More than a novice, but	More than a novice, but
Barely any experience	More than a novice, but	Some experience, but d	More than a novice, but	More than a novice, but	Some experience, but d	Barely any experience
No experience	More than a novice, but	Some experience, but d	No experience	No experience	No experience	Some experience, but d
More than a novice, but	Barely any experience	More than a novice, but	Some experience, but d	Barely any experience	No experience	More than a novice, but
No experience	No experience	Barely any experience	Barely any experience	No experience	Barely any experience	No experience
No experience	Some experience, but d	Some experience, but d	Some experience, but d	More than a novice, but	More than a novice, but	Barely any experience
Barely any experience	No experience	Barely any experience	No experience	Barely any experience	Barely any experience	No experience
Some experience, but d	Barely any experience	Barely any experience	Some experience, but d	Some experience, but d	Barely any experience	I'm an expert
No experience	Barely any experience	No experience	No experience	Some experience, but d	No experience	No experience
Barely any experience	No experience	No experience	Barely any experience	No experience	Barely any experience	No experience

Collective reflection time on norms (6 min)

- Individually, on post-its (2 min):

  - Write a time you felt good in the classroom

  - Write a time you felt ashamed or discouraged

  - Write patterns or principles drawn from the experiences

  - (To consider: How about when sharing something personal like a creative art project? Does that change the degree of vulnerability?)

- With your tables, on the whiteboard (4 min):

  - After sharing the past, brainstorm the future. Add more post-its: what would you like to see in a positive learning environment? What would really destabilize you?

Past good	Past bad
Future good	Future bad
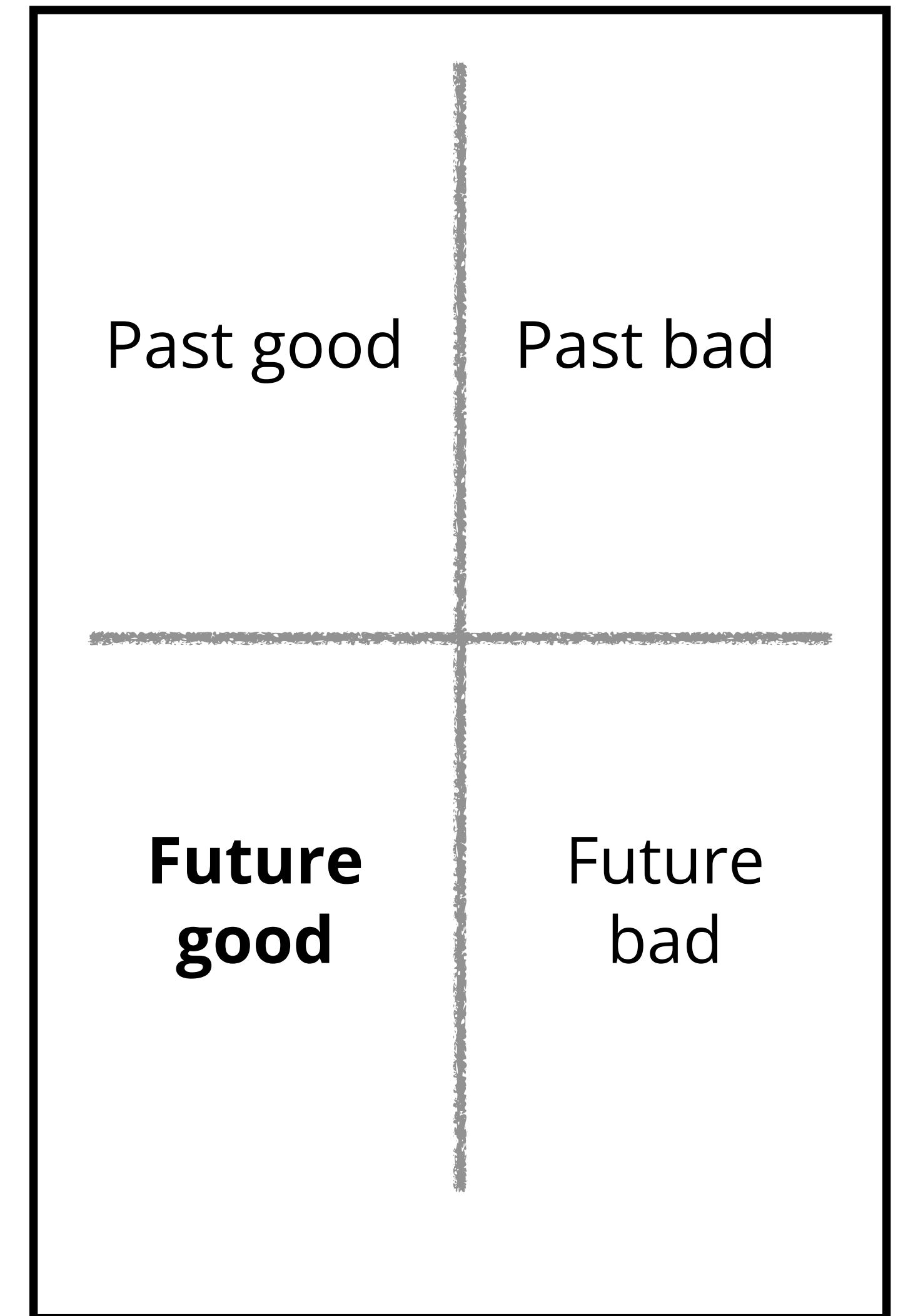
CS181DT course norms

- Dos:

  - It's OK to be wrong! No bad or stupid questions. It's good to ask questions!

  - Constructive, actionable criticism; don't shut down others completely or be rude

  - Mindfulness, active listening

  - Acknowledge each other's efforts

  - Collaboration!

- From Sp 2024:

- 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

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.)

- Making (do) does not have to be Western, does not have to be individualized, and does not have to have middle-class values

- Offers a **more expansive definition** of making as making do: "Beyond their heroic narratives of empowerment and self-realization, making and hacking can express other and more ambivalent projects, ranging from **assertion of local needs and values** to situated forms of coping with the displacements of a neoliberal world."

BSTI Rd

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.

BEEN HERE?

39

JIRKA MATOUSEK / CC BY 2.0

- 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

Activity

- 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? How will you repair and repurpose what you make?

        - *Activity*: Sketch out your vision with markers on the printer paper. (5 minutes)

        - *Bonus*: Think about how a tool you would want to build might support this future.

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

"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?

  - Not just individual burdens, need structural protections

  - Policy development: metric of degree of human interaction (at least 25% human to be copyrighted)

Original

Glazed

https://glaze.cs.uchicago.edu/
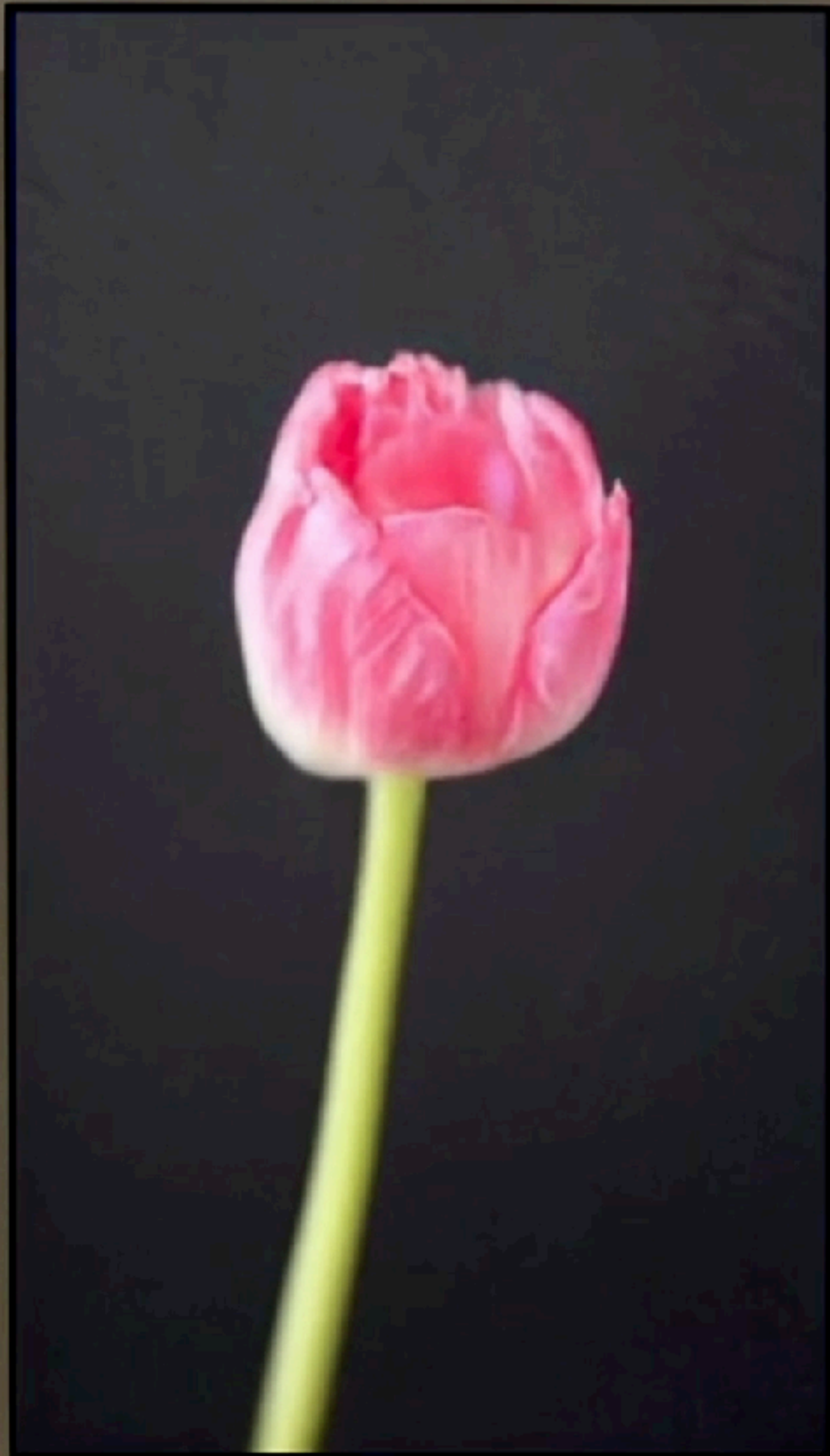
Mosaic Virus by Anna Ridler

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: https://huggingface.co/spaces/hysts/ControlNet-v1-1

- 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?

Meta seminar notes

- You can summarize each reading individually or together

- Your activities can also be per reading or together

- The seminar should ideally synthesize the readings and/or relate them to tooling and bring in examples (from the reading or the real world)

- Activities can involve demos, making something, theater—anything you want!

- If you upload your slides before class and DM me on Slack, I'm happy to give feedback so you can iterate :) Also happy to bring materials if you need any not in the Hive!

Class 2 recap

- TODOs:
  - By **next Wednesday**'s class:
    - PM1 - Hacking Zine - remember to bring to class!
    - Zipcrit by Emily
- Mentor hours, Fri 1:15-3:15, Hive common space