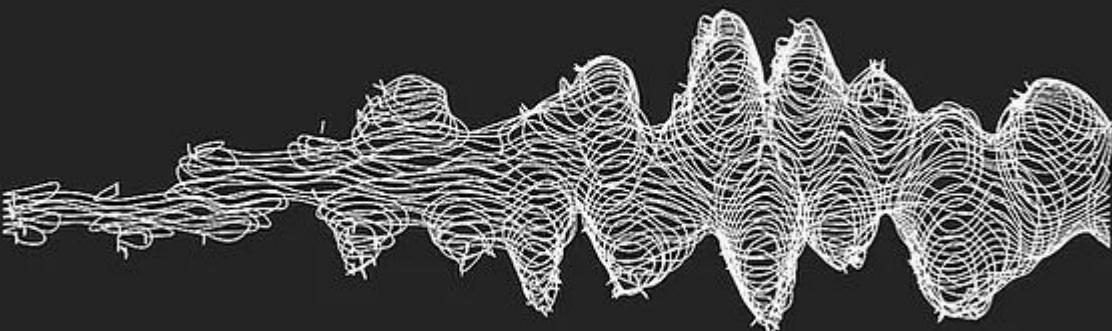


Generative Art

Richard Latham

April 27, 2021

What is Generative Art?



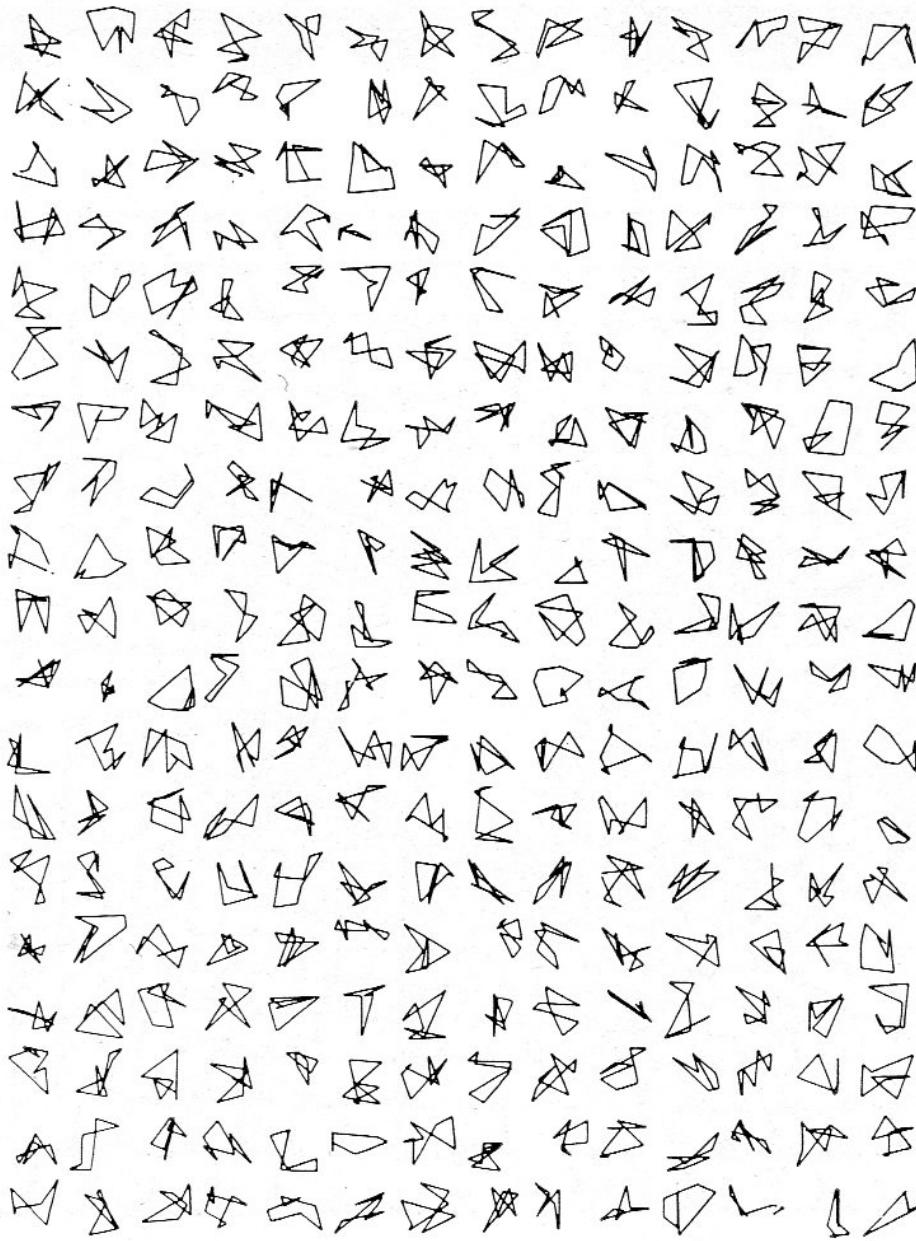
Origins

First known *computergrafik* (or computer art) comes from the 1968 thesis of George Nees.

"Looking at the multi-patterned constructions in Nees' graphics, with their floating ellipsoids, crystalloid spheres and bizarre forms, one cannot help but acknowledge and appreciate their atmospheric and inspiration-inducing effects." - Eva Karcher

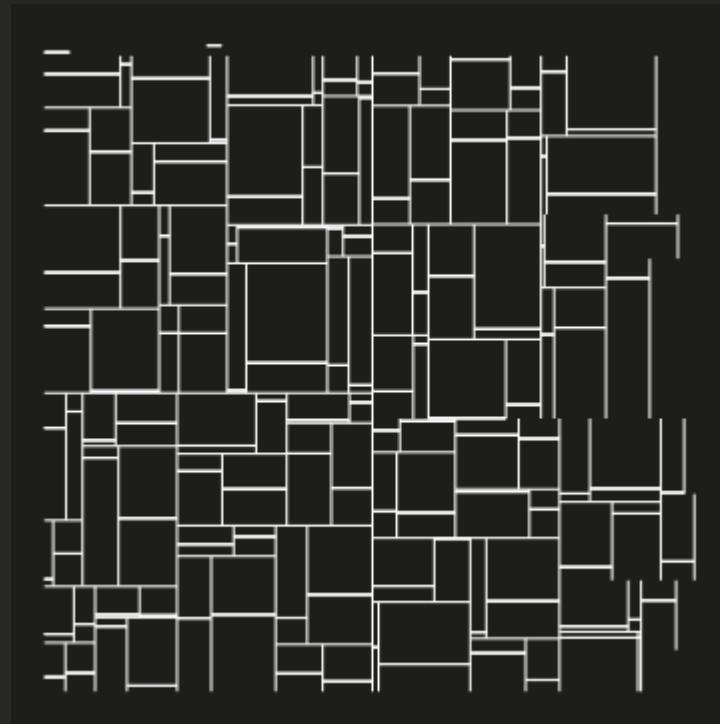
George Nees's 8-Ecke (1968) ("Eight Corner")





Human Rules, "Machine" Run

Generative art is art that in whole or in part has been created with the use of an **autonomous system**.



Example: k-d tree using R package *mathart*

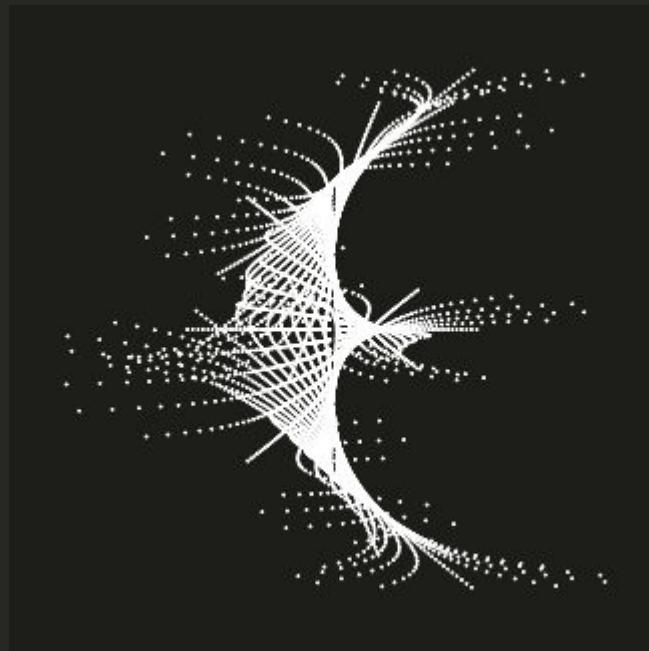
DeepDream

Popular convolutional neural network (CNN) that finds and enhances images into dream-like hallucinogenic art.



Algorithmic art

- Algorithmic art refers to computer-generated art.
- Algorithmic art is generative art, but generative art does not have to be algorithmic art.
- Algorithmic artists are called **algorists**.



Example: harmonograph using R package *mathart*

Other generative art

Robotics



Source: Twitter/@stirman

AxiDraw

Price: \$475, Model: V3/A3; Python API-enabled



Source: evilmadscientist.com/

Other generative art: Biological

Agar art with bacteria (ASM)

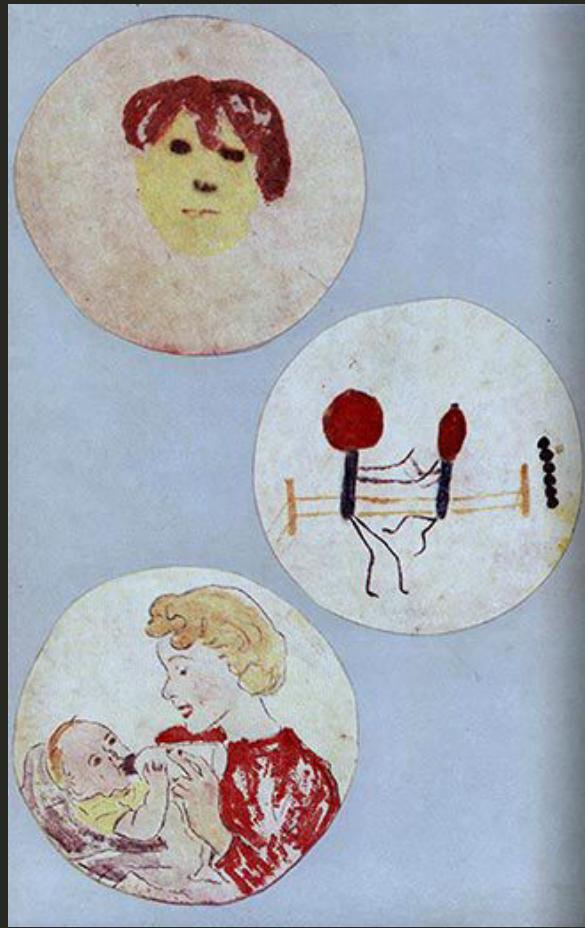
Winner of 4th Annual American Society for Microbiology Agar Art (2020)



Uses the *Candida* yeast species:

- Green - common in human gut
- Metallic green - used for DNA fingerprinting
- Blue - commonly seen alongside HIV infections
- Pink - used in chocolate production
- Purple - yeast infections
- White - common on human hands

Agar art with bacteria



Source: smithsonianmag.com

Agar art



- Messy scientist and son of a pig farmer.
- Enjoyed painting cultures on petri dishes.
- Treated syphilis and had a lot of patients that were painters at St. Mary's in London.
- Kept his desk messy and left petri dishes everywhere on his lab benches.
- One day in September 1928, he returned from a trip to discover a goop growing into a stack of abandoned bacterial cultures and killing them.
- That circle of goop was fungus.
- **Alexander Fleming** had discovered the antibiotic properties of what would become known as *penicillin*.



Social Media Trends

#genuary2021

Daily code prompts to make generative art in the month of "Genuary"

Examples:

- Jan 4. Small areas of symmetry.
- Jan 18. One process grows, another process prunes.
- Jan 22. Draw a line. Wrong answers only.
- Jan 29. Any shape, none can touch.

Source: genuary2021.github.io

#genuary2021



Thomas Lin Pedersen
@thomasp85 

#genuary2021 — Celebrating the last day of #genuary by letting one of the earlier systems fall apart due to the sad trap of gravity... This month have been a blast (but tough)

Replicate a natural concept (e.g. gravity, flocking, path following).



4:05 PM · Jan 31, 2021 

 87  5  Copy link to Tweet

#genuary2021

 **Matthew Hughes** 
@tasty_plots

#genuary day 30, replicate a natural concept.
This is based on flocking code but I think it looks
more like shoaling fish.

#genuary2021 #generative #creativecoding
#processing #digitalart

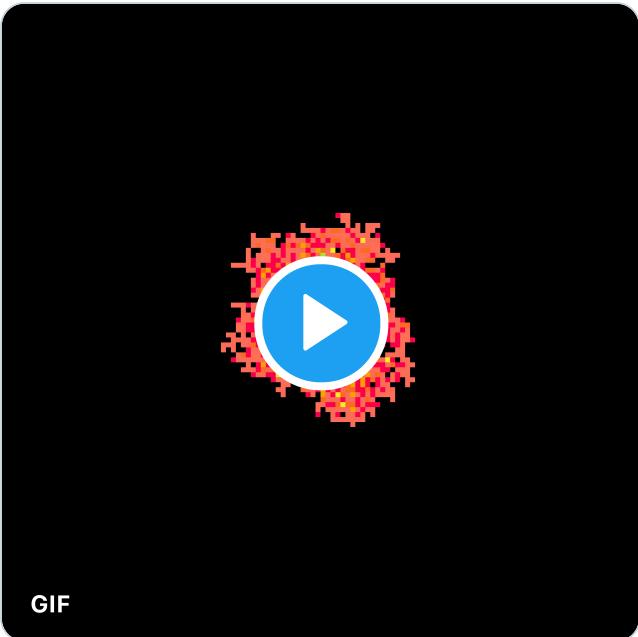


12:29 PM · Jan 30, 2021 

#genuary2021

 **Superfluid**
@superflui_d 

One process grows, another process prunes
[#Genuary2021](#) [#pico8](#) [#tweetcart](#) (code in reply)



GIF

8:04 AM · Jan 18, 2021 

 34  2  Copy link to Tweet

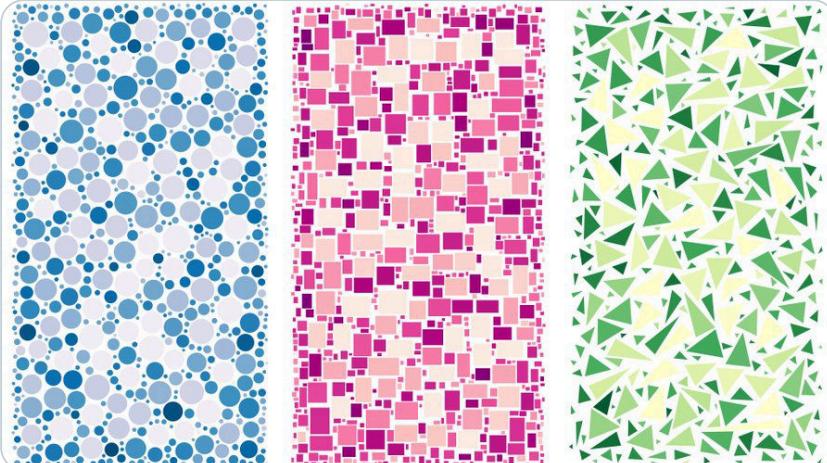
#genuary2021



Cameron Patrick
@camjpatrick



#genuary2021 - late to the party but trying my hand at some generative art. Today's prompt: "Any shape, none can touch."



4:08 PM · Jan 28, 2021

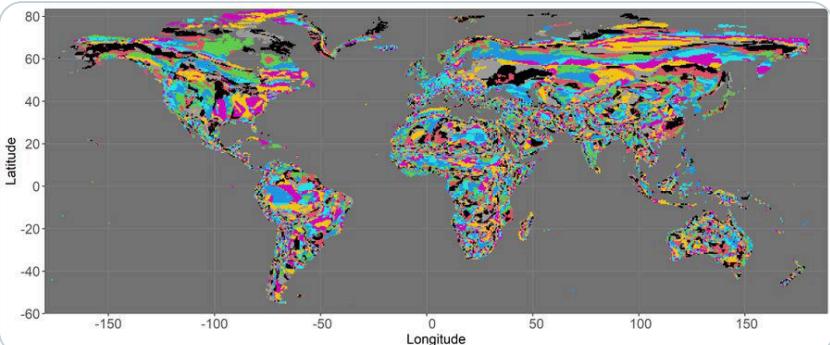


 27  2  Copy link to Tweet

@accidental_aRt

 **Nick Crouch** 
@NCrouch89

A pretty solid effort for [@accidental_aRt](#) I think



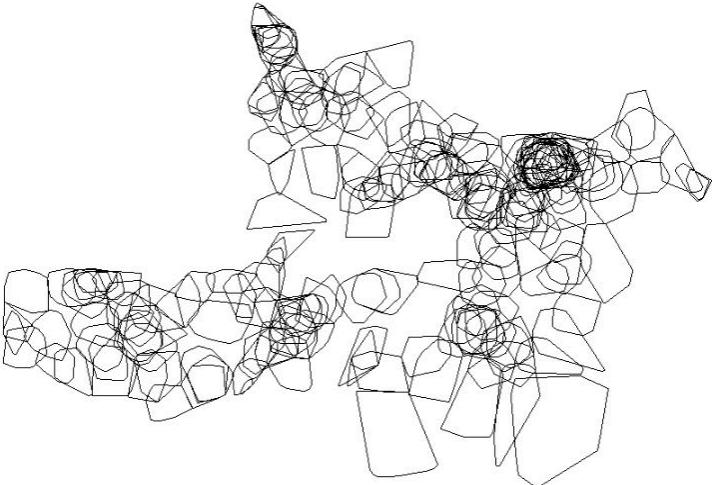
10:54 AM · Apr 2, 2021 

 17  1  Copy link to Tweet

@accidental_aRt

 **Justin Millar**
@justinjmillar 

Public health data science is my passion [#rstats](#)
[#accidental aRt](#)
[@accidental_aRt](#)



3:04 PM · Mar 25, 2021 

 23  3  Copy link to Tweet

@accidental_aRt

This is a Python one.

 Tolki
@TolkiCasts

When you use the wrong arguments for
matplotlib.imshow but it turns out pretty cool



8:40 PM · Oct 27, 2020

i

 49  4  Copy link to Tweet

23 / 33

Make Art. Profit?

@accidental_aRt

 **Mike Kearney** 
@kearneymw 

My accidental **#rstats** art is going up on the office wall! Big day!

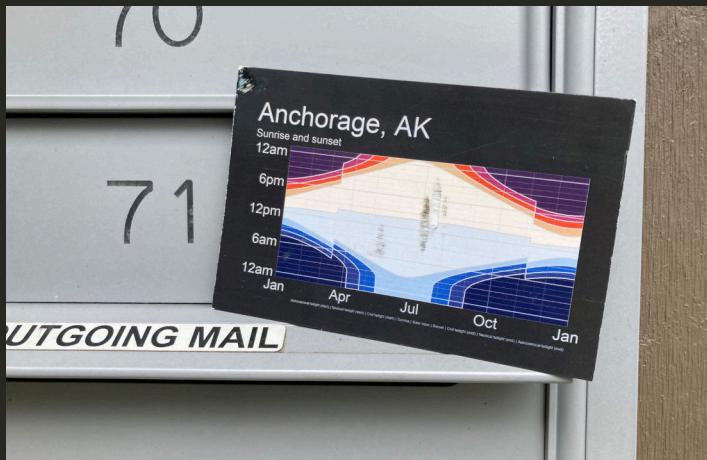


2:38 PM · Mar 10, 2021 

 2.7K  42  Copy link to Tweet 

R package ggirl

(note: it is read as "*gg IRL*", as in "grammar of graphics in real life")



70

71

OUTGOING MAIL

Pay with card

Email fakeemailforreal@gmail.com

Card information

1234 1234 1234 1234 VISA

MM / YY CVC

Name on card

Billing address

United States

Address line 1

Address line 2

City ZIP

State

Powered by stripe | Terms Privacy

Pay \$2.50

ggplot2 postcard A custom printed postcard of a ggplot2 plot.

Subtotal \$2.50

Tax \$0 Enter address to calculate

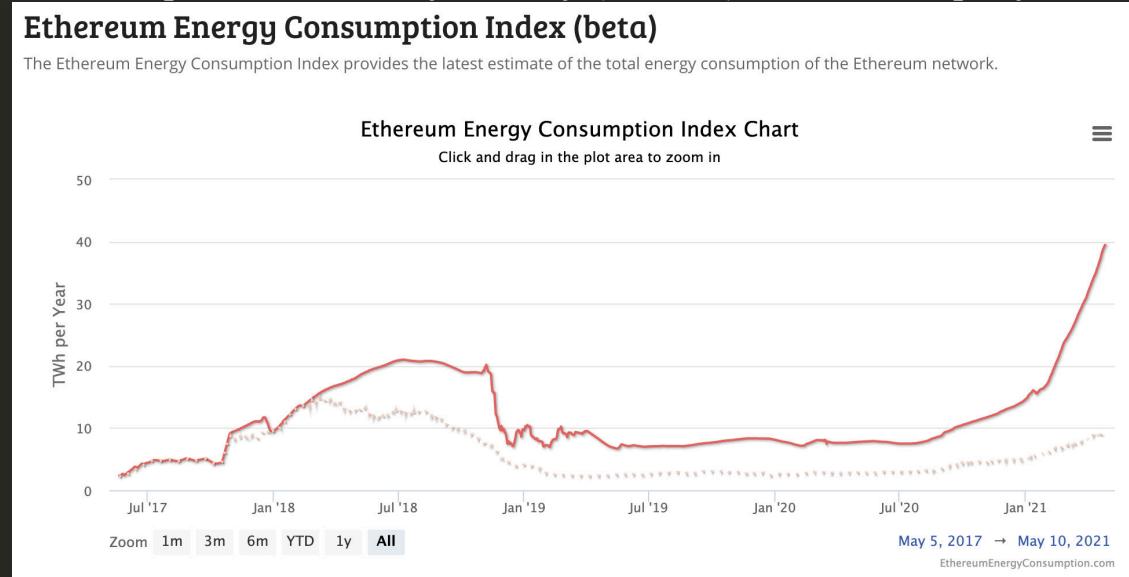
Total due \$2.50

NFTs, non-fungible tokens

- A non-fungible token means it is unique and cannot be replaced with something else.
- A good analogy is a baseball or Pokemon card. If you trade away the 1st print of a card, you no longer have that unique item.
- An NFT is a token. It is a unit of data stored on a digital ledger.
- The ledger is a blockchain and this ledger certifies that a digital file is unique.

Why is it bad?

- Digital art is... digital. There's no stopping someone from copying and reproducing your art.
- Not good for the environment.
- NYC consumes 143.2 TWh per year.
- Estimated consumption of ETH yesterday (4/26/21): 39.5 TWh per year
- Estimated consumption of Bitcoin yesterday (4/26/21): 106.4 TWh per year



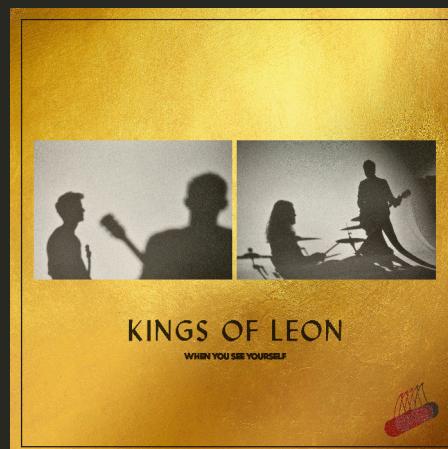
Source: <https://digiconomist.net/>

Why is it good?

New gateway for artists:

- Artists can get commission every time their work is re-sold.
- Musical artists have already jumped on board:
 - Eminem (over the weekend released art in his 'Shadycon').
 - One item is on sale for \$100k right now.
 - Kings of Leon released their latest album as a NFT.
 - They made ~\$2M from selling ~6,500 NFTs certifying a physical vinyl and digital download.

It is about exclusivity and digital memorabilia.



A fool and their money ...

Is this your tweet?

[Connect your account](#)

 jack 
@jack

just setting up my twtrr

3:50 PM · Mar 21, 2006

165.4K  9.2K   Copy link to Tweet

[SHARE](#)

Owned  by **@sinaEstavi**

[How does this work? >](#)

OFFER HISTORY 

Sold to **@sinaEstavi** for \$2,915,835.47 (◊ 1630.5826)
MAR. 22

@sinaEstavi offered \$2,500,000.00 (◊ 1630.5826)
MAR. 6

@justinsuntron offered \$2,000,000.00 (◊ 1304.466)
MAR. 6

@sinaEstavi offered \$1,500,000.00 (◊ 978.3495)
MAR. 6



▼



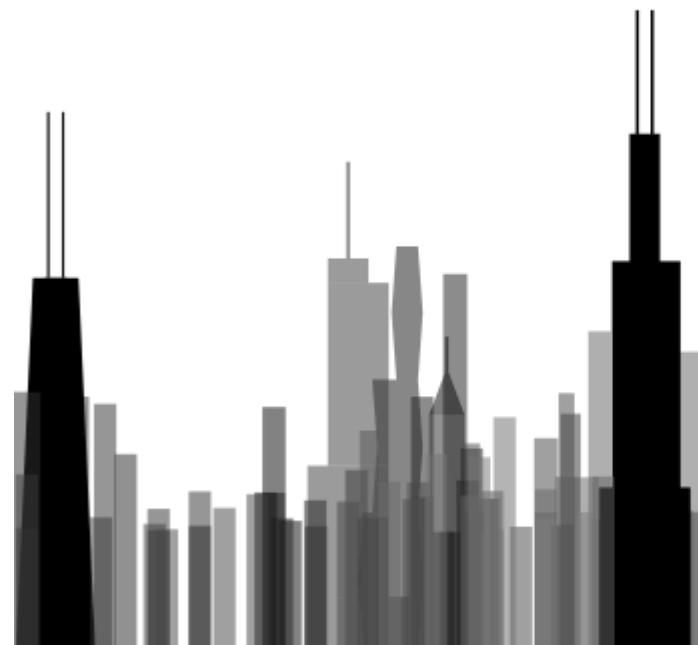
Search items, collections, and accounts

GIFS - UQ6A1ktohR



Chicago Skyline Rotated

0





▼



Search items, collections, and accounts

⚡ New

Art

Domain Names

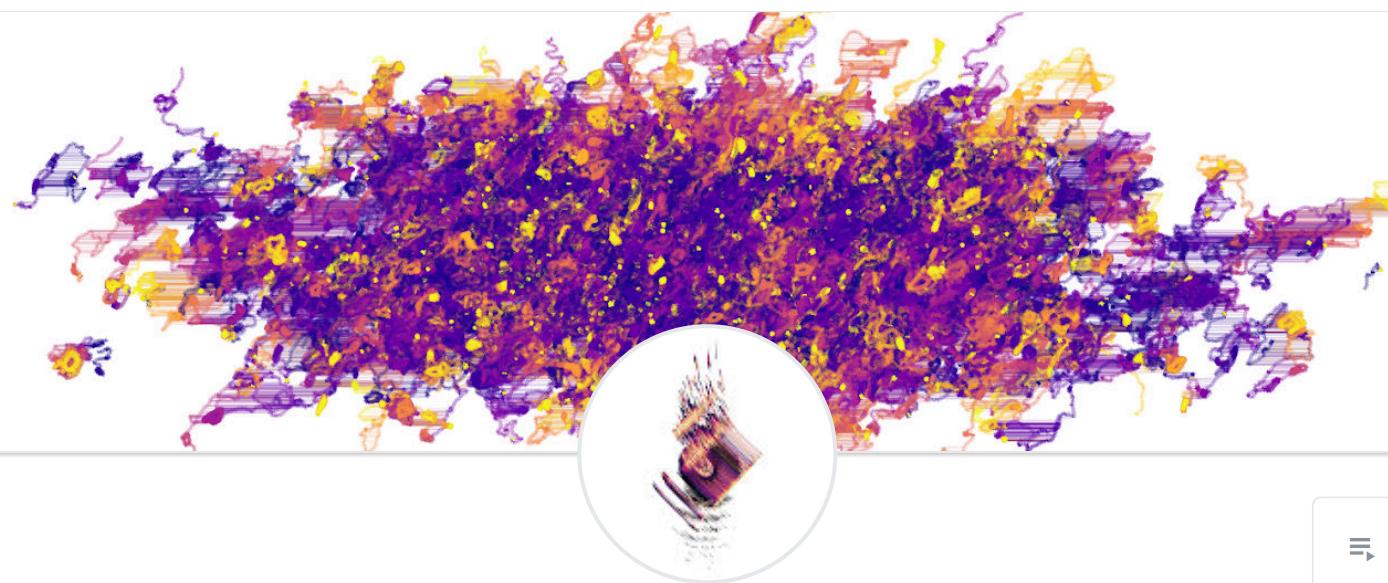
Virtual Worlds

Trading Cards

Collectibles

Sports

Utility



Generative aRtistry

4

items

1

owners

Ξ0

Ξ0.00

Thanks!

Slides created via the R package **xaringan**.

Also, **mathart**

Code: **GitHub**