



UNIVERSITÀ
DEGLI STUDI
DI BERGAMO

Dipartimento
di Lingue, Letterature
e Culture Straniere

Enzo Gentile

Accademia di Belle Arti di Brera



BRERA

ACCADEMIA DI BELLE ARTI

Seminario

Università degli Studi di Bergamo

Plurilinguismo e social network nella comunicazione museale digitale:
il progetto Museo poliglotta

Giovedì
30 giugno
2022
ore 12.00

**AI e WebXR, nuove forme di arte e di
comunicazione museale immersiva e interattiva**

Bergamo-Brescia
Capitale Italiana
della Cultura
2023



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Servizi digitali più utilizzati nel museo (Istat)

Sito web: 57%

Social network: 41%

Newsletter: 25%

Tecnologie multimediali: percentuali basse

Allestimenti interattivi o le ricostruzioni virtuali : 20%

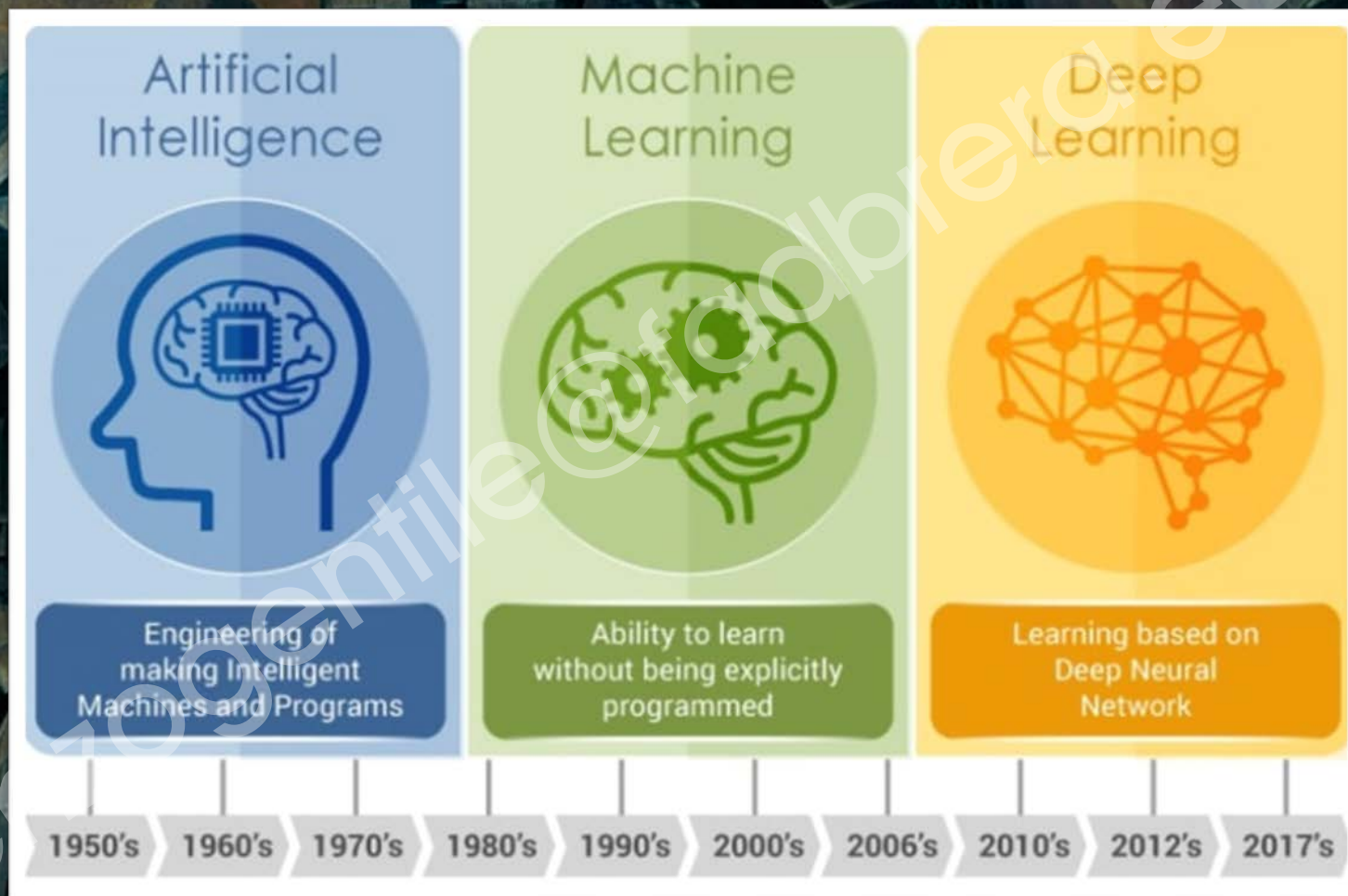
Visita virtuale : 14%



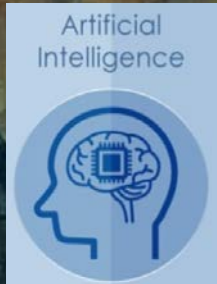
(dal sito art-museum.it fonte Palazzo Madama Torino e Osservatorio Innovazione Digitale nei Beni e Attività Culturali)

AI ? WEBXR ?

AI: Evolution



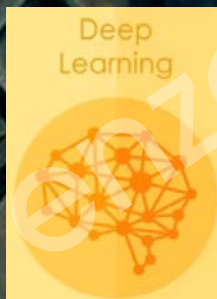
AI: EVOLUTION



AI (Artificial Intelligence): technological discipline that involves creating smarter machines.



ML (Machine Learning): subset of AI that refers to systems that can learn by themselves.



DL (Deep Learning): ML that learn from experience on large data sets.



Museum?

1

Examining the Impact of Artificial Intelligence in Museums

Collections

Museums have **tremendous** amounts of data

Galleries, libraries, archives, and museums collections data **would be structured and well classified.**

More than **90% of data is unstructured**, human-generated and sourced from various disparate entities”

We can assume that museum collection data would benefit from some **clean-up**, perhaps even an overhaul.

For an artificial intelligence algorithm, it is extremely simple to **recognize recurring visual or chromatic elements**, associate them with a current or an artistic expression and thus create more coherent collections and catalogs.

2

Examining the Impact of Artificial Intelligence in Museums

Ticketing & Attendance

Imagine taking those massive sets of ticket and visitor traffic data and using AI to look for clear **correlations** between them and social media activity, weather, advertising spending and other variables.

It's feasible to say that museum departments could discover new and insightful information that could be used to **make predicting crowd flow, allocating staffing resources, and overall planning more efficient.**

3

Examining the Impact of Artificial Intelligence in Museums

Fundraising

New tools can assist development teams on their **fundraising campaigns** by deciphering trends, navigating through the social graph, and automating aspects of the donor outreach.

Although relatively new to the market, software companies such as *Gravty* and *Affectly* have used some of the aforementioned techniques **to help nonprofits fundraise** more effectively.

4...

Examining the Impact of Artificial Intelligence in Museums

Machine Vision's Impact on: **Sentiment Analysis**

Text / Character Recognition

Extracting Color Composition

Art Authentication

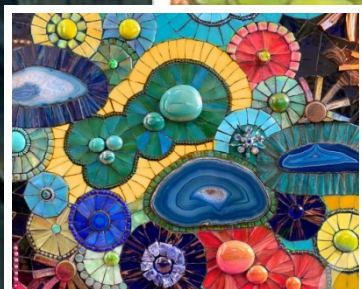
...



Stephen Hawking predicts "computers will overtake humans with AI within the next 100 years. When that happens, we need to make sure the computer have goals aligned with ours."

This may sound ominous, but we can be (almost) certain that museums and cultural institutions will have mankind's best interests in mind.

This is just the beginning.



AI: qualche link ed esempi pratici di utilizzo

AI: un passo indietro

Uses **software algorithms** to create new forms of artistic language.

Is the art of turning numbers into visual and sound processes.

Makes extensive use of chaos theory, mathematics, physics and interaction via webcams, microphones and other devices so often totally autonomous.

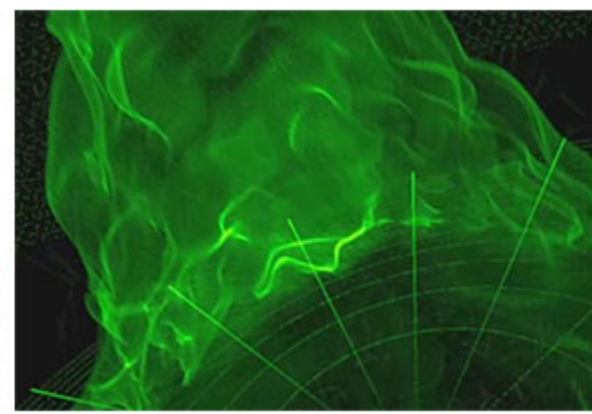
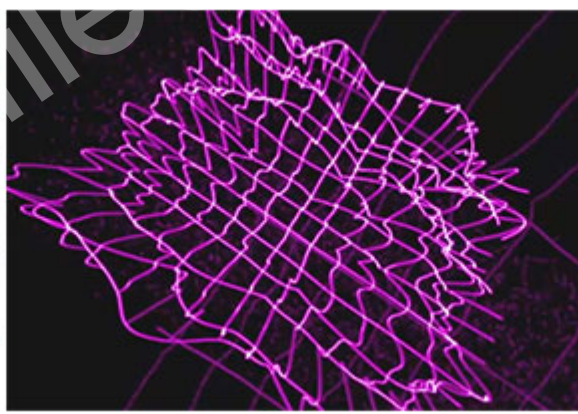
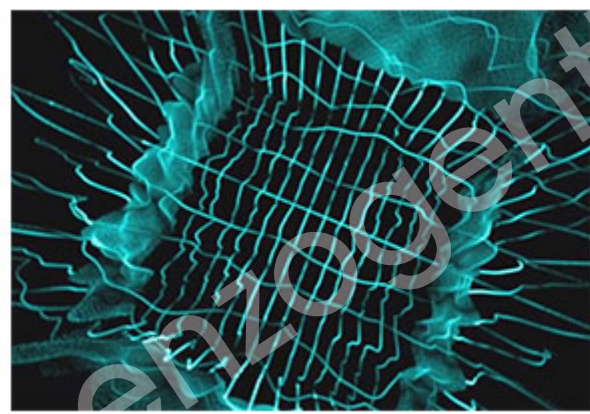
Generative art & creative coding



AI: un passo indietro

Generative software art

A generative program might produce **poems**, or **images**, or **melodies**, or **animated visuals**. Usually, the objective of such a program is to create **different results each time** it is executed and generally, it is hoped that these results have aesthetic merit in their own right, and that they are distinguishable from each other, in interesting ways.



AI: un passo indietro

Programming

is an interface between man and machine;
it is a clean, logical discipline, with clearly defined aims.

Art

is an emotional subject, highly subjective & defying definition.

Generative software art



Generative Art is the meeting place between the two.

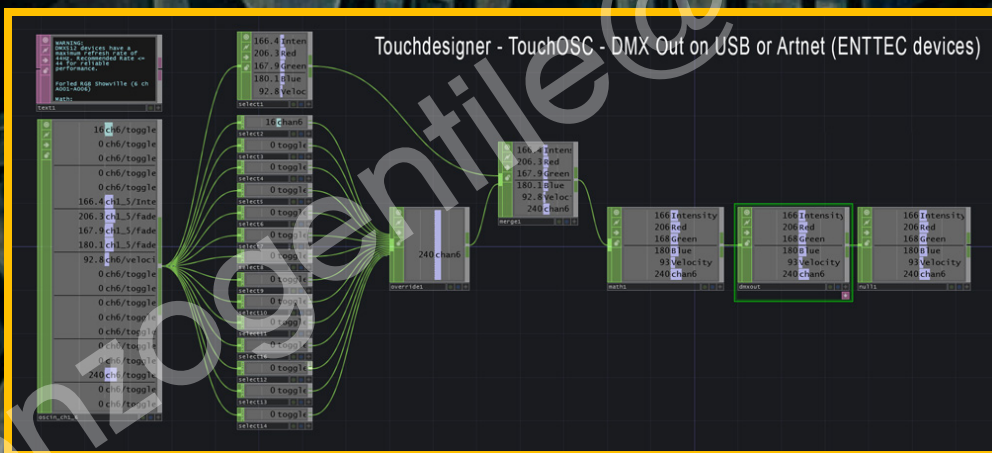
Matt Pearson

AI: un passo indietro

Creative Coding

The languages used are mainly of two types:

- classical programming with lines of code →
- with nodes (graphical) ↘



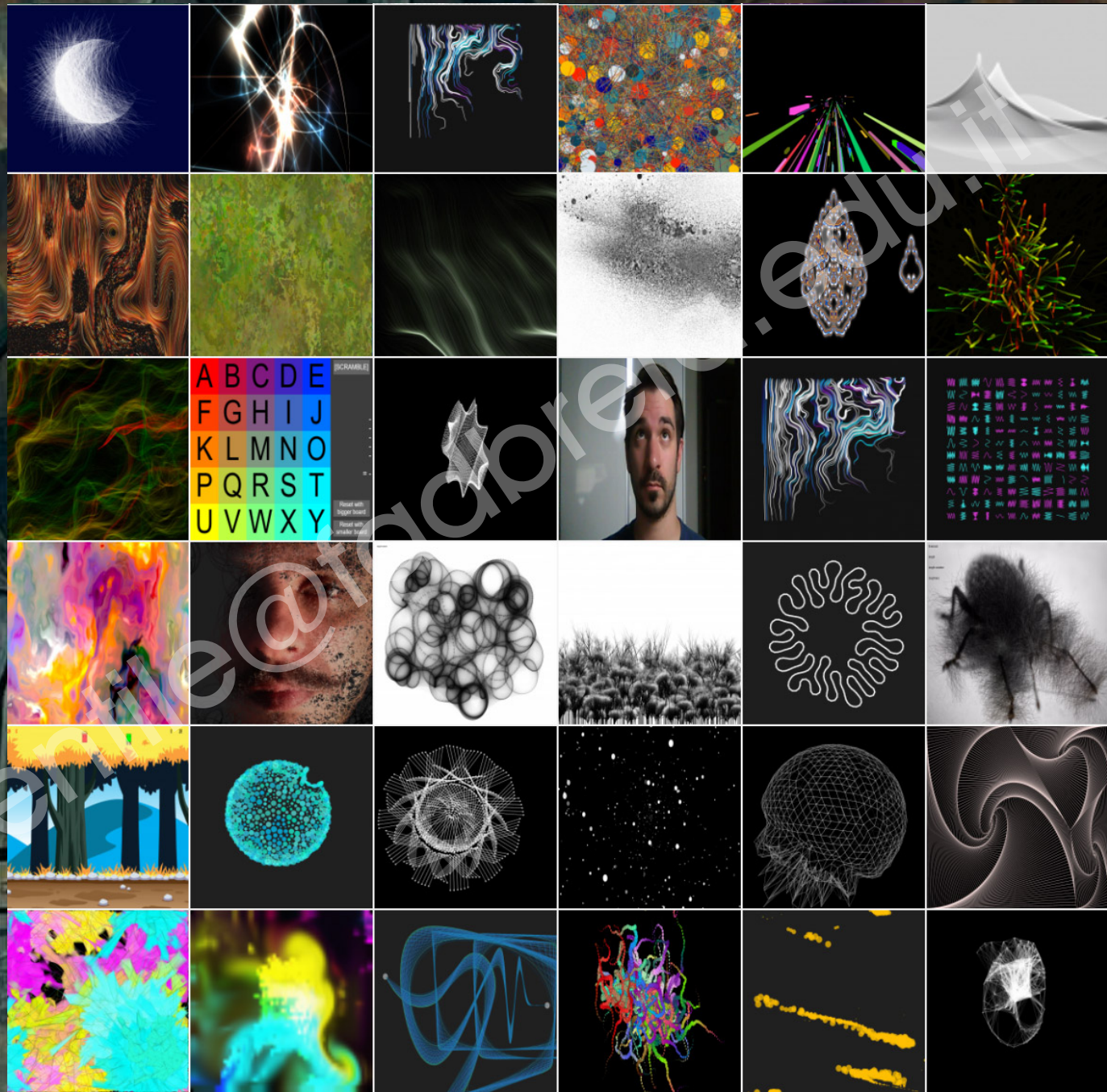
```

polish_japanese_academy
1 /**
2  * Example Processing code.
3  *
4  */
5
6 int unit = 40;
7 int count;
8
9 void setup() {
10   size(640, 360);
11   noStroke();
12   int wideCount = width / unit;
13   int highCount = height / unit;
14   count = wideCount * highCount;
15 }
16
17 void draw() {
18   background(0);
19

```

SKETCHES

Collection 01



Shaders



"Antialiasing (sort of)" by iq 8309 124



"Seascape" by TDM 330866 1074



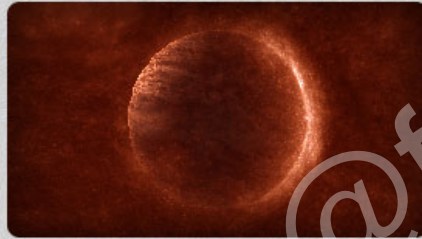
"Topologica" by otaviogood 3376 106



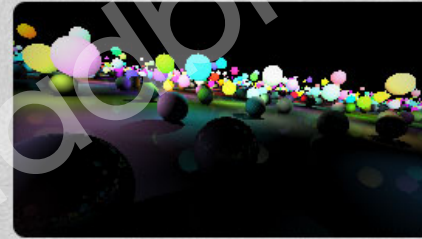
"Storm" by iq 22062 196



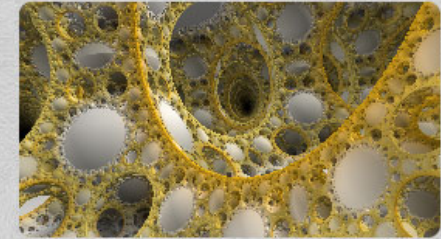
"Warping - procedural 1" by iq 7923 142



"Hot Shower" by Kali 8378 206



"A lot of spheres" by reinder 5540 91



"Apollonian" by iq 10963 149



"Angels" by iq 10472 115



"Warping - procedural 2" by iq 35333 131



"The Cave" by BoyC 7156 129



"Elevated" by iq 99440 441

Shaders are used widely in cinema post processing, computer-generated imagery and video games to produce a seemingly infinite range of effects.

SHADERS

Collection 01



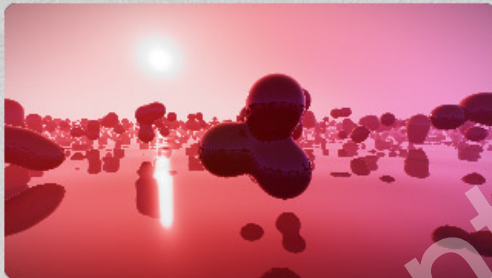
"[SH18] The Eye" by knarkowicz 👁️ 2114 ❤️ 83



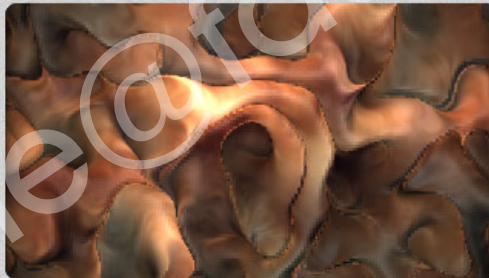
"Noise blur" by iq 👁️ 15322 ❤️ 178



"Iterations - worms" by iq 👁️ 1941 ❤️ 19



"Are Gee Be" by jasminpatry 👁️ 5000 ❤️ 87



"Iterations - guts" by iq 👁️ 6862 ❤️ 31



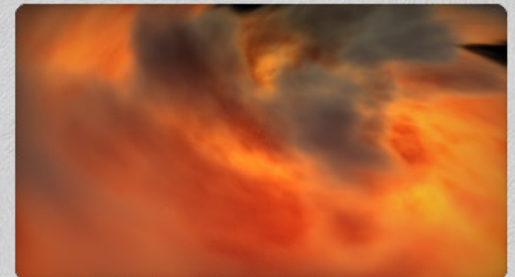
"Cell" by iq 👁️ 8849 ❤️ 81



"Morning city" by Devin 👁️ 13518 ❤️ 96



"Insect" by iq 👁️ 20490 ❤️ 105



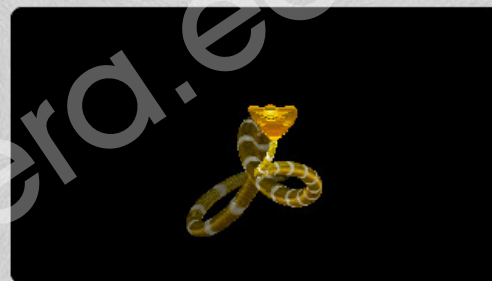
"Hell" by iq 👁️ 32986 ❤️ 416



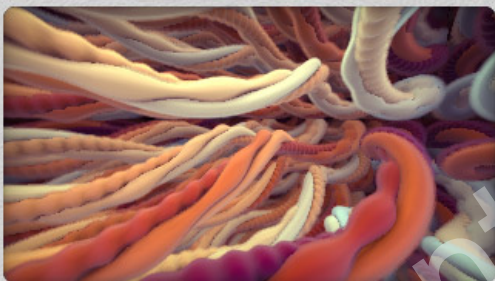
"Alien cocoons" by XT95 👁️ 5218 ❤️ 110



"Snail" by iq 👁️ 94256 ❤️ 427



"Illusion snake" by Dermenslof 👁️ 456 ❤️ 13



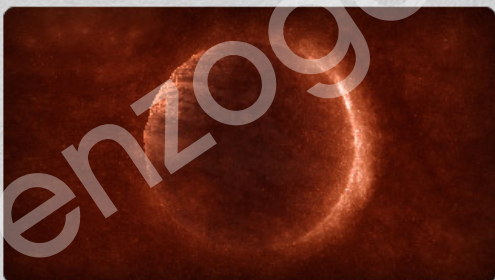
"Antialiasing (sort of)" by iq 👁️ 10424 ❤️ 149



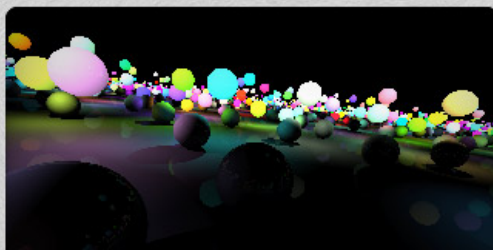
"Seascape" by TDM 👁️ 397113 ❤️ 1398



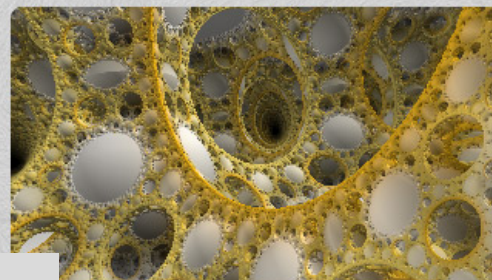
"Topologica" by otaviogood 👁️ 5446 ❤️ 127



"Hot Shower" by Kali 👁️ 10034 ❤️ 242



"Colorful spheres" by iq 👁️ 16153 ❤️ 177



"Fractal" by iq 👁️ 16153 ❤️ 177

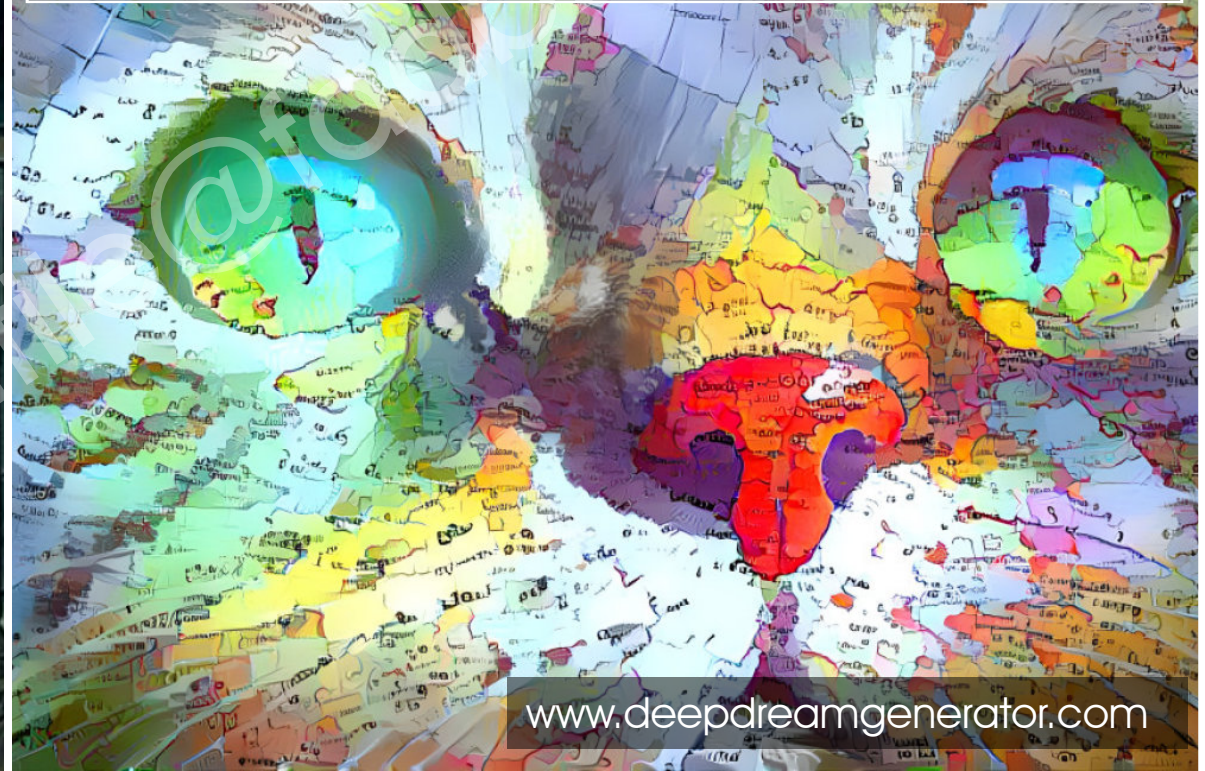
AI: qualche link ed esempi pratici di utilizzo



GAN



A **GAN** or a **generative adversarial network** is a kind of machine learning where two neural networks compete with each other to create something new.



www.deepdreamgenerator.com

AI: qualche link ed esempi pratici di utilizzo

<https://deepdreamgenerator.com/best/year>



AI: qualche link ed esempi pratici di utilizzo

<https://deepdreamgenerator.com/best/year>

GAN esempi di utilizzo:

Generazioni di immagini basate su testi o comandi vocali

Generazione di oggetti complessi anche 3D

Miglioramento di immagini e video

Creazione di nuovi oggetti di design

Creazione di sintesi e mix di immagini, musica, racconti...

...

www.imagen.research.google

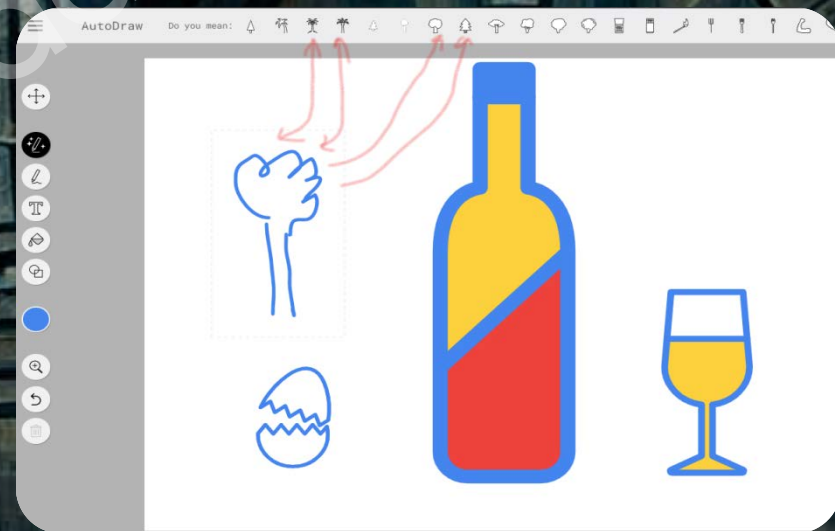
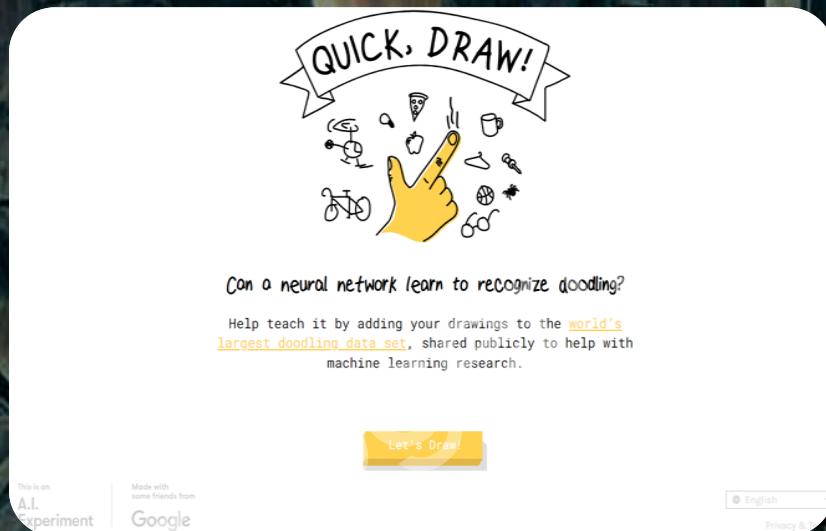


AI: qualche link ed esempi pratici di utilizzo

ML: riconoscimento schizzi a mano

<https://quickdraw.withgoogle.com/>

www.autodraw.com/



AI: qualche link ed esempi pratici di utilizzo

<https://imagen.research.google/>

A brain riding a rocketship heading
towards the moon.



A transparent sculpture of a duck
made out of glass.



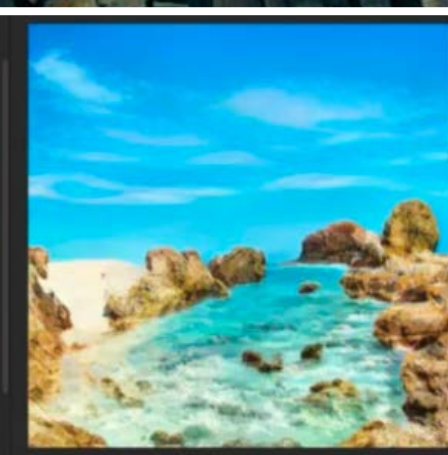
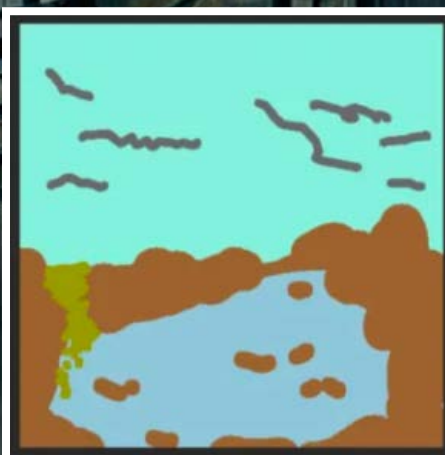
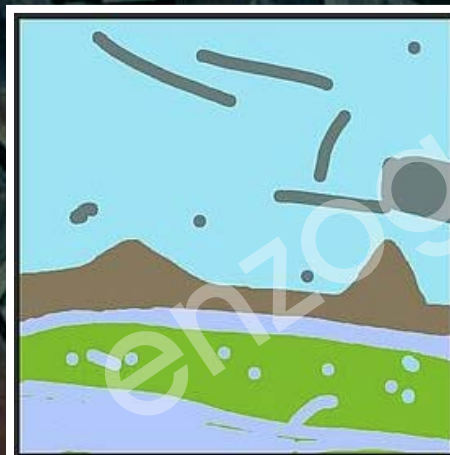
AI: qualche link ed esempi pratici di utilizzo

<http://gaugan.org/gaugan2/>

www.nvidia.com/en-us/research/ai-demos/



<http://gaugan.org/gaugan2/>





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<http://gaugan.org/gaugan2/>





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AI: qualche link ed esempi pratici di utilizzo

teachablemachine.withgoogle.com/



Image Project

Teach based on images, from files or your webcam.



Audio Project

Teach based on one-second-long sounds, from files or your microphone.



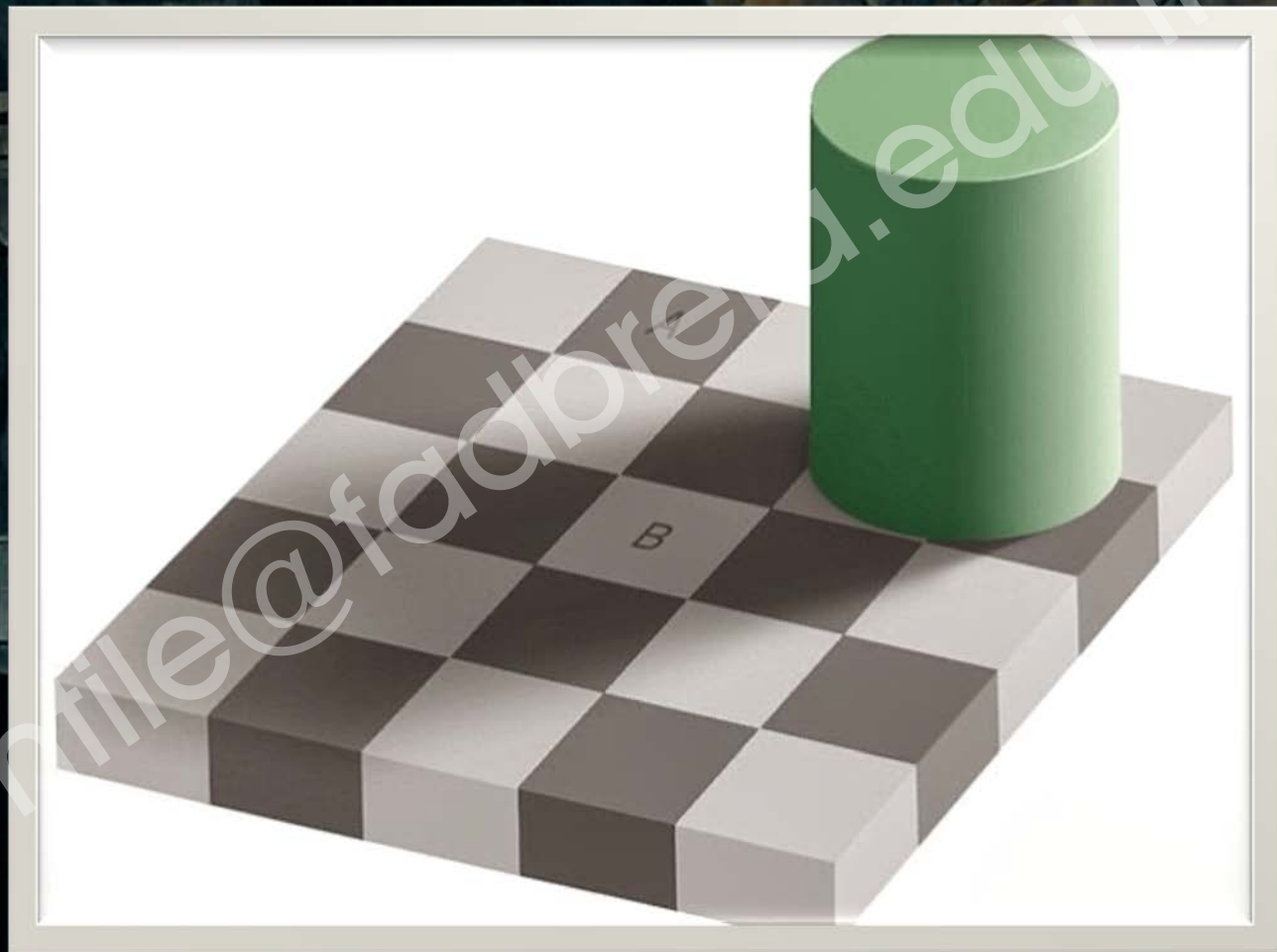
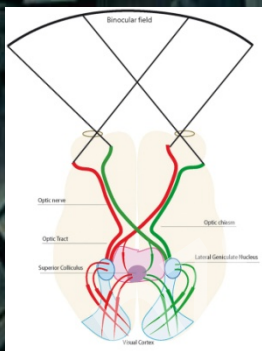
Pose Project

Teach based on images, from files or your webcam.

Creative Tools to Generate AI Art: <https://aiartists.org/ai-generated-art-tools>

Parte 2

When the visual system rendering fails...



Are the squares marked A and B the same shade of gray?

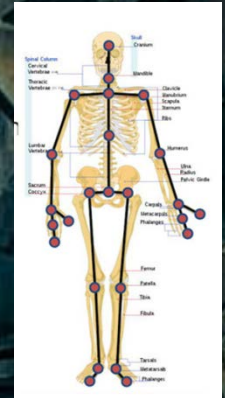
Comunicazione

Standard : passiva – unidirezionale
interattiva = maggior coinvolgimento

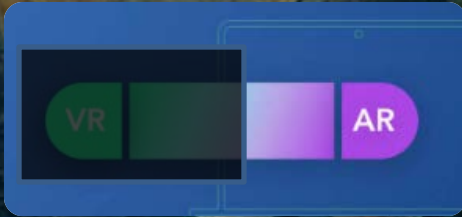
UI = User Interface

GUI = Graphical User Interface

NUI = Natural User Interface
(modalità naturali di comunicazione)



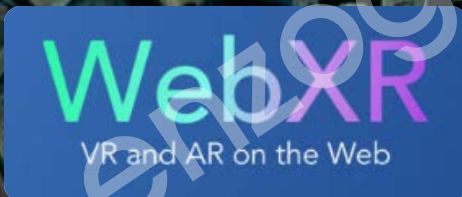
WebAR v/s WebVR v/s WebXR



WebAR (Augmented Reality on the web)
Adds digital elements to the real world around a user.



WebVR (Virtual Reality on the web)
Takes the user out of the real world and places them in a virtual world.



WebXR (EXtended Reality on the web)
Cover Augmented Reality and Virtual Reality.

www.vrallart.com

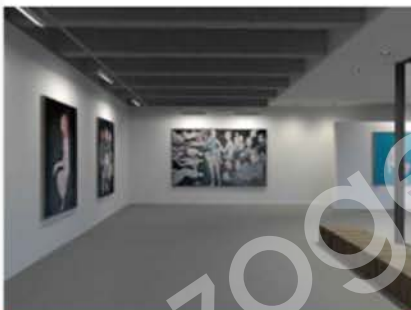
EXPLORE

Explore VR Art Exhibitions

Experience VR art exhibitions with VR devices or view it in your browser on your computer

Artists

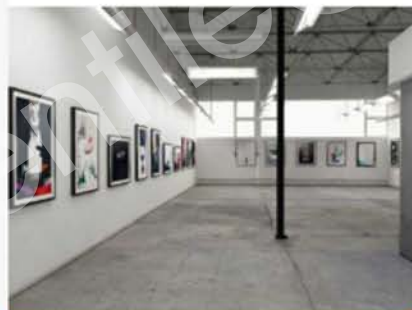
View real art by contemporary artists in virtual spaces.



EXPLORE EXHIBITIONS

Galleries

Virtually visit real galleries and enjoy their collections.



EXPLORE EXHIBITIONS

Museums

Enjoy artworks in virtual extensions of real museums.



EXPLORE EXHIBITIONS

Collectors

Experience art from private collections in Virtual Reality.



EXPLORE EXHIBITIONS

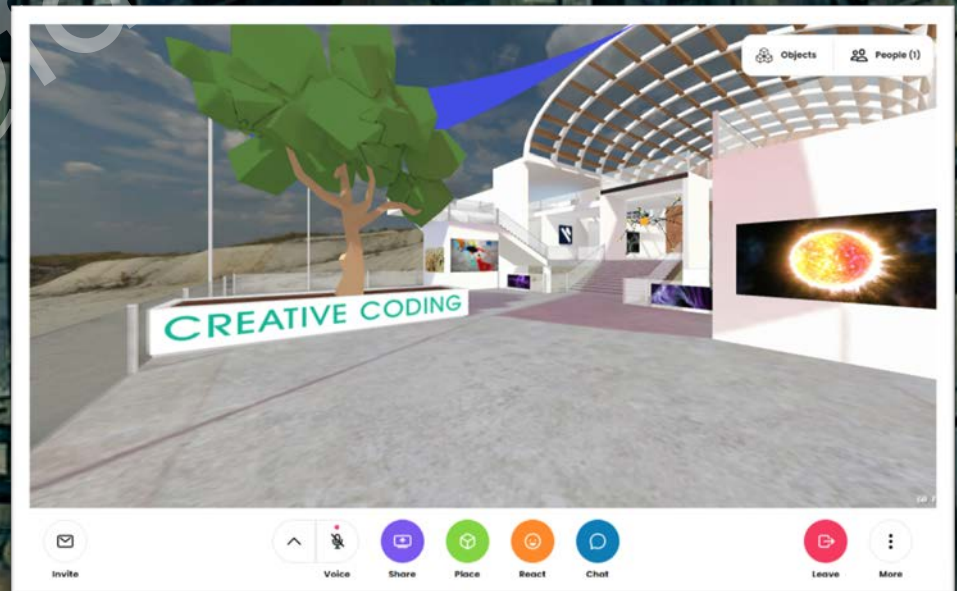
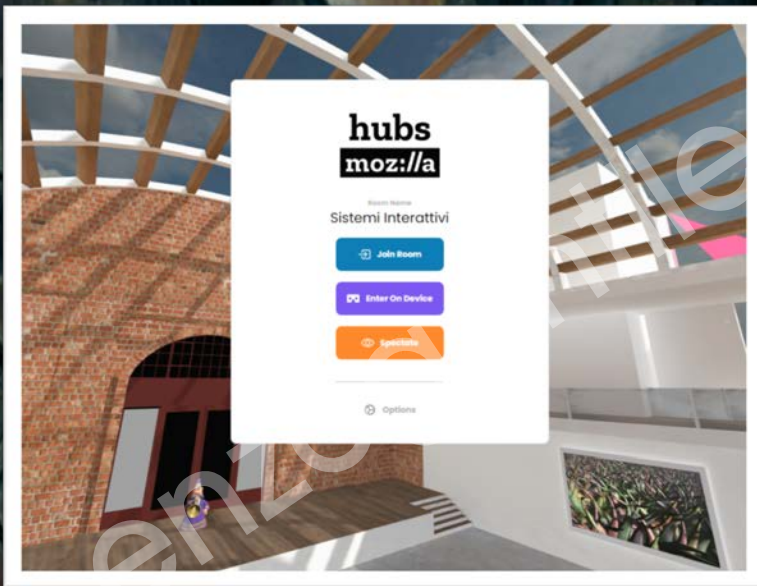
Mozilla hubs & spoke

Meet, share and collaborate together in private 3D virtual spaces = **Social Network**



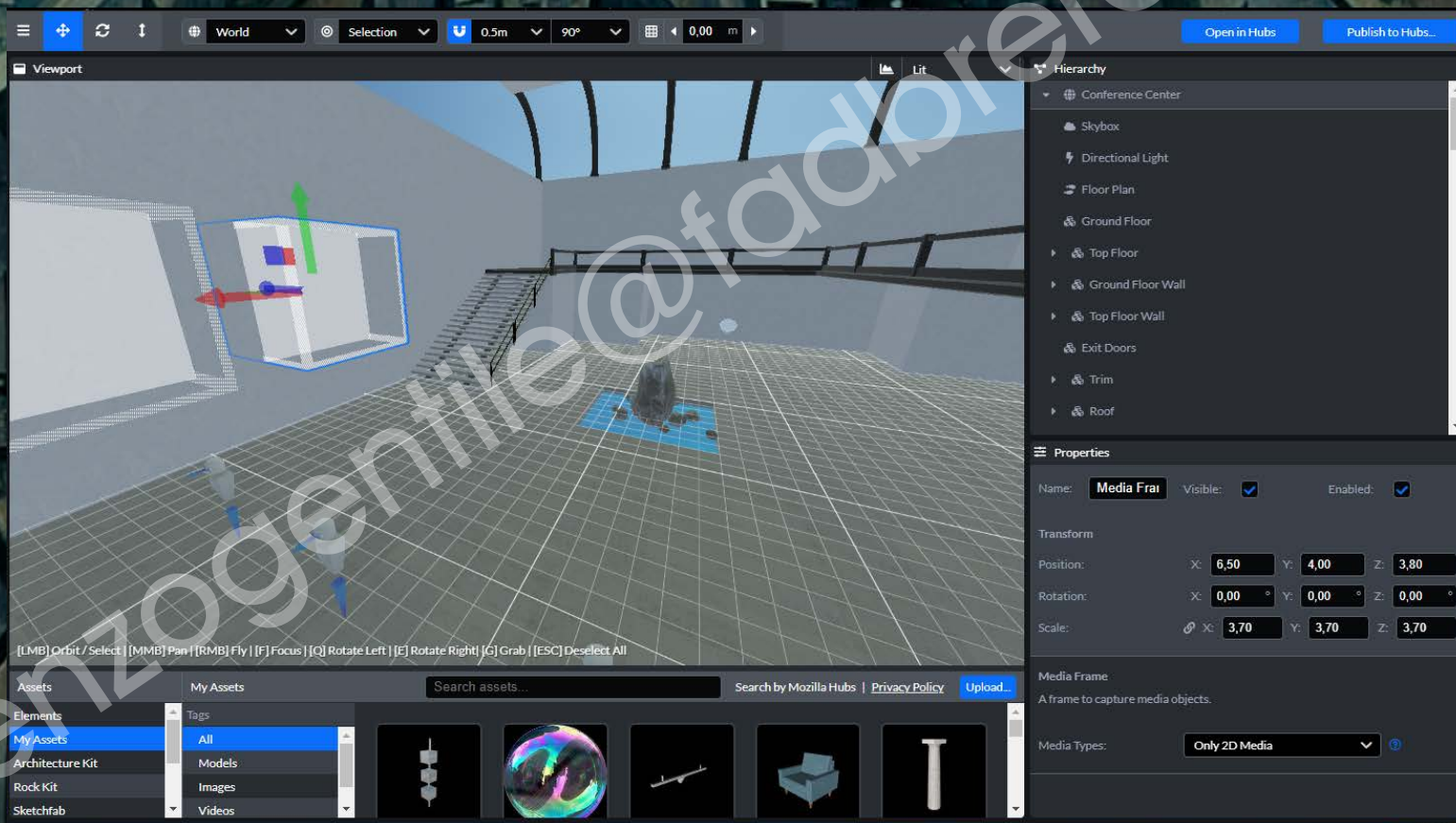
Mozilla Hubs - <https://hubs.mozilla.com/>

Hubs is a **virtual collaboration platform** that runs in your **browser**.
With Hubs you can **create your own 3D spaces** with a single click.
Invite others to join using a URL.
No installation or app store required.



Mozilla Spoke - <https://hubs.mozilla.com/spoke>

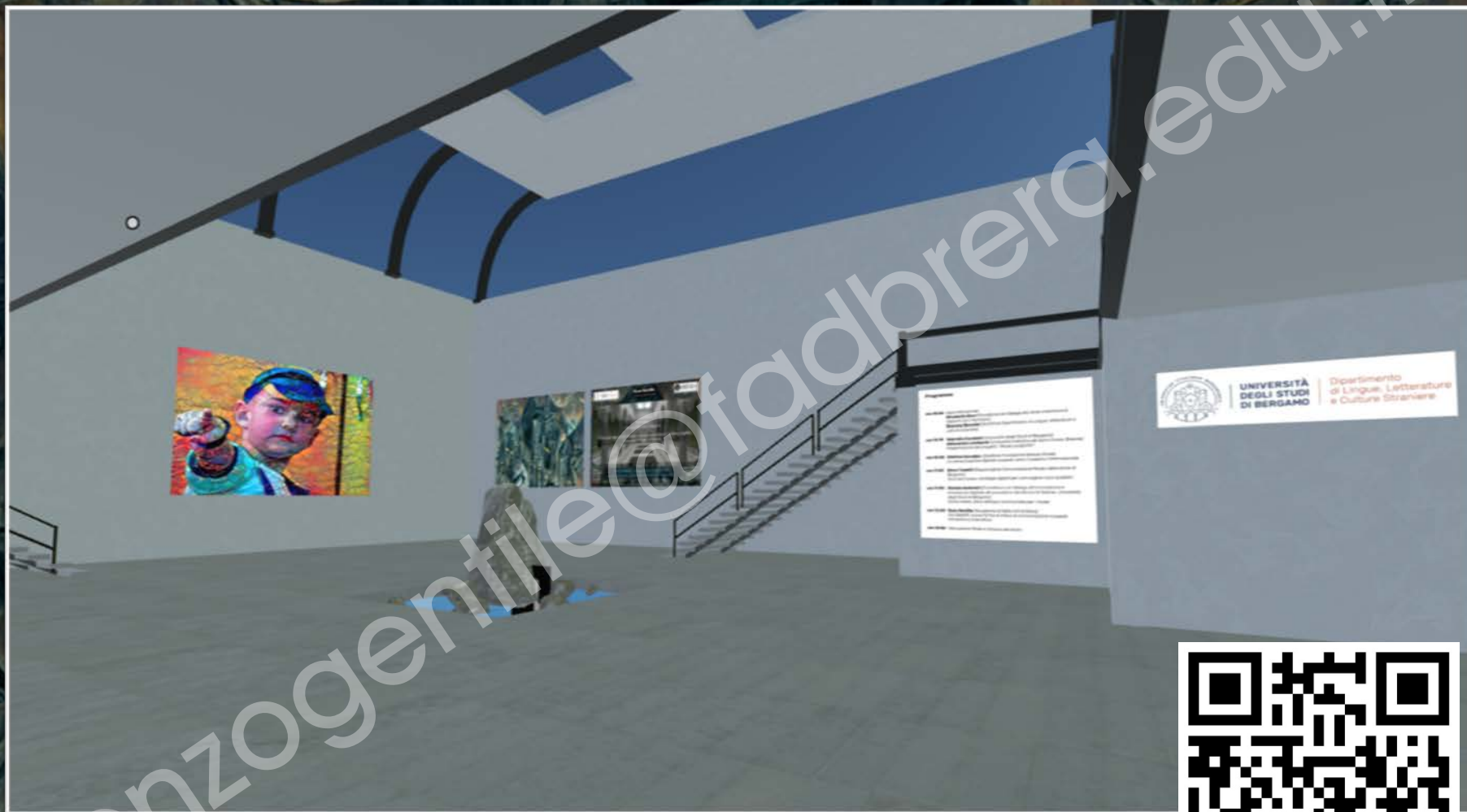
Create 3D social scenes for Hubs.



Mozilla Hello - <https://mixedreality.mozilla.org/hello-webxr/>

WebXR Mozilla Mixed Reality





<https://hub.link/n9FwyTN>





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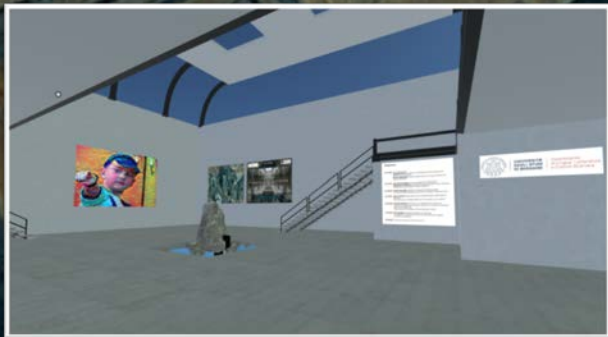
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Virtual meeting in
Mozilla Hubs



Grazie per l'attenzione!

www.enzogentile.com

www.anughea.com



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www.twitter.com/enzogentile

