A.I. amenable intelligence

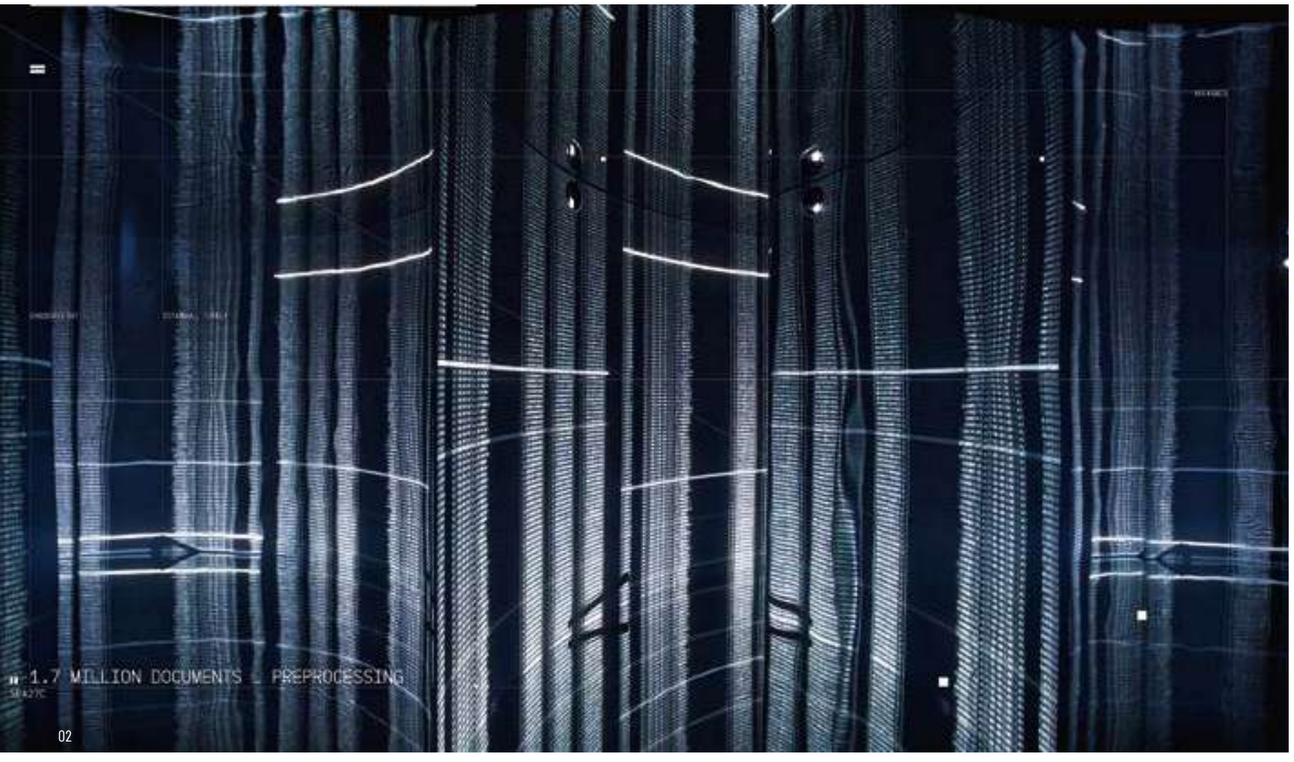
research ricerca**: Melissa Magnani** | **season autumn/winter 2020.21** stagione autunno/inverno 2020.21

Artificial Intelligence: sensitive, docile, digital,
changeable, dream-like, unsettling intelligence.
Technological unconsciousness, computer imagination, electronically processed art.
Faces and portraits generated by a computer that contains infinite datasets,
that studies forms, that knows how to recognise eyes, mouths,
where and how they are, and can recreate them autonomously.
Inputs, codes, algorithms.
Sensors, agents, actuators, computational systems, artificial neural networks.
It's the fascination with the process, highly technological but
never aseptic, never infallible or defined.
The operation preserves a dose of imperfection,
comes close to human nature, to the creating impulse of all living beings.
It generates empathy, a closeness between humans and machines.
It spreads a new vision of the future: open, advanced, always evolving.
This is the era of computer science trust: information is open source,
research is free, shared, available.
Art dialogues with science.
Researchers, philosophers, artists, creative coders
contribute to the production of a new visual experience.
It is the poetic and scientific season of automatic learning.
The poetry of generative adversarial networks (GAN),
of computers that perceive, act and compose.
Artificial aesthetic, tangible vision: clothes are transformable substances
with deformed aspects and surfaces and hypertrophic,
poorly pleated, rolled up and knotted details.
Jackets, sometimes quilted, wrap around the body.
Dismantled clothes, without front or reverse sides, are in perpetual change.
Textures feature swellings, puckering, translucent effects.
Patent, leather and high-tech fabrics alternate with
soft knits and structured woollens.
The penetrating darkness of grey, petrol blue and malachite green
offsets absolute white.

Intelligenza Artificiale: intelligenza sensibile,
docile e digitale, mutevole, onirica, inquieta.
Inconscio tecnologico, immaginario informatico, arte elaborata elettronicamente.
Volti, ritratti generati da un computer che contiene dataset infiniti,
che studia le forme, che sa riconoscere gli occhi, le bocche,
dove sono, come sono, e li sa autonomamente ricreare.
Input, codici, algoritmi.
Sensori, agenti, attuatori, sistemi computazionali, reti neurali artificiali.
È il fascino del processo, altamente tecnologico ma
mai asettico, mai infallibile o definito.
L'operazione conserva una dose di imperfezione,
si avvicina alla natura umana, alla spinta creatrice di ogni essere vivente.
Genera empatia, vicinanza tra l'uomo e la macchina.
Diffonde una nuova visione del futuro: aperta, avanzata, sempre in evoluzione.
È l'era della fiducia informatica: le informazioni sono open source,
la ricerca è libera, condivisa, disponibile.
L'arte dialoga con la scienza.
Ricercatori, filosofi, artisti, creative coder
contribuiscono alla produzione di una nuova esperienza visiva.
È la stagione poetica e scientifica dell'apprendimento automatico.
È la poesia delle reti antagoniste generative (GAN),
del computer che percepisce, agisce, compone.
Estetica artificiale, visione tangibile: gli indumenti sono sostanze trasformabili,
hanno aspetti e superfici deformate e dettagli ipertrofici,
malpiegati, arrotolati, annodati.
Le giacche, a volte trapuntate, si avviluppano intorno al corpo.
Gli abiti smontati, senza dritto né rovescio, sono in perpetuo mutamento.
Le texture presentano rigonfiamenti, increspature, effetti traslucidi.
Vernice, pelle e tessuti high-tech si alternano
a maglie soffici e lane strutturate.
La penetrante oscurità dei grigi, blu petrolio e verde malachite
bilancia il candore assoluto.

01

Images Immagini**: 01. Mario Klingermann.**



Images Immagini**: 02. Refik Anadol.**

KEY COLOUR

19-4005 TCX
bug

19-3925 TCX
dataset

17-3923 TCX
system

18-4005 TCX
algorithm

19-4914 TCX
electronic emotion

16-1432 TCX
humanoid

03

04

05

"What the Machine Learning / AI scene really urgently needs is more weirdness. (...)
'Weirdness' - I mean mature, dangerous high weirdness. Get to work."

Samim A.Winiger
designer, engineer and researcher of Machine Learning, Human-Computer Interaction and Creativity

"Ció di cui lo scenario dell'Apprendimento Automatico e dell'Intelligenza Artificiale ha davvero urgente bisogno é maggiore mistero e stranezza. (...) intendo matura, pericolosa, alta 'Stranezza'. Mettiamoci al lavoro."

Samim A.Winiger
designer, ingegnere e ricercatore di Apprendimento Automatico e Creatività Interattiva Human-Computer

Images immagini: **03. Ouchhh - 04. Behind the fan - 05. Mario Klingermann.**

```
y_relu(x, alpha=0.2):
 tf.name_scope('LeakyRelu'):
alpha = tf.constant(alpha, dtype=x.dtype, nam
return tf.maximum(x * alpha, x)

-----------------------------------------
t-neighbor upscaling layer.

ale2d(x, factor=2):
rt isinstance(factor, int) and factor >= 1
actor == 1: return x
 tf.variable_scope('Upscale2D'):
s = x.shape
x = tf.reshape(x, [-1, s[1], s[2], 1, s[3], 1
x = tf.tile(x, [1, 1, 1, factor, 1, factor])
x = tf.reshape(x, [-1, s[1], s[2] * factor, s
return x

-----------------------------------------
upscale2d + conv2d.
 and uses less memory than performing the ope

ale2d_conv2d(x, fmaps, kernel, gain=np.sqrt(2
rt kernel >= 1 and kernel % 2 == 1
get_weight([ke
le=use_wscale)
tf.transpose(w
tf.pad(w, [[1,
tf.add_n([w[1:
tf.cast(w, x.d
 [tf.shape(x)[
rn tf.nn.conv2
mat='NCHW')

----------
lter downscali

scale2d(x, fac
rt isinstance(
actor == 1: re
 tf.variable_s
ksize = [1, 1,
return tf.nn.a
mat='NCHW') #

----------
conv2d + downs
 and uses less

2d_downscale2d(x, fmaps, kernel, gain=np.sqrt
rt kernel >= 1 and kernel % 2 == 1
get_weight([kernel, kernel, x.shape[1].value,
le=use_wscale)
tf.pad(w, [[1,1], [1,1], [0,0], [0,0]], mode=
tf.add_n([w[1:, 1:], w[:-1, 1:], w[1:, :-1],
tf.cast(w, x.dtype)
rn tf.nn.conv2d(x, w, strides=[1,1,2,2], padd

-----------------------------------------
ise feature vector normalization.

l_norm(x, epsilon=1e-8):
 tf.variable_scope('PixelNorm'):
return x * tf.rsqrt(tf.reduce_mean(tf.square(

-----------------------------------------
tch standard deviation.
```

06

06

portraits by the system
human and artificial nature
mutated creatures

ritratti dal sistema
natura umana e artificiale
creature mutate

Images Immagini: **06. ph. Hart Leshkina - 07. Mario Klingermann. Codes: NVIDIA Corporation.**

07

1. Inseta - 2. Olimpias Labels Division - 3. Igea - 4. Reca Group - 5. Lartigianabottoni - 6. Gritti Group
7. Federico Aspesi - 8. Albiate 1830 - 9. Varcotex

08

09

Images Immagini**: 08. Mario Klingemann - 09. sfpc.io. Codes: NVIDIA Corporation.**

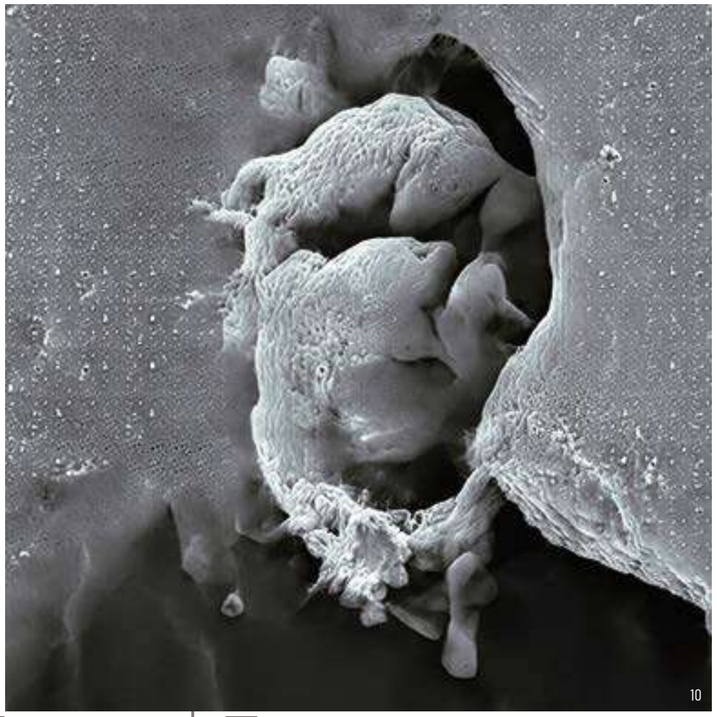
```
# 4.0 International License. To view a copy of this license, visit
# http://creativecommons.org/licenses/by-nc/4.0/ or send a letter to
# Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

"""Multi-resolution input data pipeline."""

import os
import glob
import numpy as np
import tensorflow as tf
import dnnlib
import dnnlib.tflib as tflib

#----------------------------------------------------------------------------
# Parse individual image from a tfrecords file.

def parse_tfrecord_tf(record):
    features = tf.parse_single_example(record, features={
        'shape': tf.FixedLenFeature([3], tf.int64),
        'data': tf.FixedLenFeature([], tf.string)})
    data = tf.decode_raw(features['data'], tf.uint8)
    return tf.reshape(data, features['shape'])

def parse_tfrecord_np(record):
    ex = tf.train.Example()
    ex.ParseFromString(record)
    shape = ex.features.feature['shape'].int64_list.value # temporary pylint workaround #
pylint: disable=no-member
    data = ex.features.feature['data'].bytes_list.value[0] # temporary pylint workaround #
pylint: disable=no-member
    return np.fromstring(data, np.uint8).reshape(shape)
```

generative codes
technological unconsciousness
poetic distortions

codici generativi
inconscio tecnologico
distorsioni poetiche

creative algorithms
artificial neural networks
hypertrophic details

algoritmi creativi
reti neurali artificiali
dettagli ipertrofici


10

$$J(\theta_0, \theta_1) = \frac{1}{2m} \sum^{m} (y_i' - y_i)^2 = \frac{1}{2m} \sum_{i=1} (h_0(x_i) - y_i)^2$$

Aganovich
a/w 2017.18

Notkunst

Images | immagini: 10. Mario Klingermann.

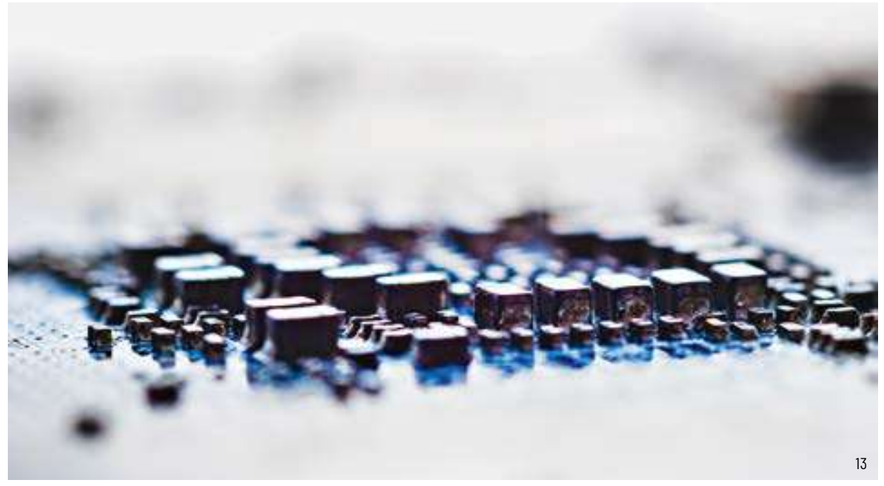
1. Luxury Jersey - 2. Emmetex - 3. Lanificio Moessmer - 4. Lanfranchi - 5. Igea - 6. Gruppo Uniesse - 7. Gritti Group
8. Tessuti Pordenone / Olimpias - 9. Varcotex - 10. Topp Italia

$$\theta_j := \theta j - \alpha \frac{\partial}{\partial \theta_j} J(\theta_0, \theta_1)$$

digital aesthetic
sensitive A.I.
unsettling visions

estetica digitale
A.I. sensibile
visioni inquiete

Images Immagini: **11. Mario Klingemann - 12. Refik Anadol - 13. John Difool.**



Rick Owens

infinite datasets
processed files
alterations

dataset infiniti
file processati
alterazioni

Boss
a/w 2017.18

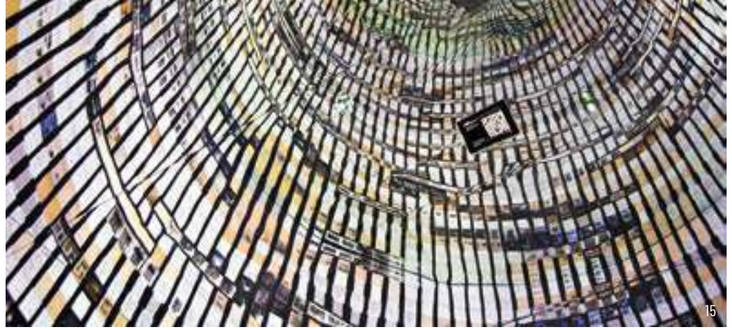
14

Images immagini: **14. Refik Anadol. Codes: NVIDIA Corporation.**

```
def minibatch_stddev_l
    with tf.variable_s
        group_size = t
divisible by (or small
        s = x.shape
        y = tf.reshape
s[3]])   # [GMncHW] Sp
groups c.
        y = tf.cast(y,
        y -= tf.reduce
over group.
        y = tf.reduce_
over group.
        y = tf.sqrt(y
over group.
        y = tf.reduce_
over fmaps and pixels.
        y = tf.reduce_
into c channel groups
        y = tf.cast(y,
original data type.
        y = tf.tile(y,
group and pixels.
        return tf.conc
fmap.

#----------------------
# Networks used in the

def G_paper(
    latents_in,
latent_size].
    labels_in,
    num_channels
based on dataset.
    resolution
    label_size
Overridden based on da
    fmap_base
maps.
    fmap_decay
resolution.
    fmap_max
    latent_size
min(fmap_base, fmap_ma
    normalize_latents
the network?
    use_wscale
    use_pixelnorm
    pixelnorm_epsilon
normalization.
    use_leakyrelu
    dtype
    fused_scale
separate upscale2d lay
    structure
efficient, None = sele
    is_template_graph
class, False = actual
    **_kwargs):
```

1. Bernasconi Tessuti - 2. Forza Giovane Art - 3. Lanificio Subalpino - 4. Botto Giuseppe - 5. Gruppo Uniesse - 6. Crystals from Swarosvki
7. Lanificio T.G. di Fabio - 8. Tessitura Monti - 9. Federico Aspesi - 10. Inseta - 11. Piave Maitex - 12. Schoeller Textiles - 13. Varcotex

1. Igea - 2. Varcotex - 3. Lanificio dell'Olivo - 4. Forza Giovane Art - 5. Industria Italiana Filati - 6. Inseta
7. Luxury Jersey - 8. Lartigianabottoni - 9. Ramponi


15

16

Images Immagini: **15. Refik Anadol - 16. Mario Klingermann.**

"This is what the neural network then recognizes in a face. It's very creepy, it's just a few eyes, a big mouth, and some hair. But it's definitely kind of a new way of looking at humans."

Mario Klingemann
artist, neurographer, coder, data collector

"Questo è ciò che la rete neurale riconosce in una faccia. È molto inquietante, sono solo un po' di occhi, una grande bocca e alcuni capelli. Ma è sicuramente un modo nuovo di guardare gli umani."

Mario Klingemann
artista, neurografo, programmatore, raccolta dati

$$\theta_j := \theta_j - \alpha \frac{1}{2m} \sum_{i=1}^{m} (h_0(x^{(i)}) - y^{(i)}) x_j^{(i)} = \frac{\partial}{\partial \theta_j} J(\theta)$$

$$(h_0(x^{(i)}) - y^{(i)}) x_j^{(i)} = \frac{\partial}{\partial \theta_j} J(\theta)$$

$$(h_0(x^{(i)}) - y^{(i)}) x_j^{(i)} = \frac{\partial}{\partial \theta_j} J(\theta)$$

open source data
deformed aspects

dati open source
aspetti deformi

Ganor Dominic

$$h_\theta = \theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_3 + \theta_4 x_4 + \ldots + \theta_{n-1} x_{n-1} + \theta_n x_n$$

Images Immagini: 17. Robbie Barrat - 18. Robbie Barrat for Balenciaga.

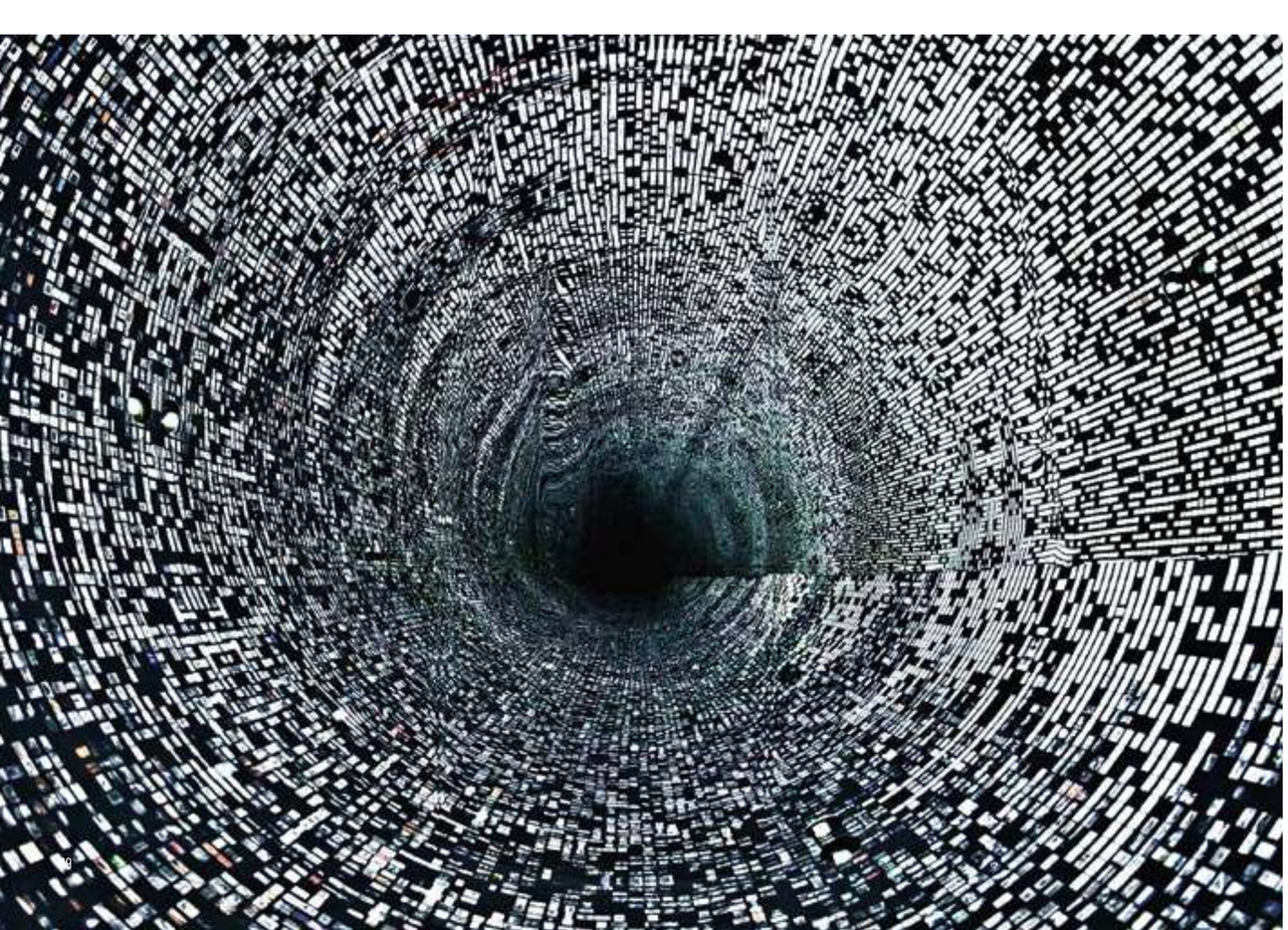
1. Inseta - 2. Ramponi - 3. Jackytex - 4. Pecci Filati - 5. Lanificio dell'Olivo
6. Varcotex - 7. Gritti Group - 8. Lane Bottoli - 9. Reca Group - 10. Lanificio Moessmer - 11. Emmetex

"I think what's so interesting about art made with GANs/ Machine Learning is that GANs aren't creative, but they are imaginative."

Robbie Barrat
artist working with Artificial Intelligence

"Credo che ciò che rende così interessante l'arte prodotta con le reti antagoniste generative (GAN) e l'apprendimento automatico sia il fatto che le GAN non sono per niente creative, però sono fantasiose.

Robbie Barrat
artista che lavora con l'Intelligenza Artificiale



19

MM6 Maison Margiela
a/w 2019.20

20

machine learning aesthetic
perpetual change

estetica del machine learning
mutamento perpetuo

YTN N°7

Images Immagini**: 19. Refik Anadol - 20. Mario Klingermann.**

1. Inseta - 2. Tessitura Attilio Imperiali - 3. Luxury Jersey - 4. Luxury & Leather - 5. Varcotex - 6. Lartigianabottoni
7. Gruppo Uniesse - 8. Conceria Montebello - 9. Fada Tessuti - 10. Gritti Group

Images Immagini: **21. Mario Klingermann. Codes: NVIDIA Corporation.**

```
            return x

    # Linear structure: simple
    if structure == 'linear':
        img = images_in
        x = fromrgb(img, resol
        for res in range(resol
            lod = resolution_l
            x = block(x, res)
            img = downscale2d(
            y = fromrgb(img, r
            with tf.variable_s
                x = lerp_clip(
        scores_out = block(x,

    # Recursive structure: con
    if structure == 'recursive
        def grow(res, lod):
            x = lambda: fromrg
            if lod > 0: x = cs
            x = block(x(), res
            if res > 2: y = cs
fromrgb(downscale2d(images_in,
            return y()
        scores_out = grow(2, r

    assert scores_out.dtype ==
    scores_out = tf.identity(s
    return scores_out

#----------------------------------------------------------------------------
```

A.I. amenable intelligence sourcing

robbiebarrat.github.io

rickowens.eu

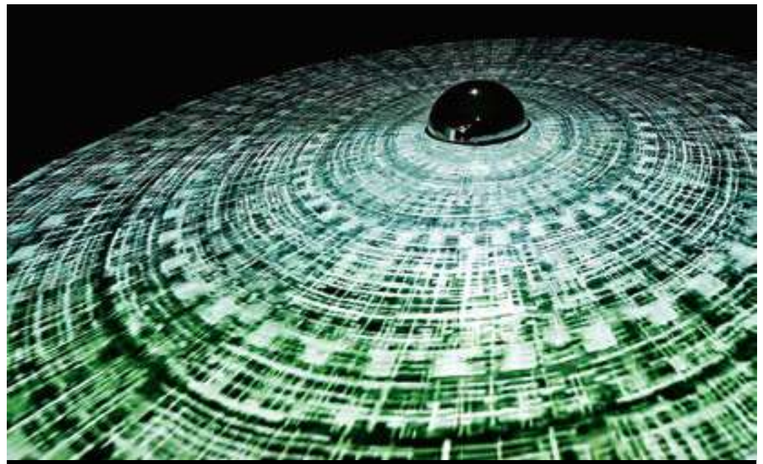
aganovich.com

memo.tv

sougwen.com

melittabaumeister.com

obvious-art.com


ouchhh.tv

aiartists.org

ganordominic.com

refikanadol.com

quasimondo.com