FABLAB COLMAYOR

FACULTAD DE ARQUITECTURA E INGENIERÍA

7° ENCUENTRO DE EXPERIENCIAS INSTRUMENTALES

Procesos de Conceptualización y Fabricación usando Herramientas Digitales e Inteligencias Múltiples.

Giovanna Elizabeth Pillaca Morote

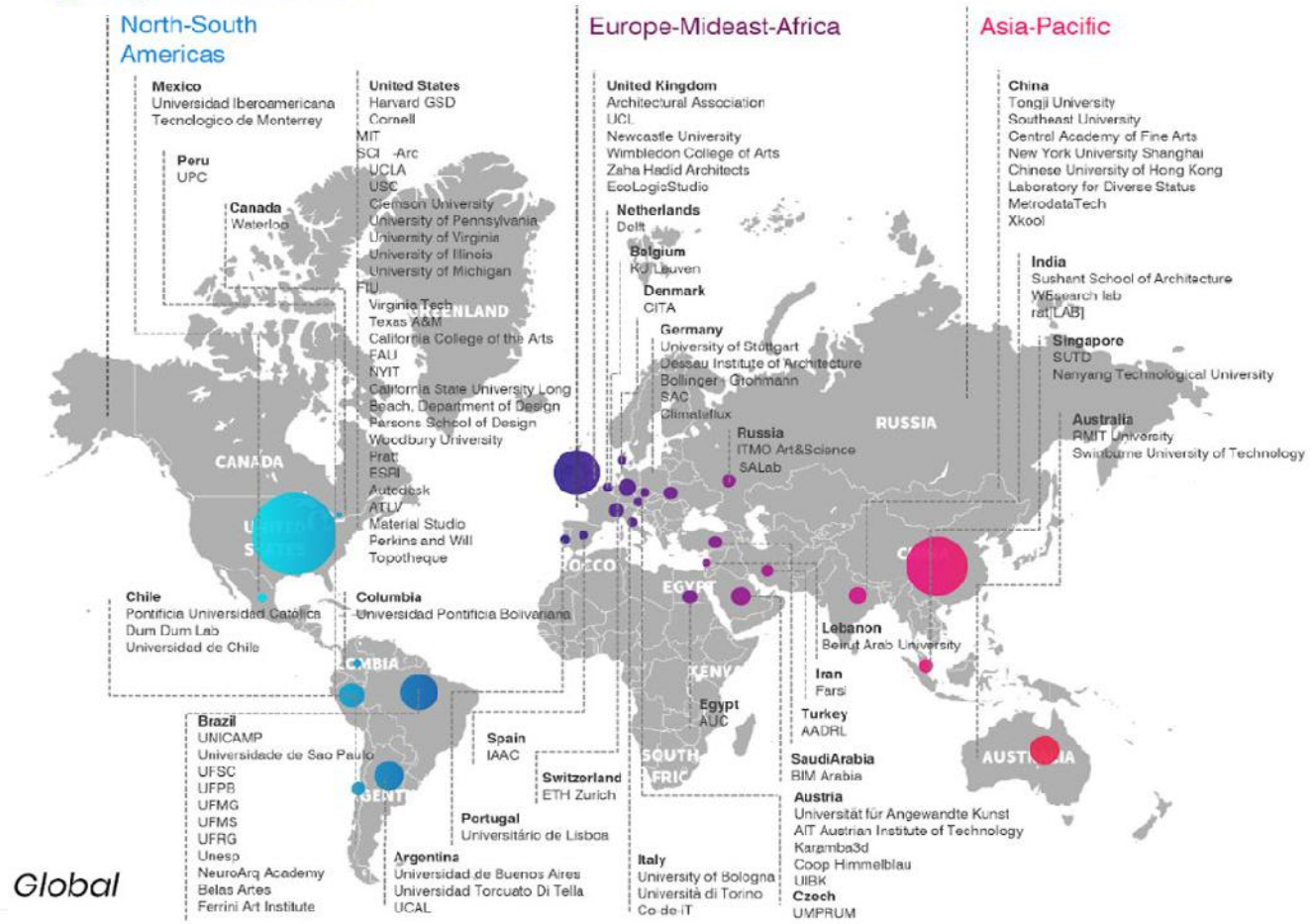
FABLAB COLMAYOR

INSTITUCIÓN UNIVERSITARIA COLEGIO MAYOR DE ANTIOQUIA®

Acreditados en ALTA CALIDAD


GIOVANNA PILLACA

DigitalFUTURES



Upcoming live streams

Digital Futures International Online Workshops Preview...
2 waiting
• Scheduled for 6/9/23, 4:00 PM
Notify me

Digital Futures International Onlines Workshops Preview...
Scheduled for 6/10/23, 9:00 AM
Notify me

Digital Futures International Online Workshops Preview...
Scheduled for 6/10/23, 2:00 PM
Notify me

Digital Fuures International Online Workshops Preview...
Scheduled for 6/11/23, 9:00 AM
Notify me

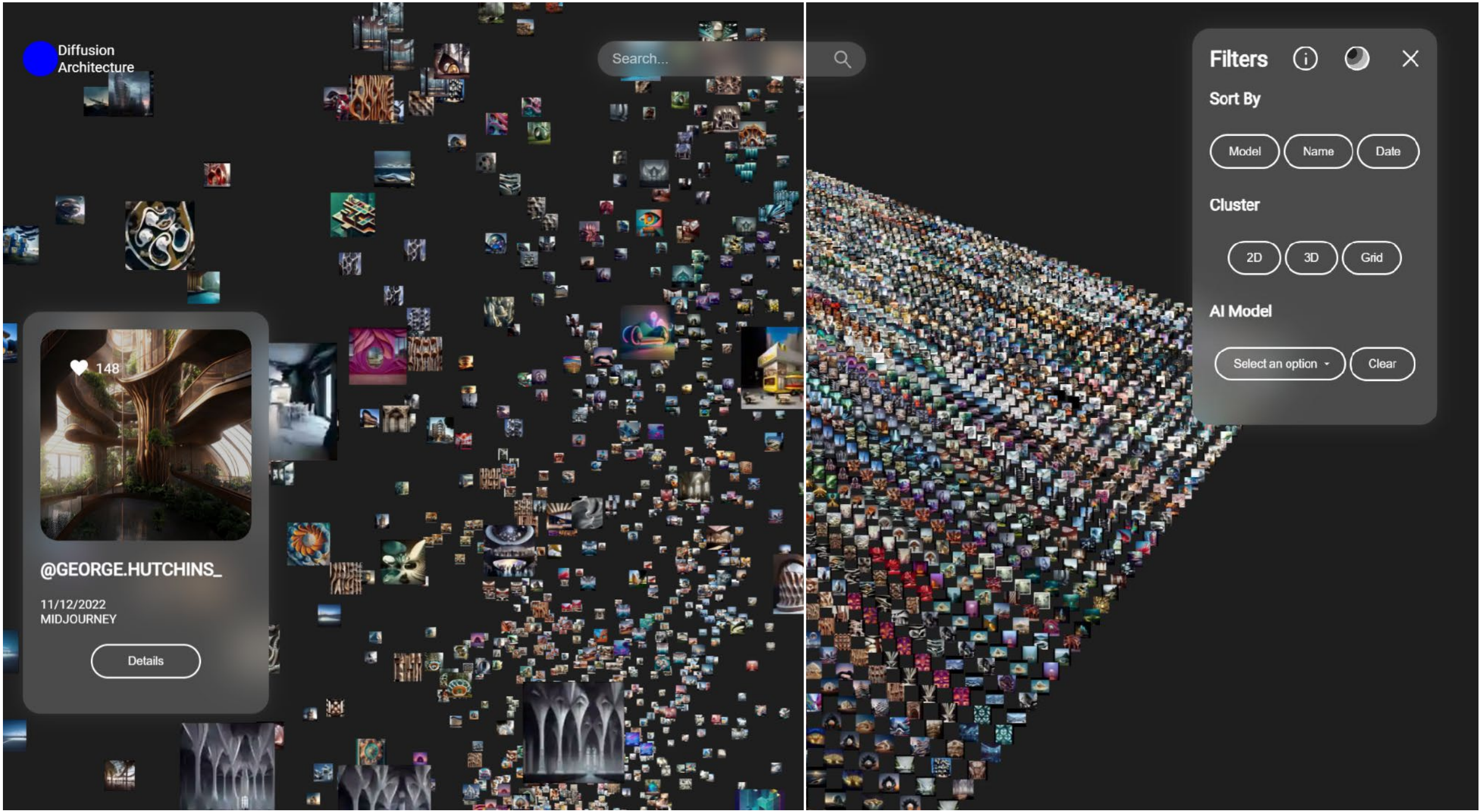
Digital Fuures International Online Workshops Preview...
Scheduled for 6/15/23, 7:00 AM
Notify me

Contacto: spanish.digitalfutures@gmail.com

DigitalFUTURES Español

digitalFUTURES.international

GIOVANNA PILLACA



GIOVANNA PILLACA

GIOVANNA PILLACA

COLMAYOR

GIOVANNA PILLACA

GIOVANNA PILLACA

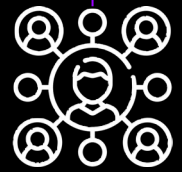
MEDIOS DE DISEÑO

LA HERENCIA CULTURAL Y LAS NUEVAS REPRESENTACIONES

SER

NATURAR

CREAR
?



COMUNIDAD

ARQUITECTURIZAR

TECNOLOGÍAS

Utilizando herramientas como:
Impresión 3D, Realidad Virtual (VR), Realidad Aumentada (AR), Redes Sociales y Comunicación Digital, Economías Digitales, Metaversos, Inteligencia Artificial.

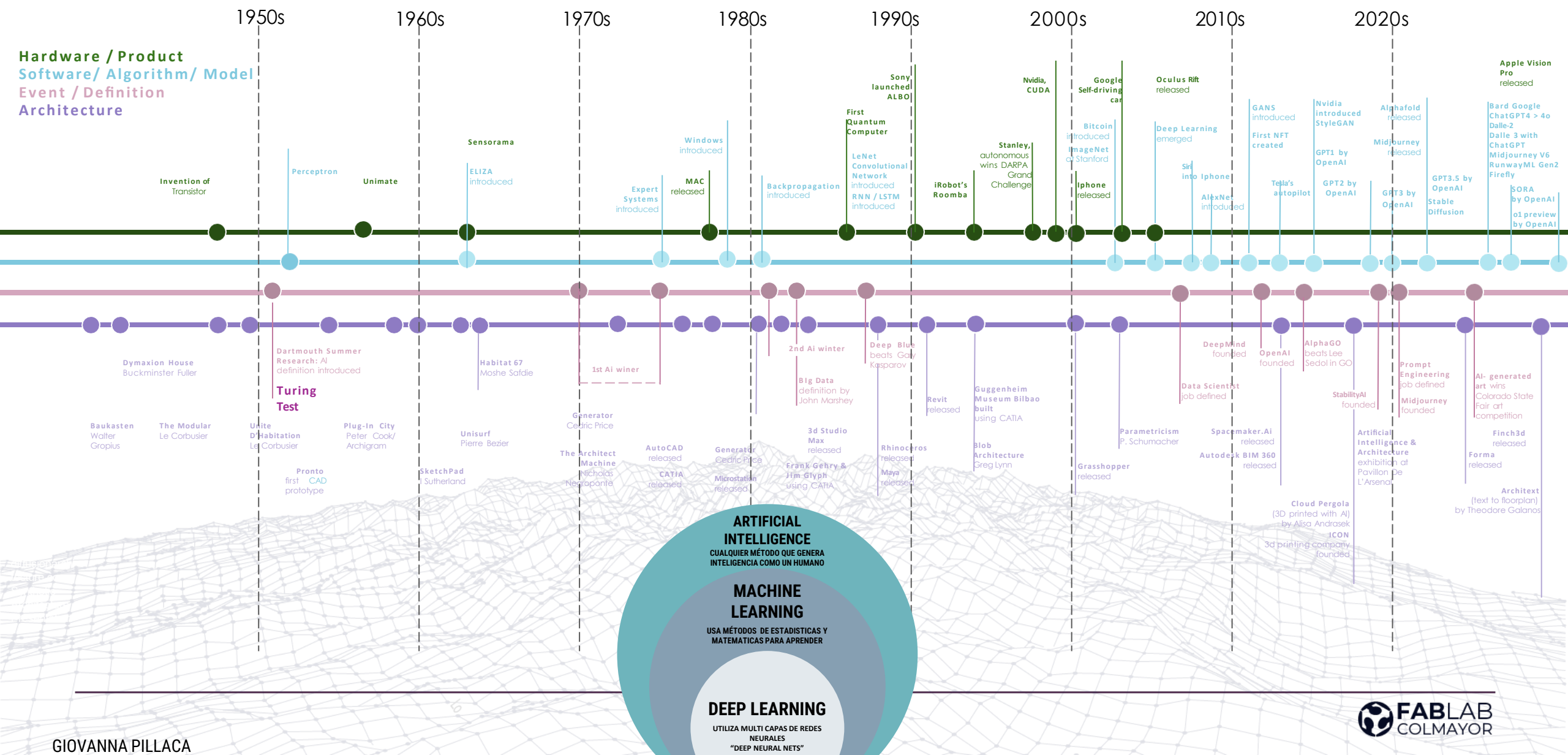
CREAR

GENERAR NUEVAS ASOCIACIONES / IDEAS Y CONCEPTOS

INTERPRETA CONOCIMIENTO

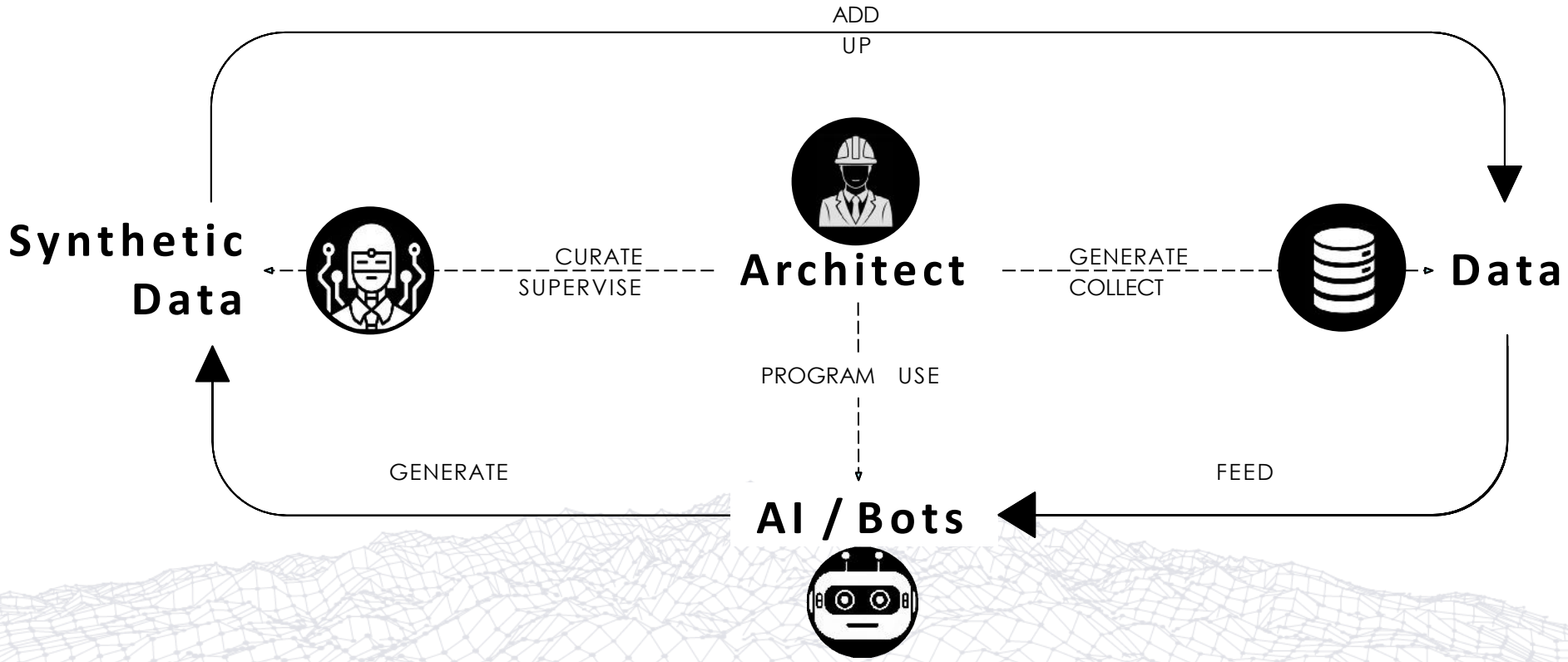
INSTITUCIÓN UNIVERSITARIA COLEGIO MAYOR DE ANTIOQUIA® | Acreditados en ALTA CALIDAD

Convergencias en la Innovación Académica Maker:
La Arquitectura y el Diseño en la Era de la Transformación Digital.



FABLAB COLMAYOR

GIOVANNA PILLACA

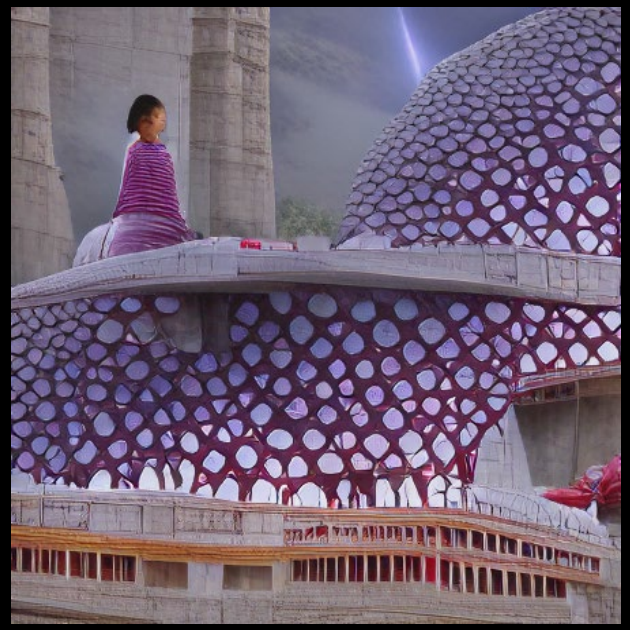


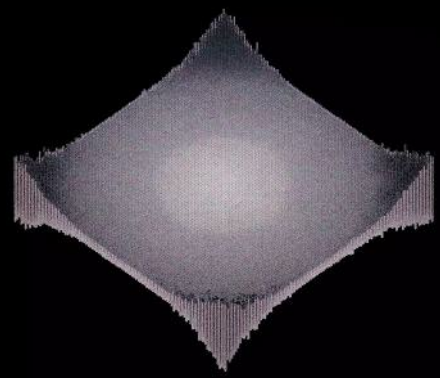
source: diffusionarchitecture.com Synthetic Architecture Presentation

TEXTO A VIDEO

PROMPT: TEMPLO INDU **INSPIRADO** EN LA ARQUITECTURA DE ZAHA HADID, WOLF PRIX Y MA YAN SON

2021





EL RETABLO DIGITAL

THE DIGITAL ALTARPIECE

#AI #Mortuary-Rituals #New-Media // PERSONAL PROJECT // July 2021

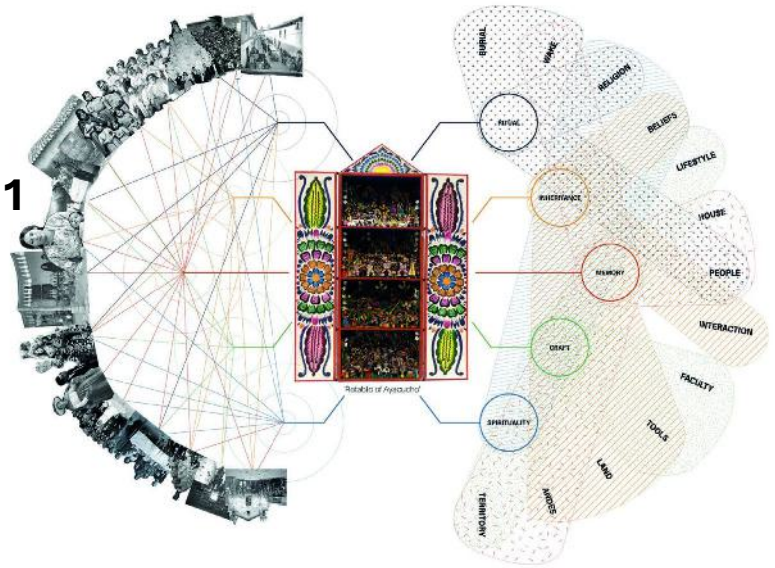
The Digital Altarpiece is an immersive virtual temple designed to communicate a traditional funeral ritual from Ayacucho, Peru, and revive it in a contemporary environment. Inspired by the concept of "Retablos Ayacuchanos", 3D sculptural figures used to narrate iconic moments, it highlights the cultural and spiritual value of ancestral knowledge in humanity. During the pandemic, Peruvian Andean rituals faced the risk of disappearing, making this preservation effort especially urgent.

Phases // The first phase — research, AI data collection, architectural and audiovisual design — was promoted by AMUTEC, MAC & US Embassy in Peru // **The Second Phase**, focusing on augmented and virtual reality, was supported by ASIMTRIADRE & the Ministry of Culture of Peru. // **Third Phase**, focused on 3D printing artwork, was self managed.

Personal role // research, AI curator, design, 3D model, visualization, AR & VR design

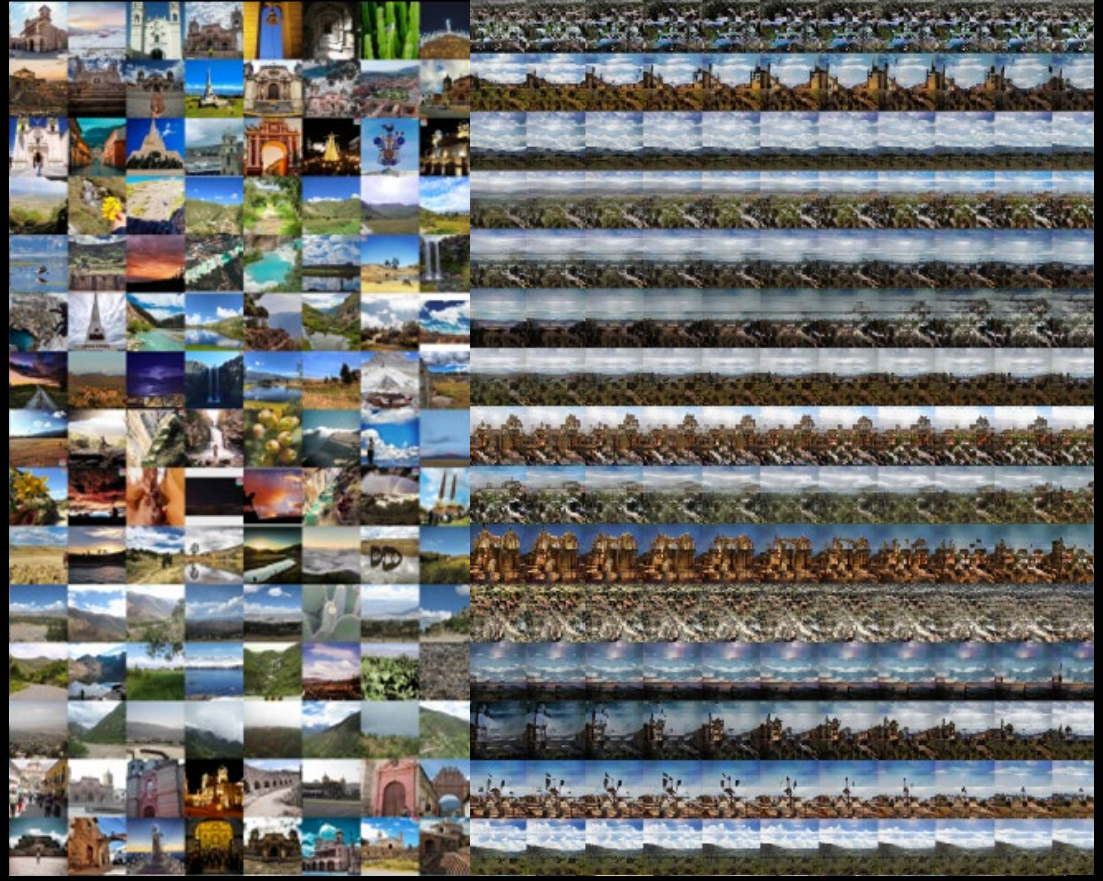
Collaborators // A. GAN's Expert: Daniel Escobar // Sounds: Marco Valdivia

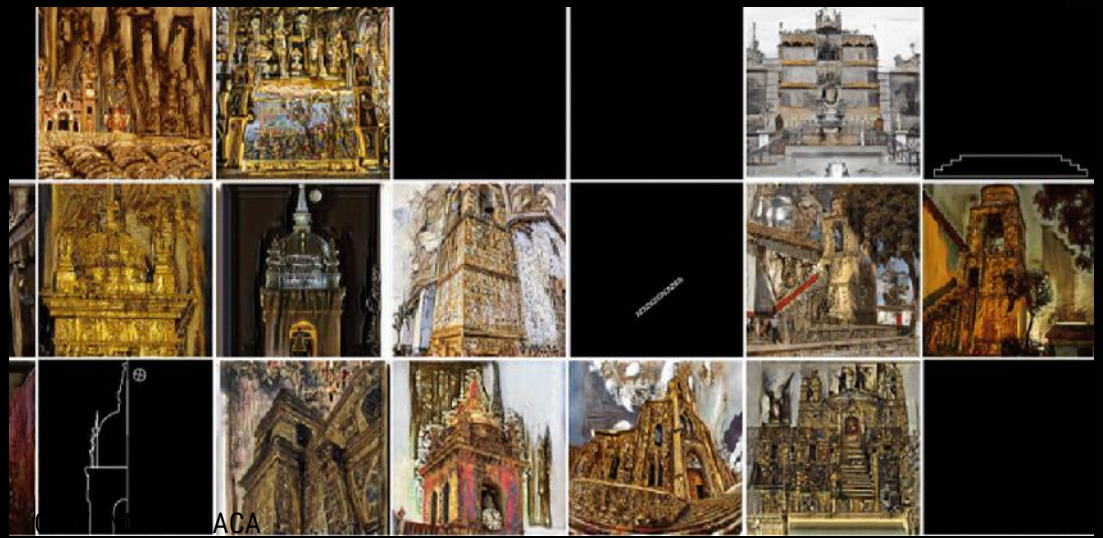
Skills // Rhino, Grasshopper, Zbrush, Keyshot, GANs, Google Colab, Unity, 3D Printing, Illustrator, Photoshop, Premiere, Meta Quest



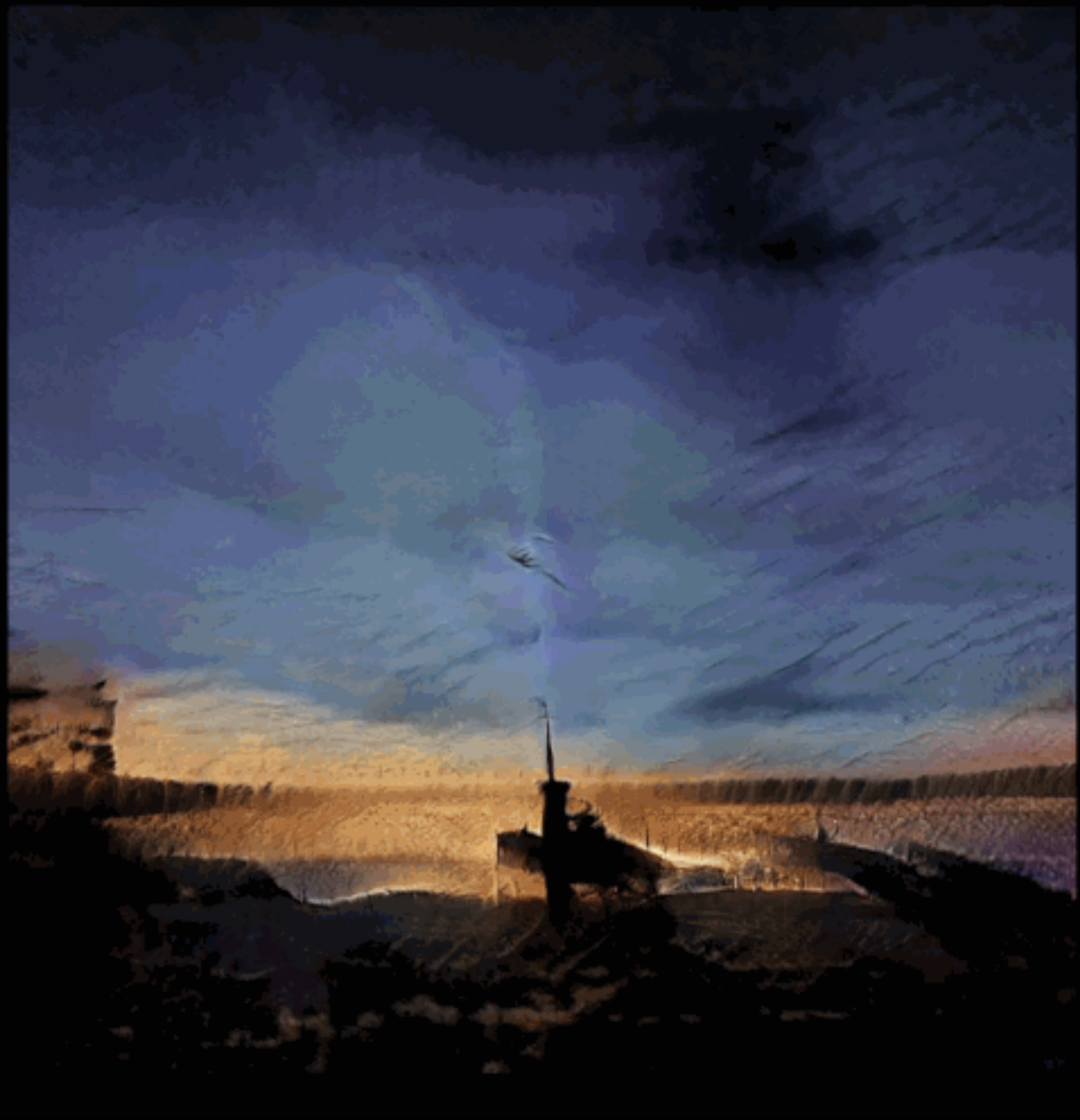
2021

EL RETABLO DIGITAL





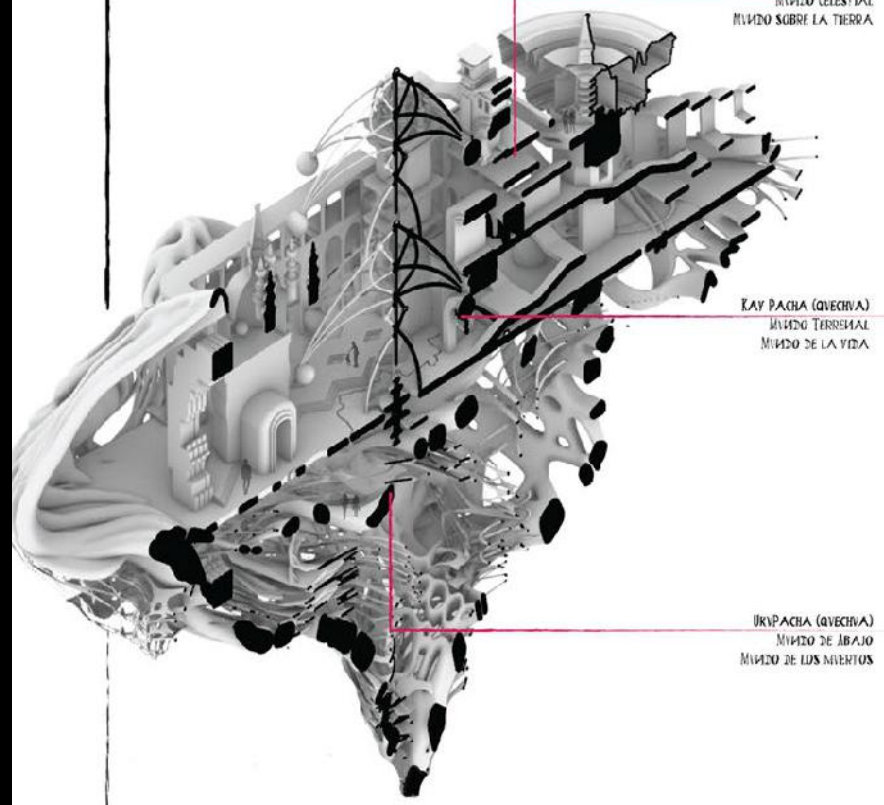
ACA



INTELIGENCIA ARTIFICIAL . RITUALES MORTUORIOS . DISEÑO ESPECULATIVO

EL RETABLO DIGITAL

LA PRIMERA EXPERIENCIA DE ARQUITECTURA VIRTUAL UTILIZANDO INTELIGENCIA ARTIFICIAL PARA CELEBRAR RITUALES MORTUORIOS O FUNERARIOS INSPIRADO EN LA HERENCIA CULTURAL ANDINA Y EL POPULAR RETABLO DE AYACUCHO, PERÚ.



realidad aumentada

realidad virtual

experiencity

RECOMBINAR PROCESOS

EL RETABLO DIGITAL _ ESQUEMA METODOLÓGICO_2021-2022

EL RETABLO DIGITAL

INPUT

Data Personal
Ancestral

Entradas del diseñador

Data Colectiva
Social Media

Entradas externas + Procesos Algorítmicos

EXPERIMENTAR

EN VIVO +

AUDIO +

VISUAL

RITUAL

SONIDOS AMBIENTALES + MÚSICA TRADICIONAL

ALTARES DE IGLESIAS

PAISAJES

STREETSCAPE

CONTEXTO HISTÓRICO

9000 IMÁGENES

CURAR

ELEMENTOS DE DISECCIÓN PARA LA RECONCEPTUALIZACIÓN

procesos de DISEÑADOR

SELECCIÓN DE SONIDOS BASADOS EN RESPUESTAS SENSORIALES

procesos de DISEÑADOR

EXTRACCIÓN DE CARACTERÍSTICAS COMUNES CON APRENDIZAJE PROFUNDO (RED GENERATIVA)

procesos ALGORÍTMICOS

TRANSFORMAR

TRADUCIR PROCEDIMIENTOS ESPACIALES RITUALES

ENTRADA DEL DISEÑADOR

UBICACIÓN EN EL ESPACIO PARA LA EXPERIENCIA

ENTRADA DEL DISEÑADOR

TRADUCIR CARACTERÍSTICAS A 'ELEMENTOS SIMBÓLICOS' A 3D

procesos ALGORÍTMICOS

CONFIGURAR

USAR LA IGLESIA COMO TIPOLOGÍA BASE DESDE LA PERTINENCIA CULTURAL

RESULTADOS DEL DISEÑADOR

EXPERIENCIA EN REALIDAD VIRTUAL / AR / 360

+ ESPACIO ARQUITECTÓNICO TEXTURIZADO Y AMBIENTADO CON SONIDOS RITUALES TRADICIONALES
+ 2D -> 3D -> EXPERIENCIA

OUTPUT

GIOVANNA PILLACA

Giovanna Pillaca

EL RETABLO DIGITAL

INTERACCIONES

Convergencias en la Innovación Académica Maker:
La Arquitectura y el Diseño en la Era de la Transformación Digital.

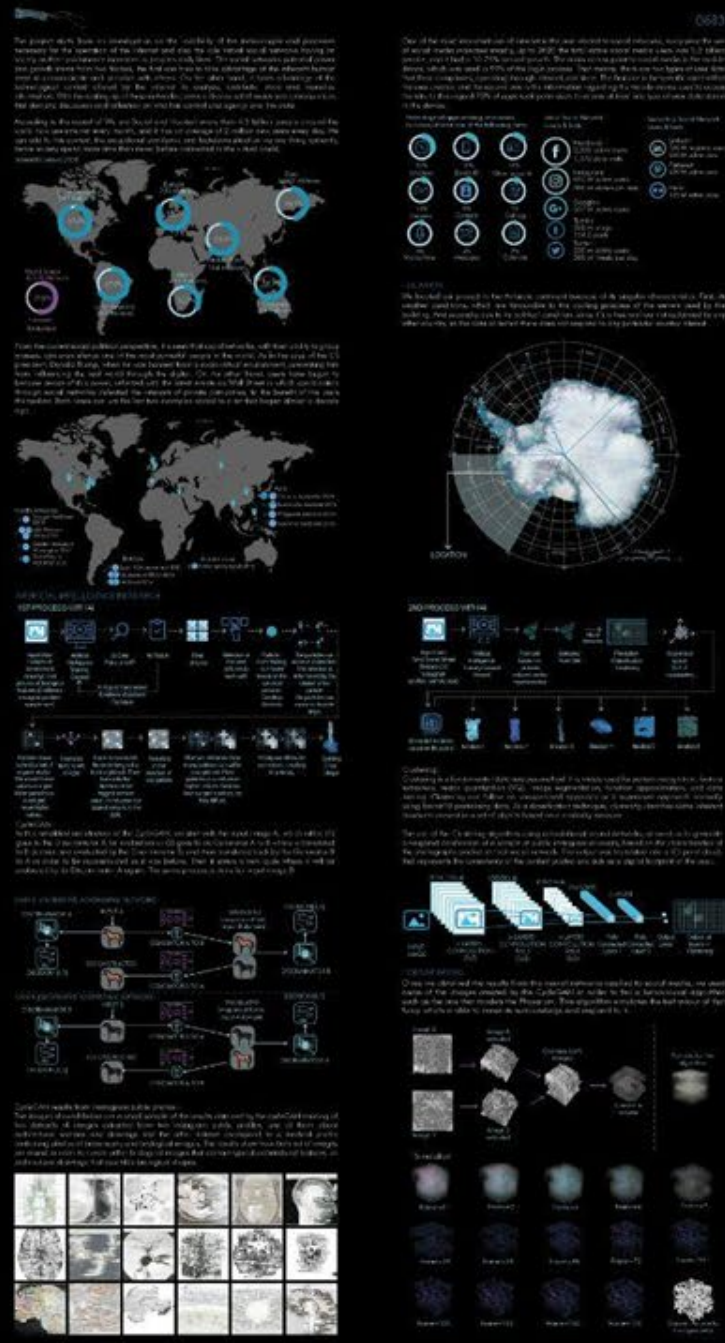
EL PODER DE LA DATA

[USERNAME]

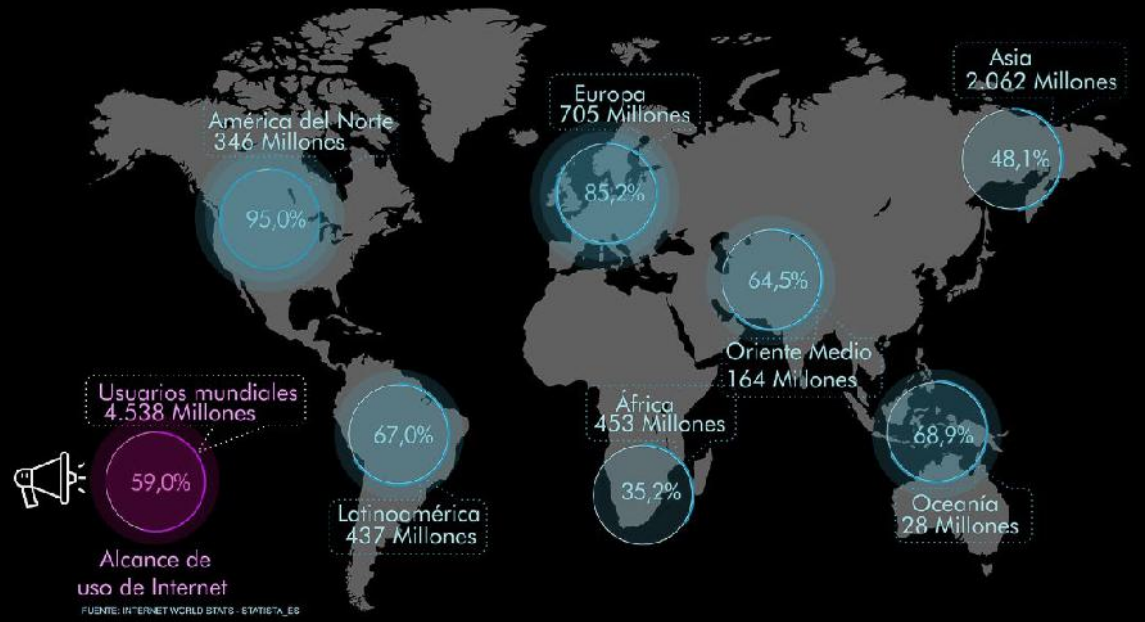
THE POWER OF DATA

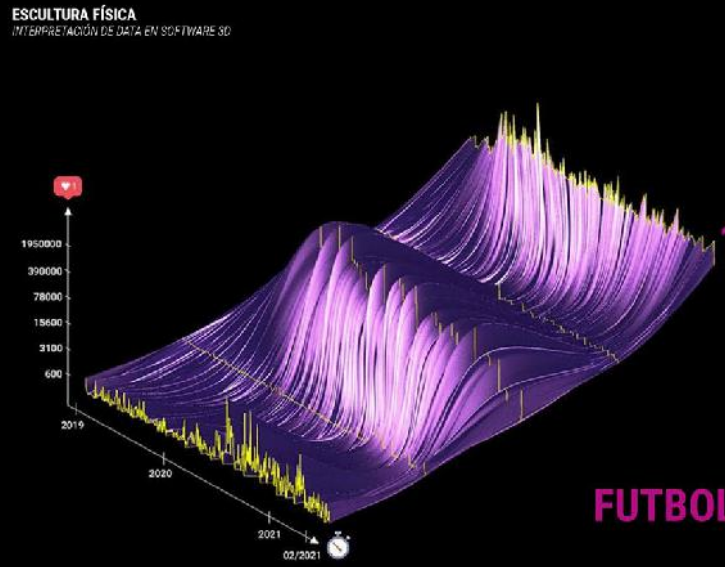
2021

GIOVANNA PILLACA



EL PODER DE LA DATA





120 K

1 000 000 +

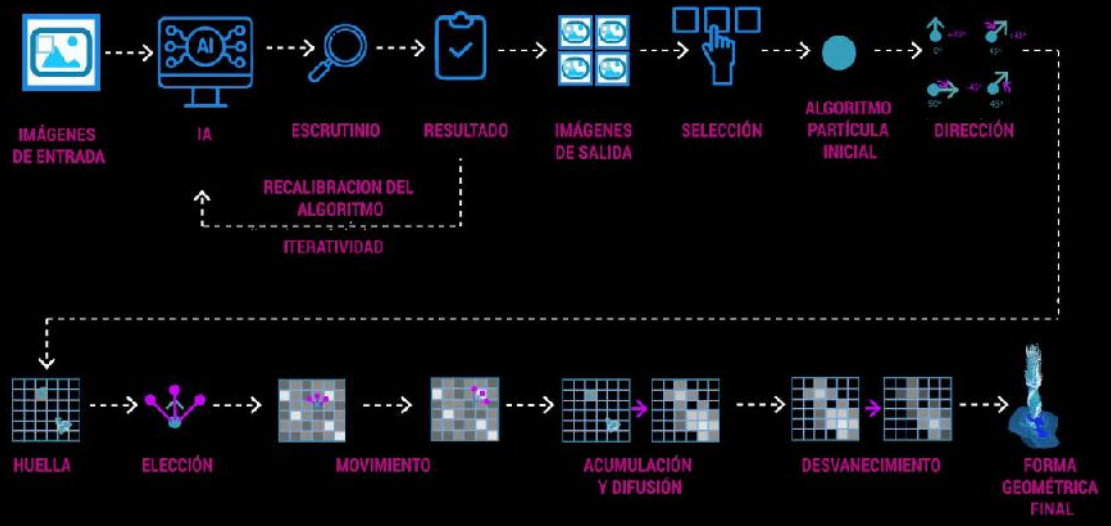
Seguidores

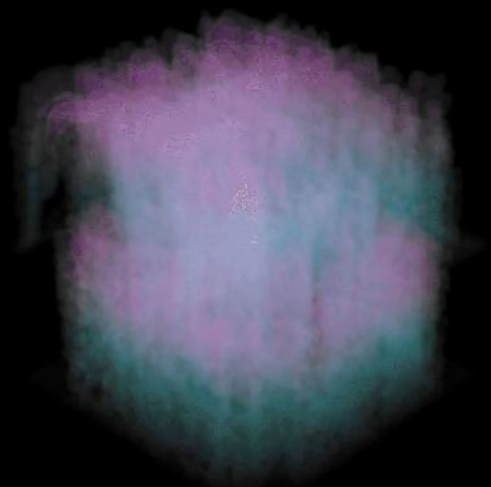
500 000 +

Likes

FUTBOLISTAS + BASQUETBOLISTAS + YOGA

Perfiles escogidos





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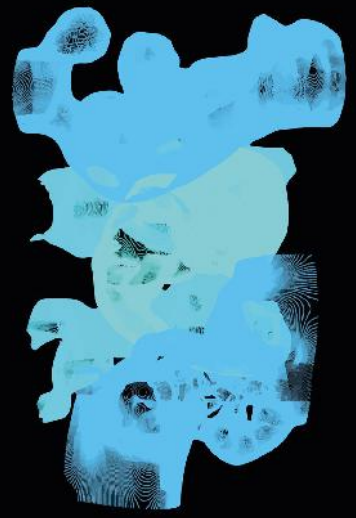
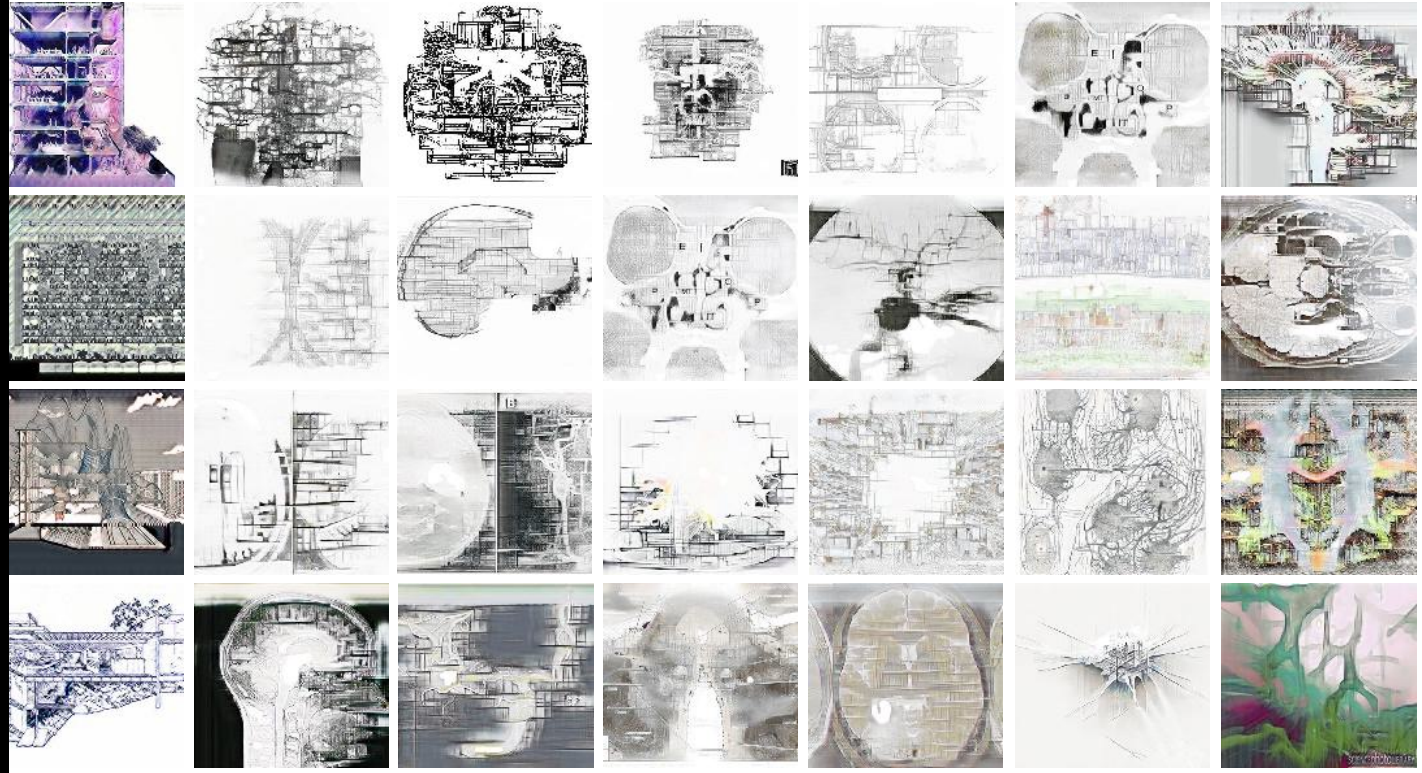
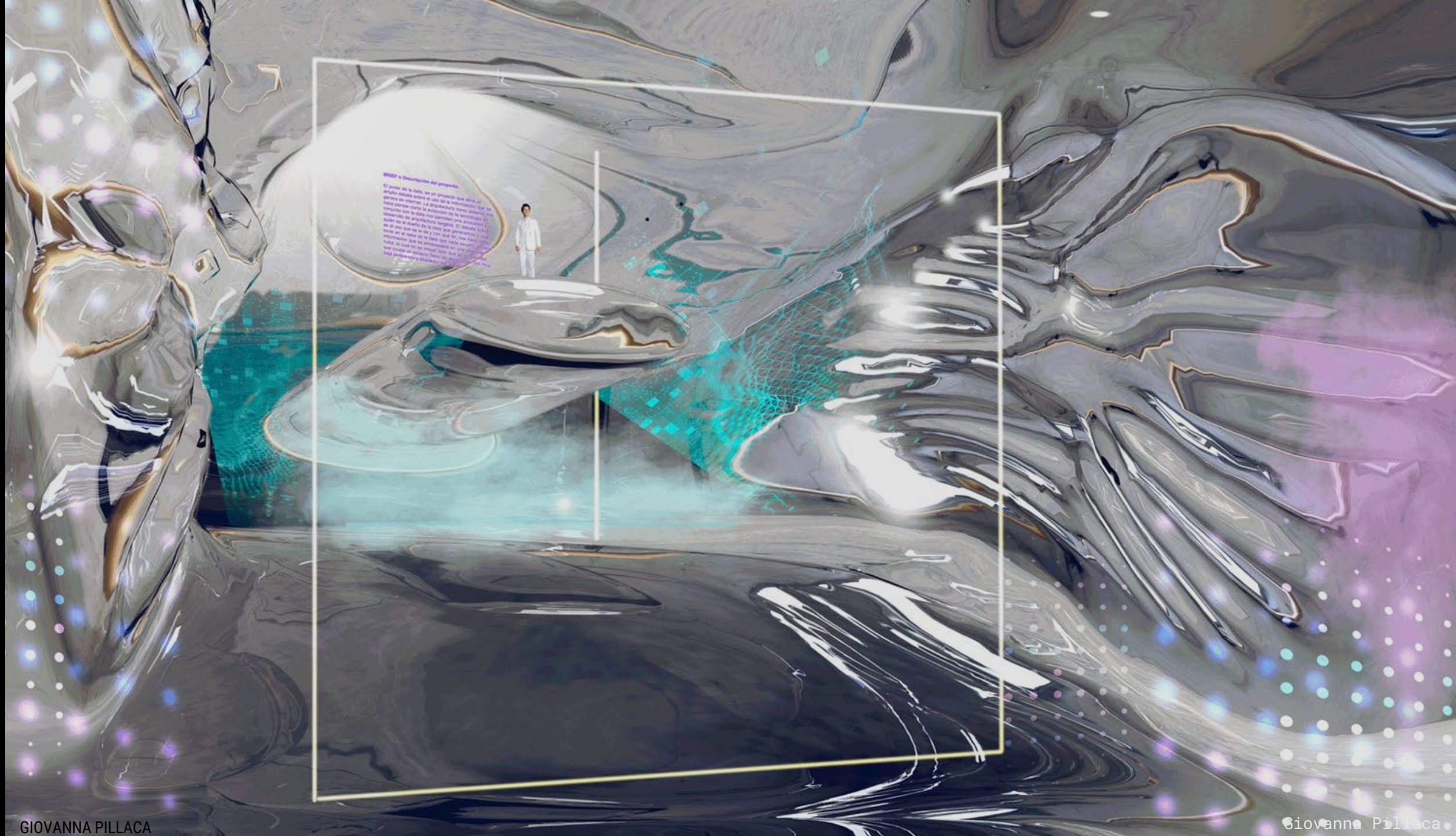
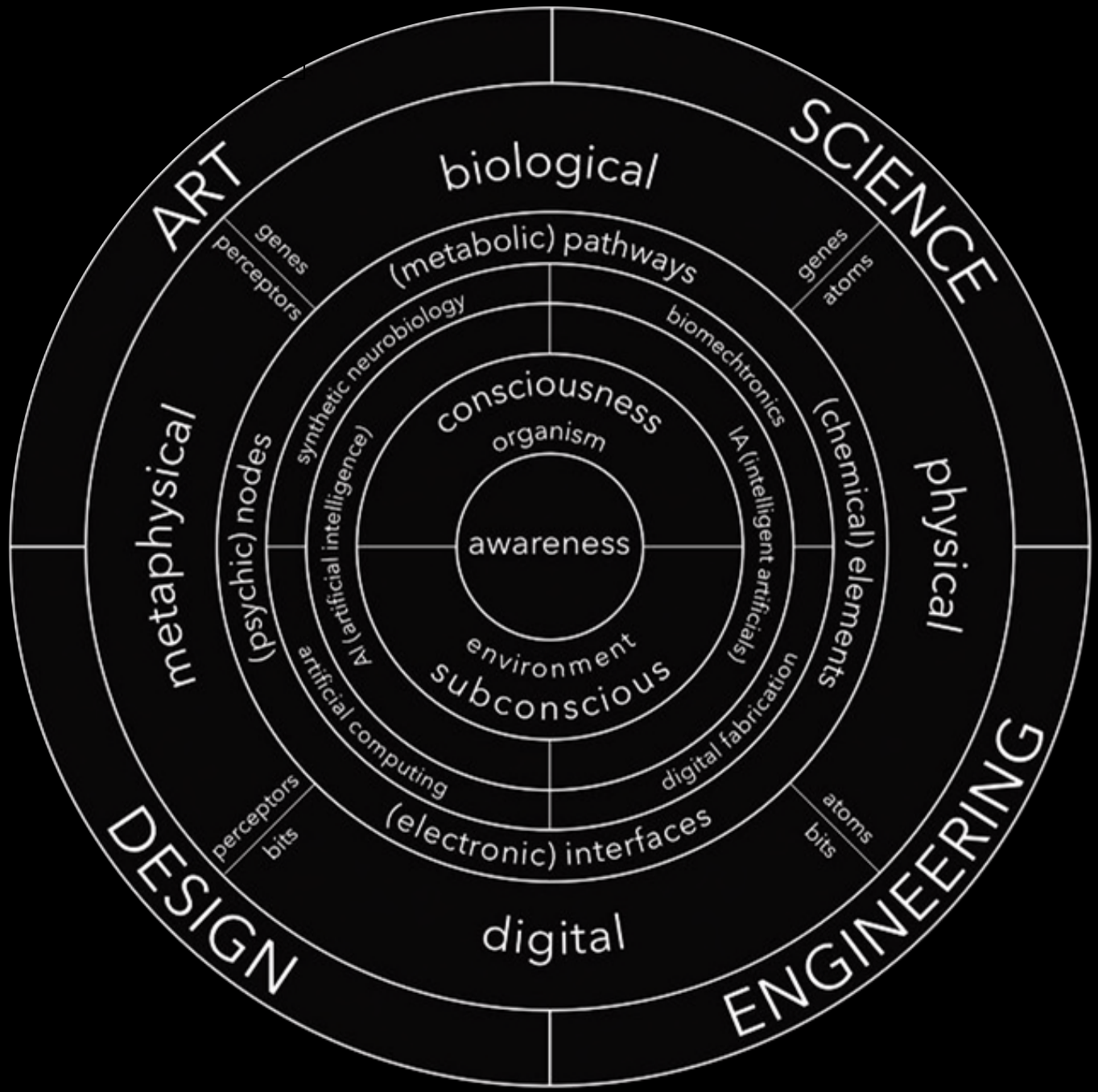


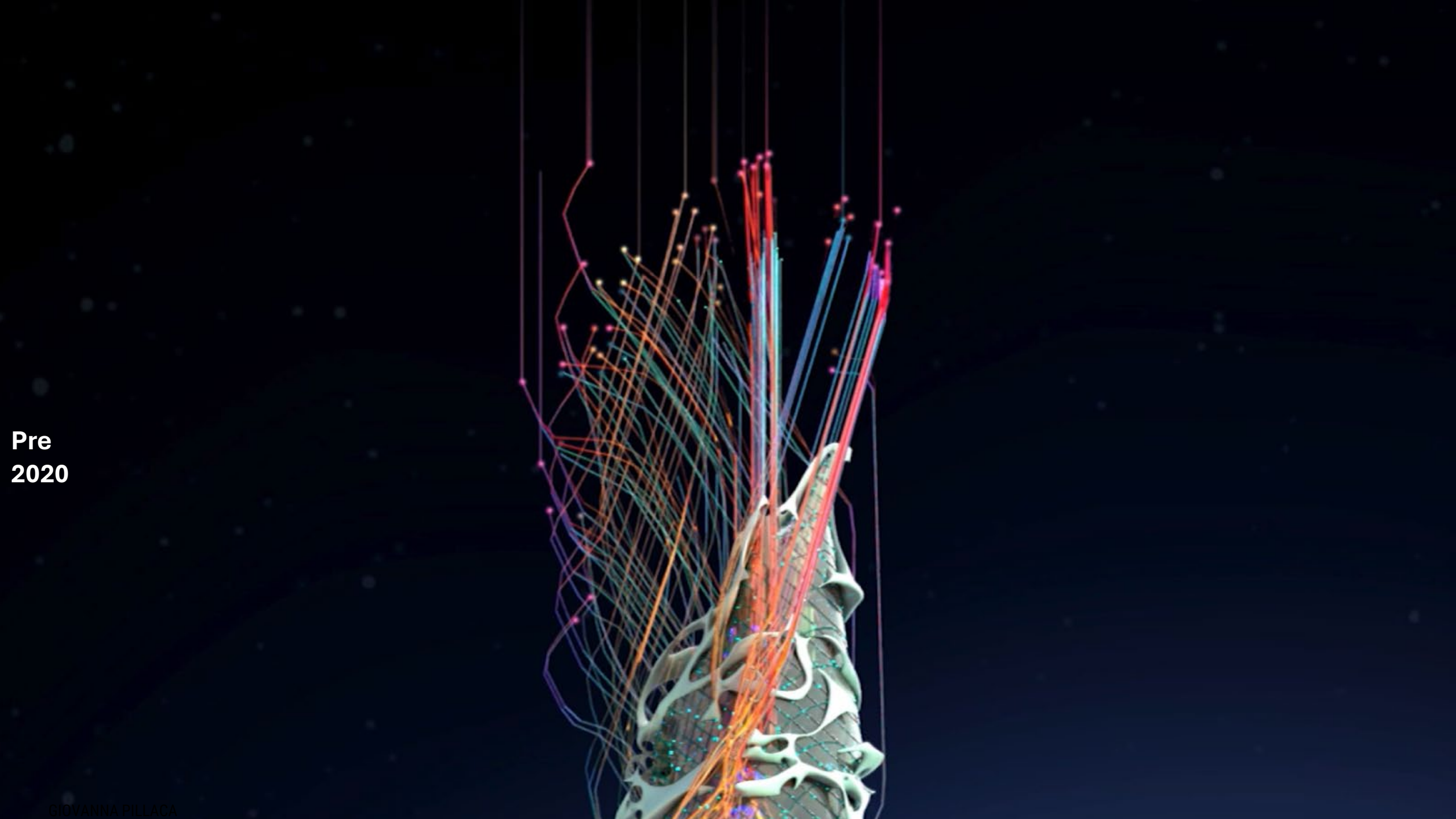


GIOVANNA PILLACA

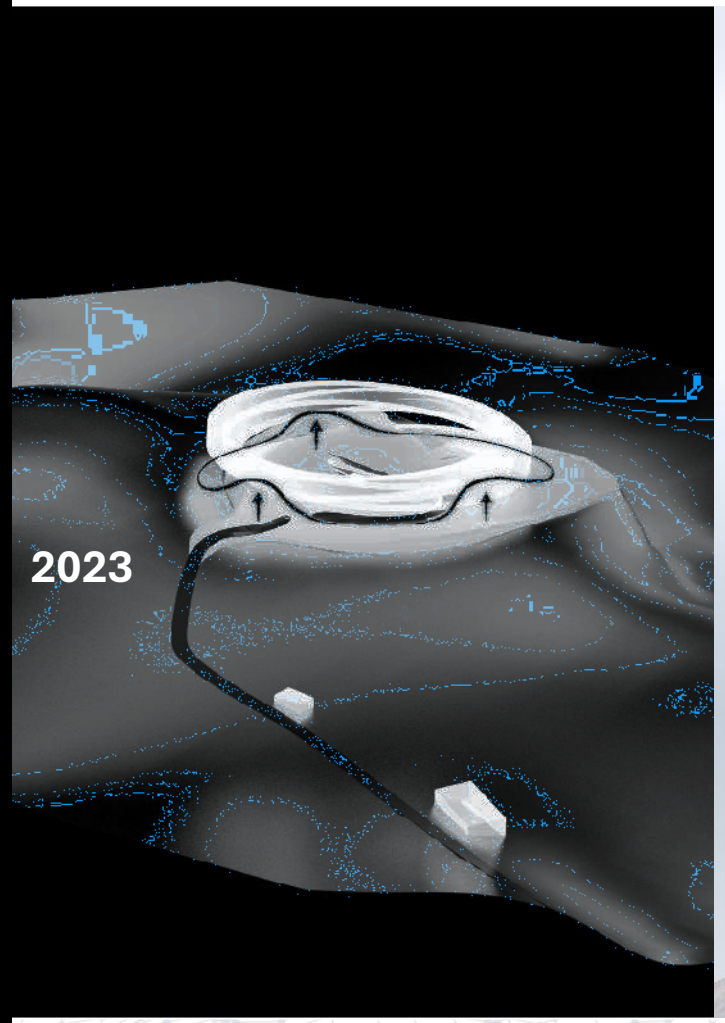


GIROSCOPIO
NERI OXMAN




Pre
2020

PROYECTO ESPECULATIVO – DATA CENTER



COMPETITION
Finalist Project at YAC 2023

DESIGNERS **Ola**

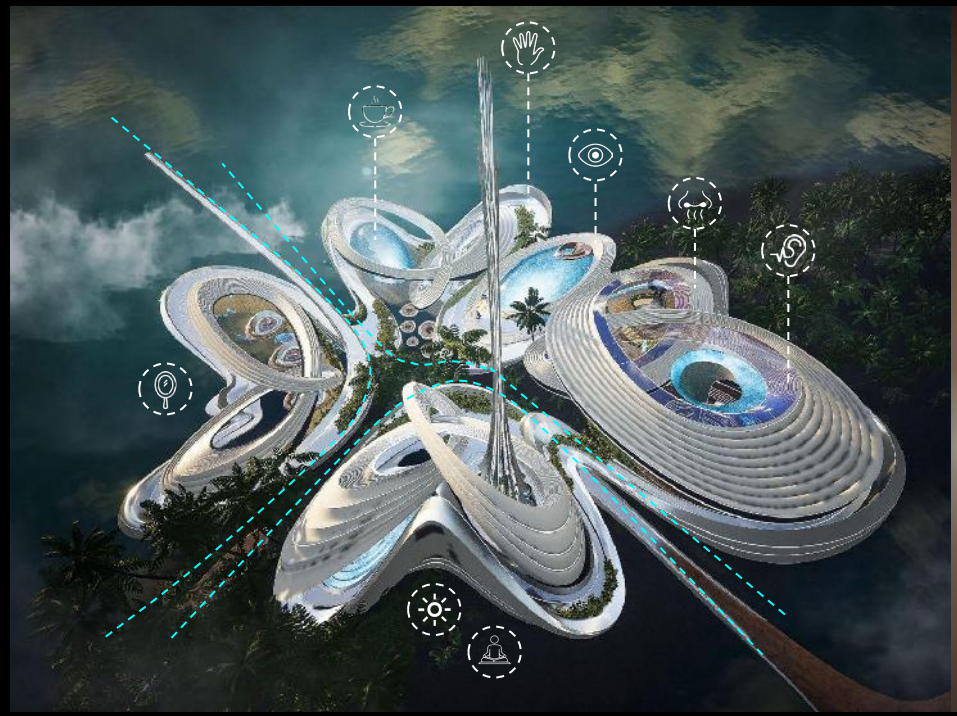
Research
Jennifer Durand
Claudia Garcia
Daniel Escobar
Giovanna Pillaca
Jose Luis Vintimilla

METAVERSO

METAVERSO

2024

GIOVANNA PILLACA



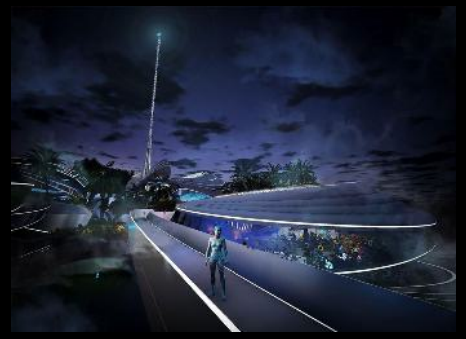
En el lenguaje Quechua, AYA significa "espiritu, alma" y WASKA significa "cuerda" o "liana".

La palabra AYAHUASCA podria significar LIANA DEL ALMA o LIANA DEL ESPIRITU.

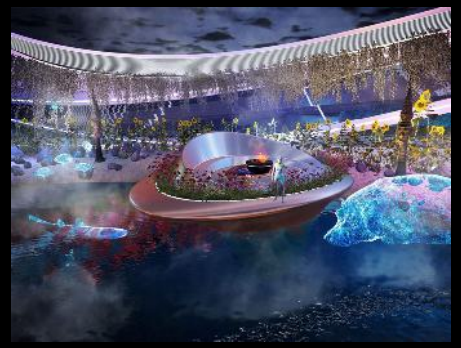
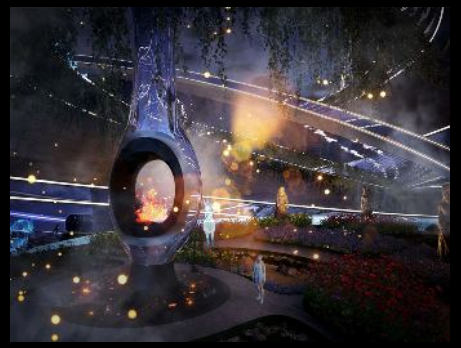
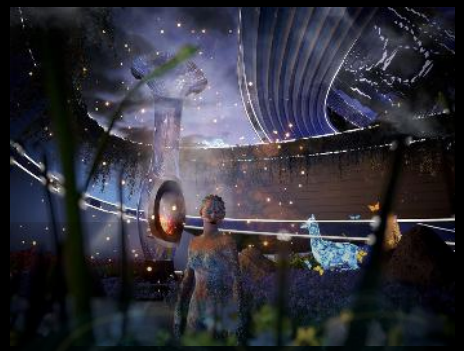
ARCHIMETAVERS PRO
Finalist Project at YAC 2023

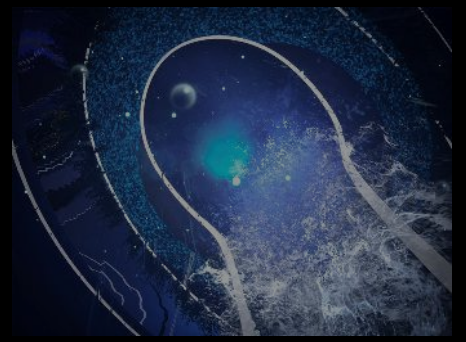
AYAHUASCA

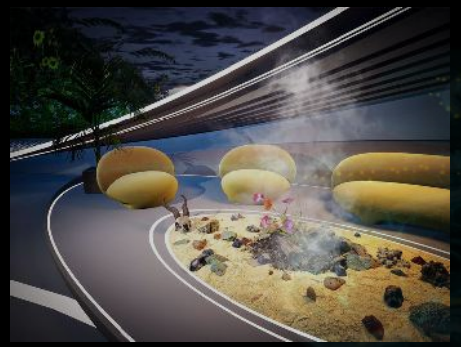
METAVERSO

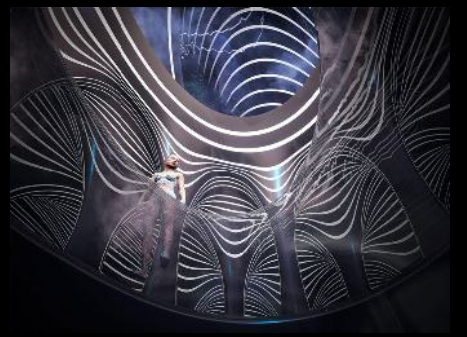


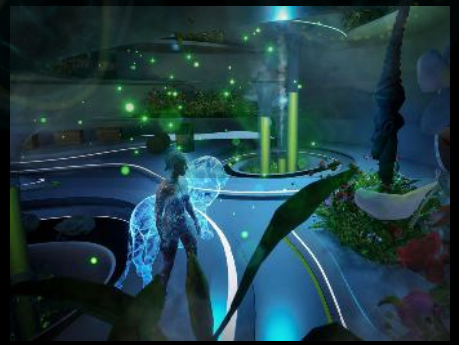


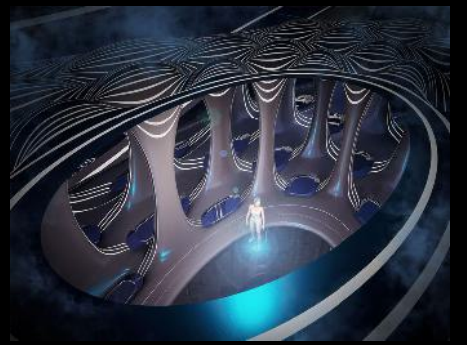









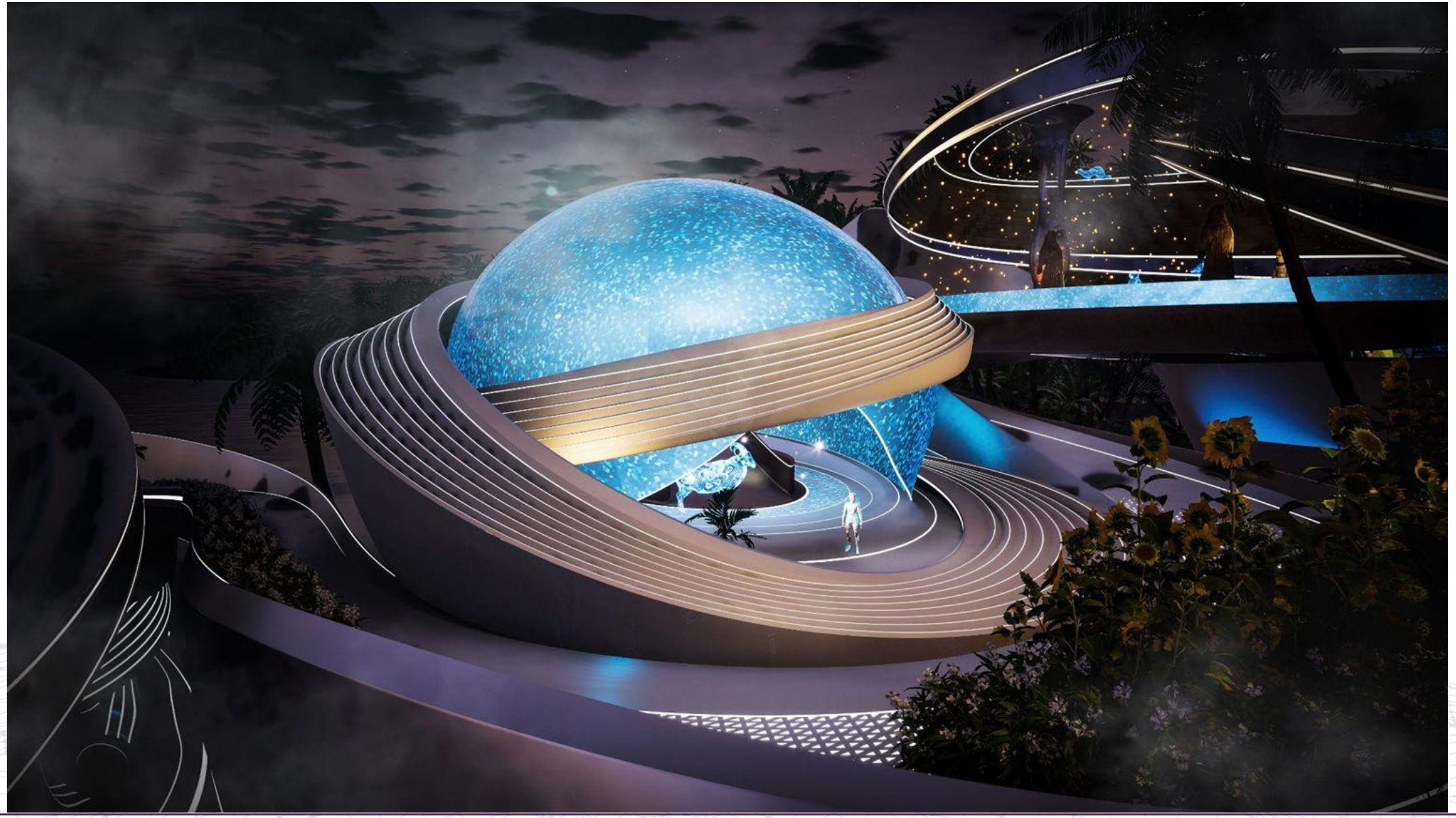





VANNA PILLACA

METAVERSO

2024



INVESTIGACION BIOMIMETICA

2022
2023

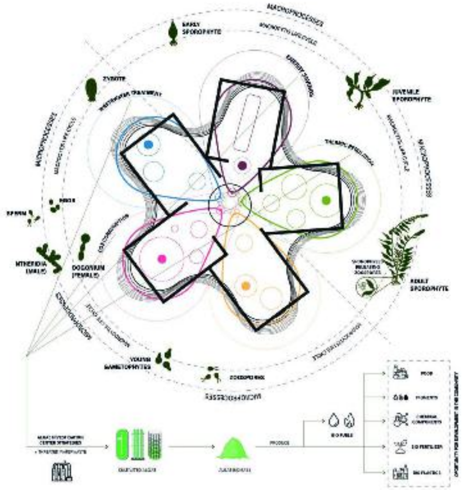
ALGAE RESEARCH CENTER

#Sustainability #Biomaterials #3DPrinting // THESIS PROJECT // 2020-2023

This project addresses the lack of infrastructure in Marcona, Peru by proposing a Macroalgae Research Center. The center aims to advance sustainable practices through macroalgae cultivation, bioluminescence research, and the production of eco-friendly materials such as bioplastics and biobricks. The initiative integrates research, production, residency and recreational spaces, fostering collaboration among fishermen, academics, and tourists. The design leverages Marcona's unique coastal ecosystem, emphasizing sustainability and innovation to compete in global markets.

Phases // Phase 1: Research, experts interview and contextual analysis. // **Phase 2:** Integration of computational tools and bioinspired design methodologies. // **Phase 3:** Development of master plans and architectural visualizations.

Personal Role // Biomimicry research in Architecture, biomaterials research, Marcona research trip, architectural design, modeling, and visualization.
Thesis Advisor // Arch. José Cárdenas del Carpio
Consultants // Local fishing community ([illegible]), biotechnologists, architects.
Skills // Biomimicry design principles, Rhinoceros, Grasshopper, Maya, Autodesk, Autocad, Revit, Twinmotion, Midjourney, Adobe tools.

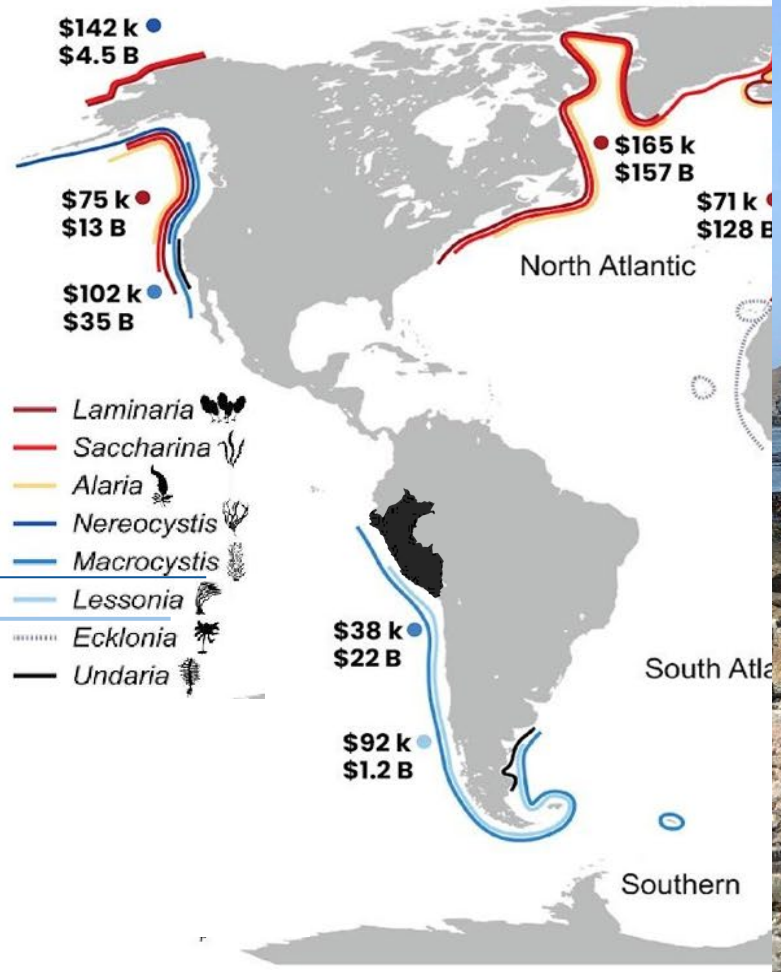


INVESTIGACION BIOMIMETICA

PAISAJES MARINOS

CENTRO DE INVESTIGACIÓN DE MACROALGAS EN MARCONA,PROVINCIA DE NASCA, ICA.

Potencial Económico y Desarrollo Sostenible



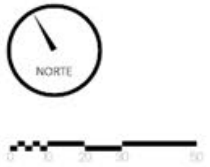
Las macroalgas contienen sustancias como el alginato, utilizado en m
biomateriales. Este hecho ha convertido a las macroalgas en una princi
Marcona.

Potencial Económico y Desarrollo Sostenible

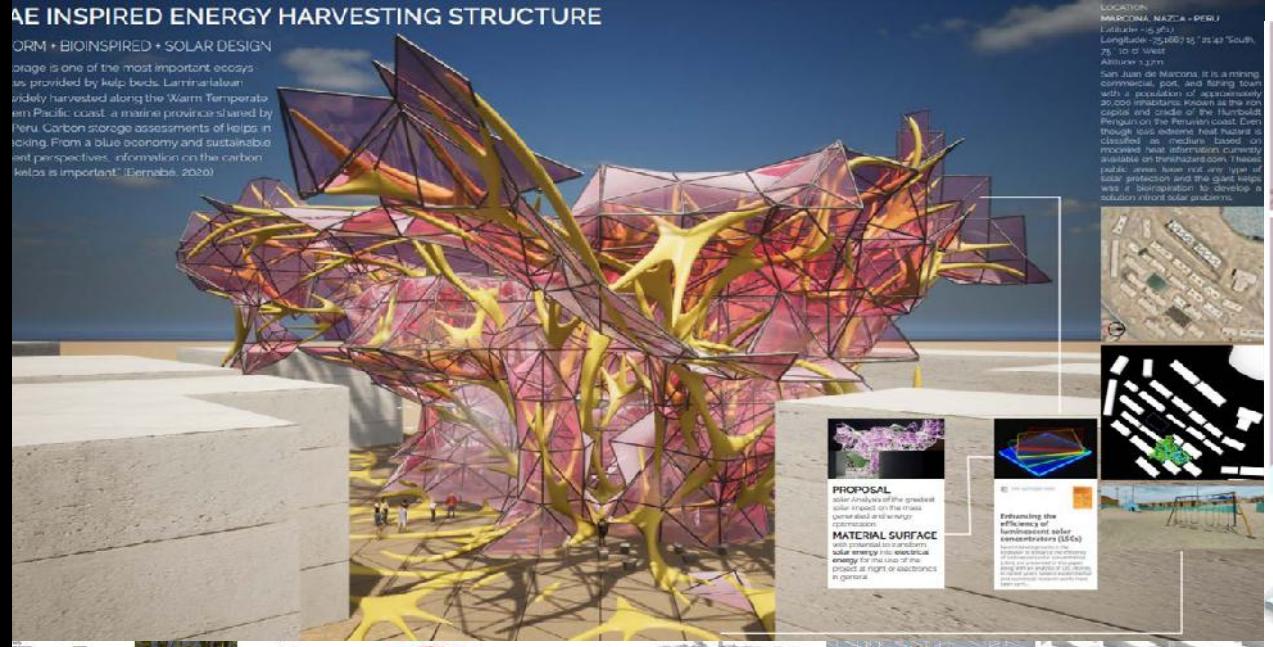
Las macroalgas tienen aplicaciones en la **industria farmacéutica, textil, vitivinícola y alimentaria**. Además, se utilizan en la producción de fertilizantes, forraje y en la extracción de compuestos con propiedades antifúngicas, antivirales, anticancerígenas y antibacterianas. También se destacan por su capacidad de reducir el gas metano en la digestión del ganado vacuno y se han utilizado en la **producción de oxígeno, biocombustible, ladrillos y biopaneles.**

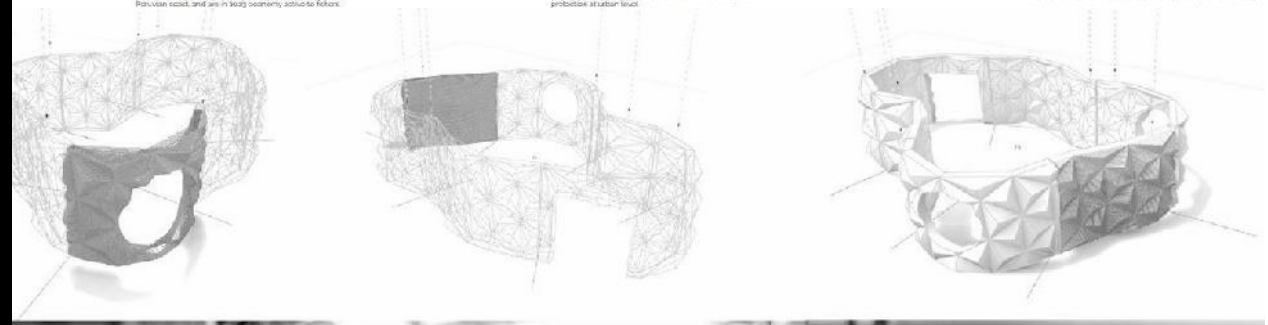
Plot Plan

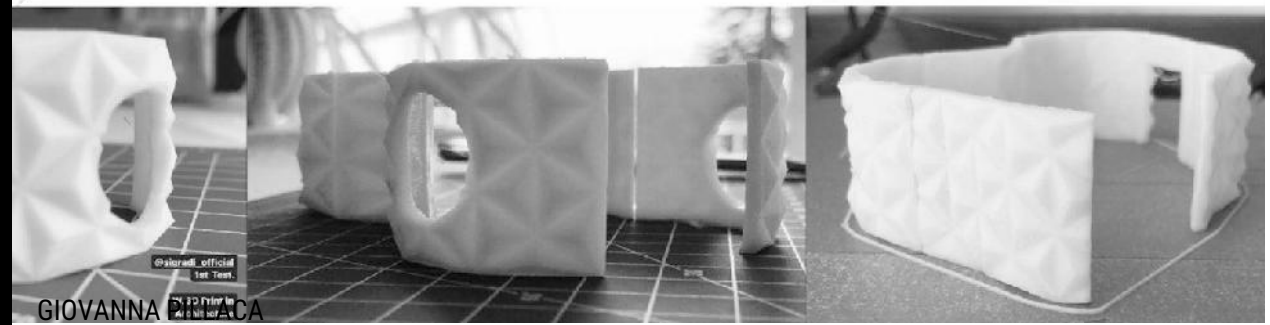
- A Ingreso: Plaza de Ingreso, Oficinas Administrativas, Tópico y Seguridad
- B Investigación: Microalgas y Macroalgas
- C Procesamiento: Control, Pesado,Triturado y Molienda
- D Auditorio
- E Restaurante
- F Residencia
- G Plazas en niveles: Conexión Central
- H Acopio de Bolos de Algas Plaza de Ingreso a Investigación y Procesamiento
- I Secado de Algas
- J Linea de polea para mover Bolos de Playa a Proyecto
- K Piscinas de Algas: Macroalgas y Microalgas
- L Estacionamiento de Camiones: Circulacion R : 12m Investigación y Procesamiento
- M Estacionamiento General: Usos Adminsitrativos y Complementarios

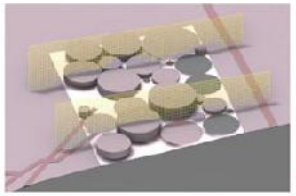


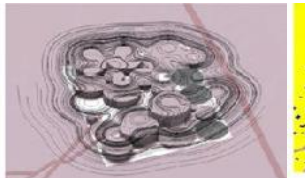
INVESTIGACION BIOMIMETICA

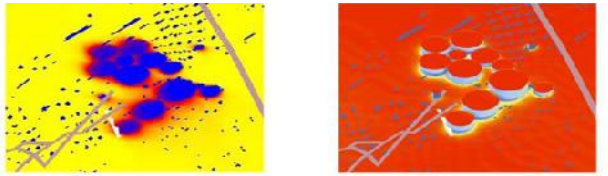


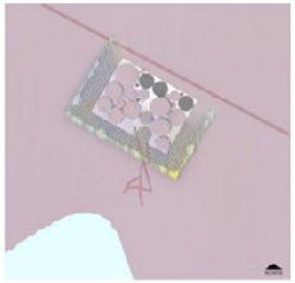


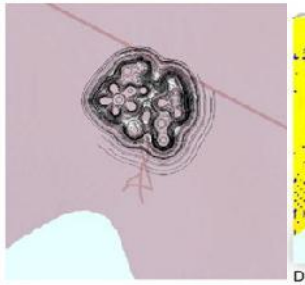


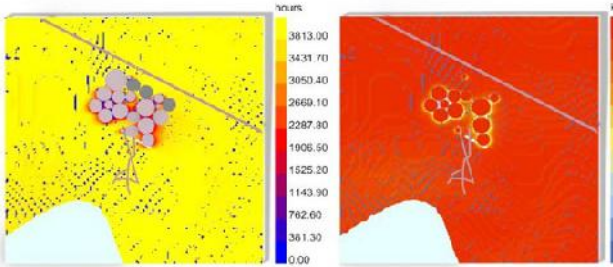






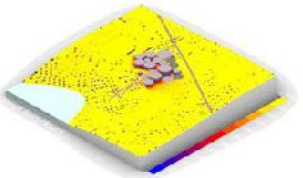




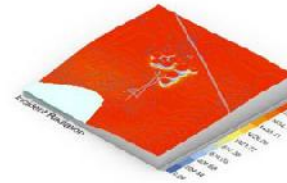


ESTUDIO DE IMPACTO DE VECTORES DE VIENTO.
EN EL MES DE JUNIO, MÁS DE VIENTOS DE 2M/M/HORA CON DIRECCIÓN NOR ESTE

DIAGRAMA MATEMÁTICO DE VECTORES DE FUERZA.
GENERADOS POR LOS VALORES DE VIENTO IMPACTADOS EN LOS BLOQUES DE ORGANIZACIÓN FUNCIONAL DEL PROYECTO.



Las zonas en azul representa la áreas en sombra por la ocupación de la arquitectura.



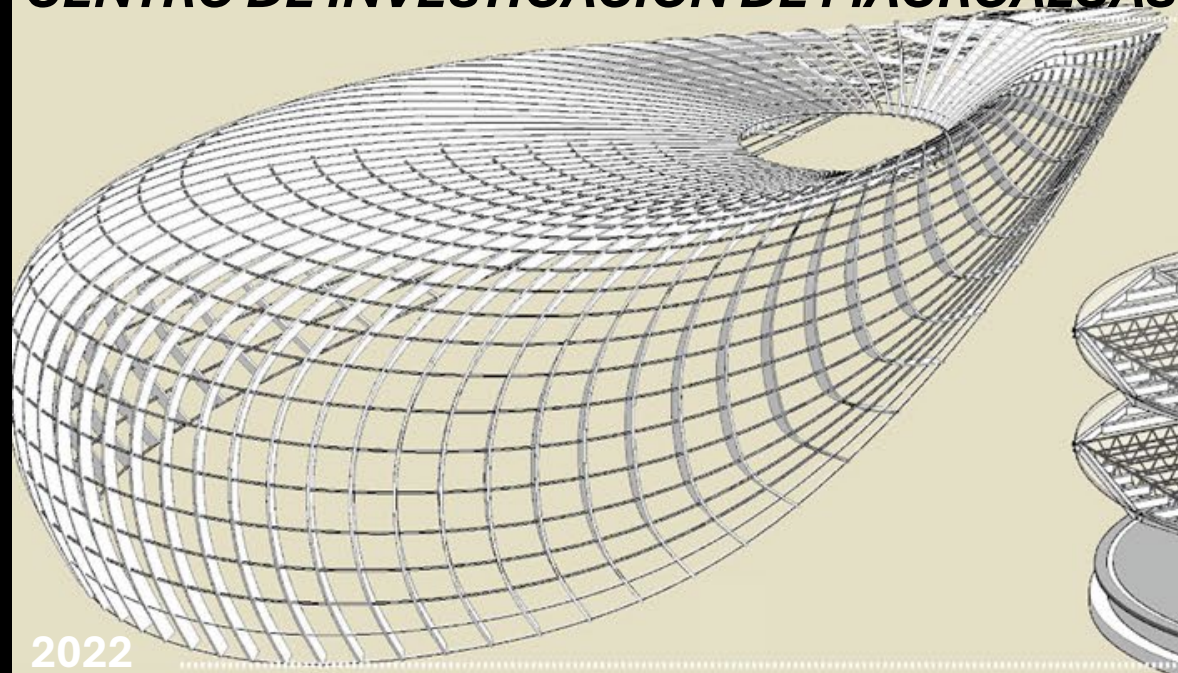
La alta radiación visibilizada en las zonas rojas permitirá usar paneles solares para uso energético.

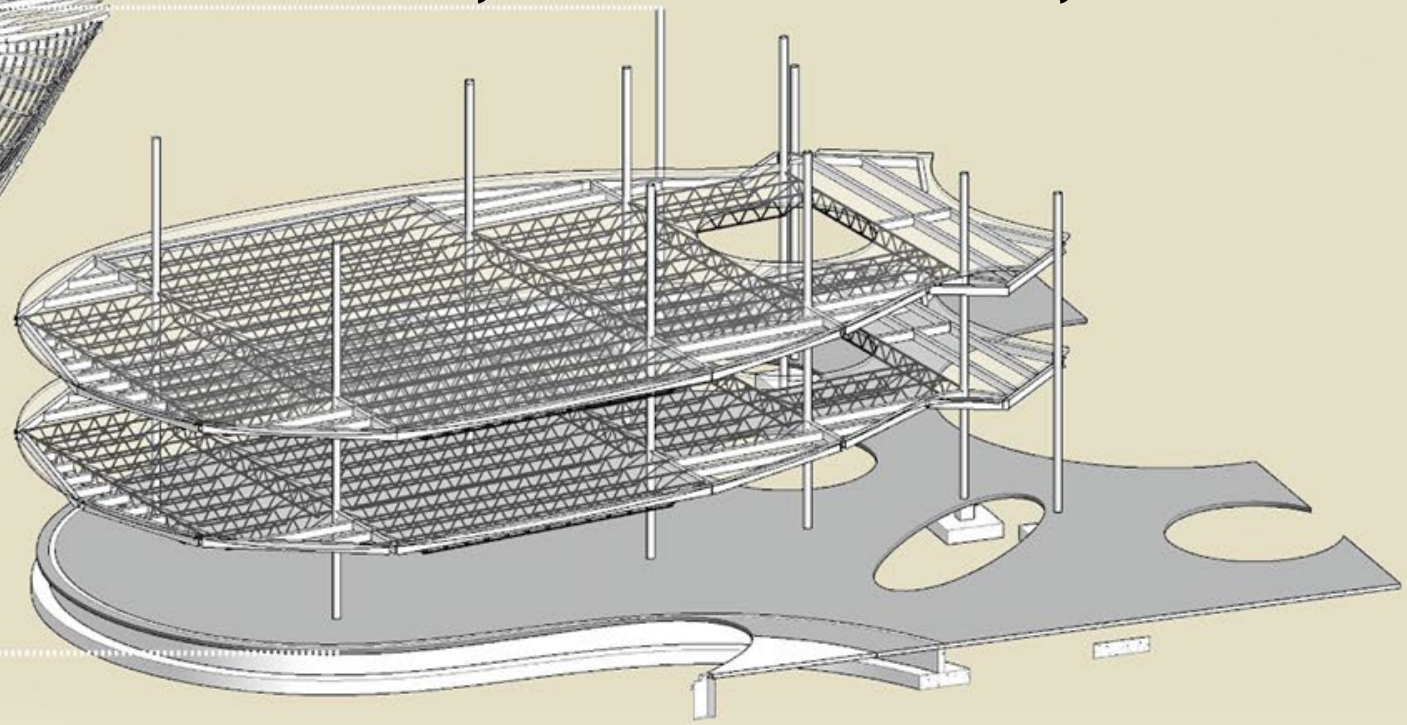
GIOVANNA PLACA

INVESTIGACION BIOMIMETICA

PAISAJES MARINOS

CENTRO DE INVESTIGACIÓN DE MACROALGAS EN MARCONA, PROVINCIA DE NASCA, ICA.



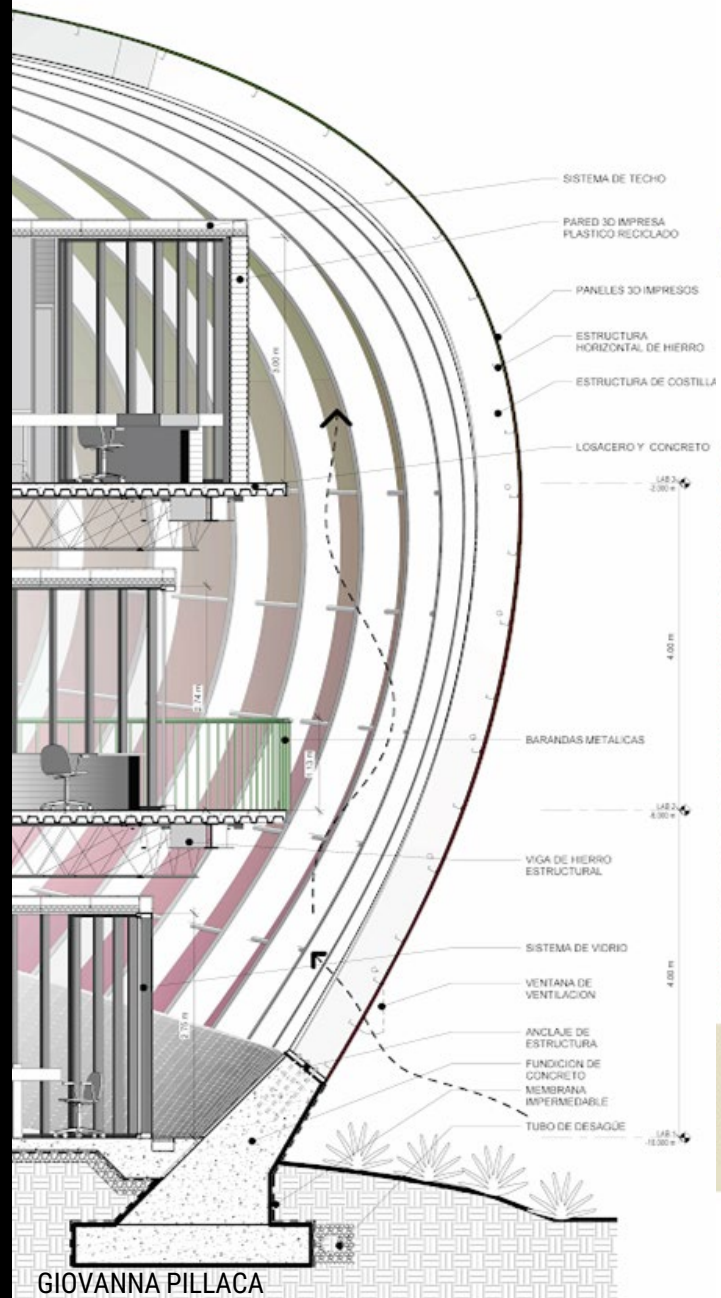


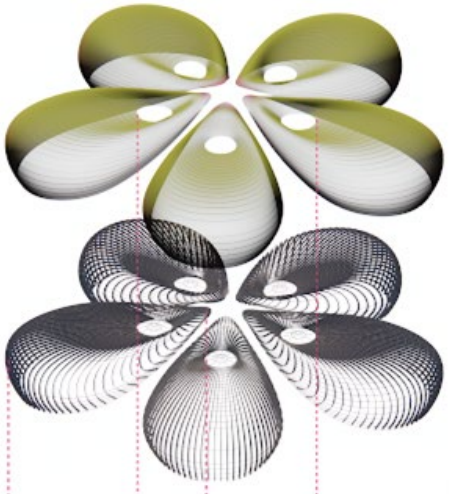
2022
2023

ESTRUCTURA EXTERIOR
ESTRUCTURA GRILLADA TIPO MALLA QUE SOPORTA PANELES DE COBERTURA

ESTRUCTURA INTERIOR
ESTRUCTURA DE ACERO
GRILLA DE COLUMNAS Y VIGAS

INVESTIGACION BIOMIMETICA

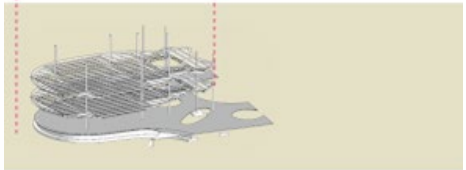


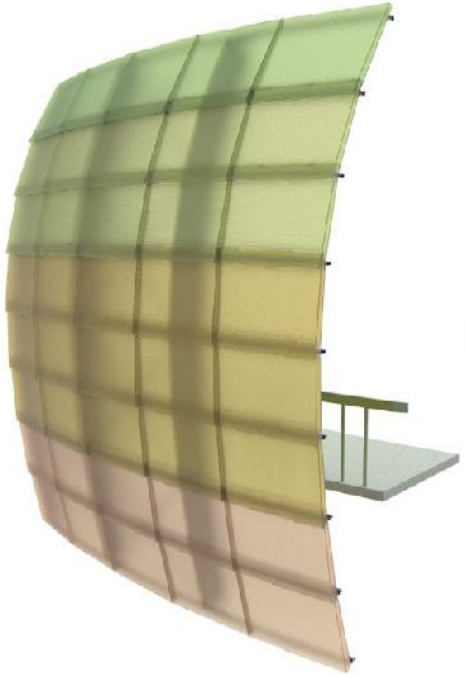


ESTRUCTURA TIPO MALLA

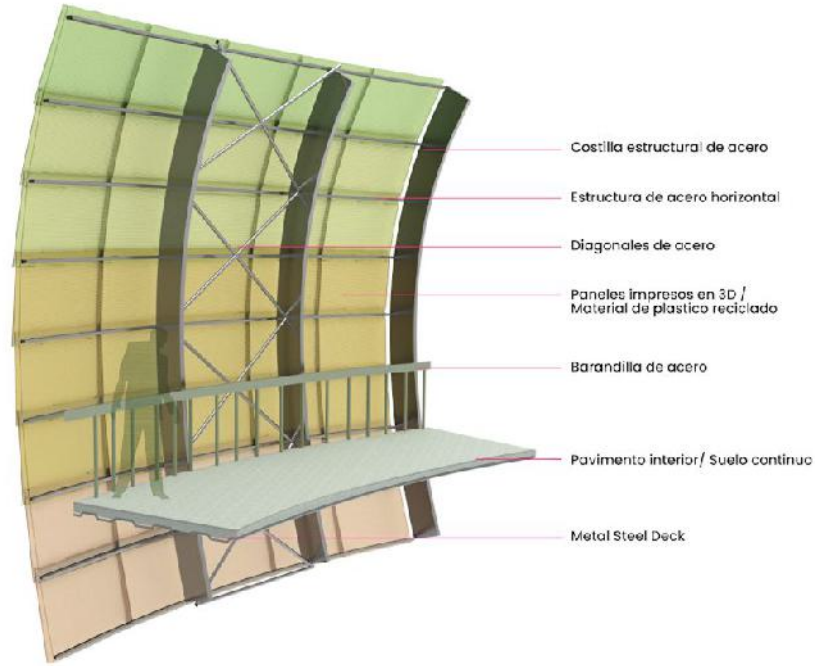
COLUMNAS METALICAS REVESTIDAS

CAPAS DE ESTRUCTURA DE ARQUITECTURA ENVOLVENTE

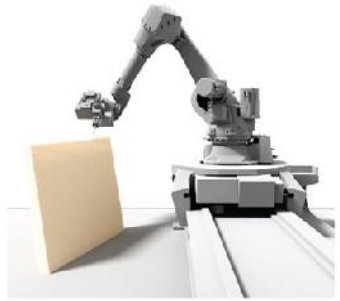




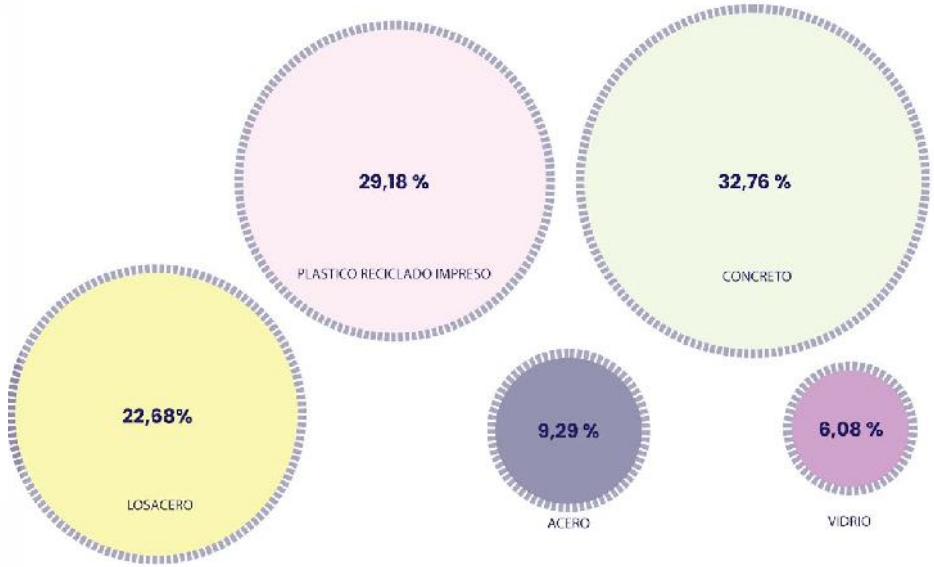
ESTRUCTURA EXTERIOR
SECCIÓN - VISTA DESDE EXTERIOR - DE ESTRUCTURA DE FACHADA TIPO MALLA QUE SOPORTA PANELES DE COBERTURA



ESTRUCTURA EXTERIOR
SECCIÓN - VISTA DESDE INTERIOR - DE ESTRUCTURA DE FACHADA TIPO MALLA QUE SOPORTA PANELES DE COBERTURA



IMPRESIÓN 3D
BRAZO ROBÓTICO EXTRUYENDO PLASTICO RECICLADO PARA PANELES

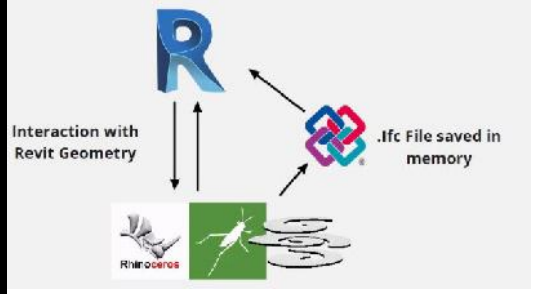


GIOVANNA PILLACA

Metodología: La Optimización de Superficies roperabilidad

Rhinoceros ← AUTODESK MAYA

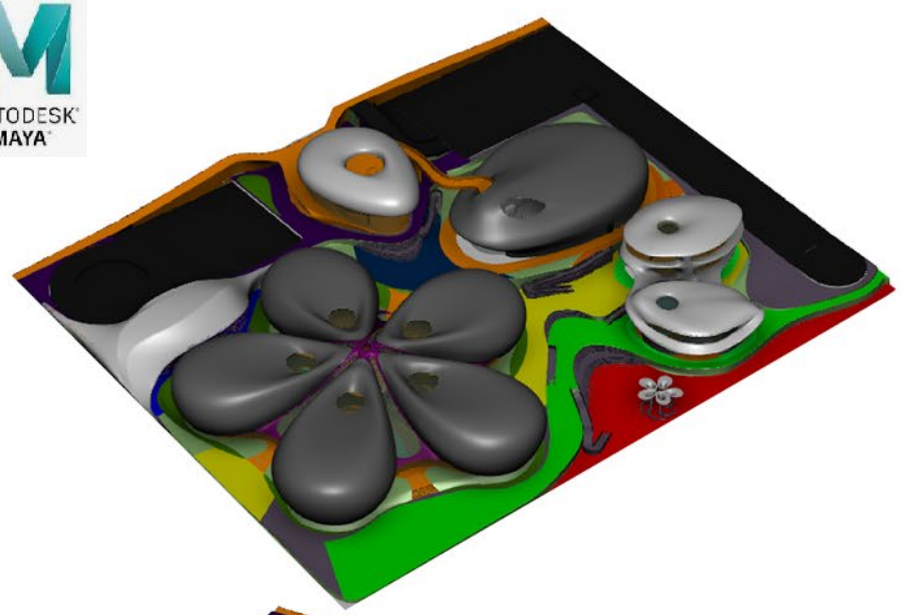
Rhino.Inside

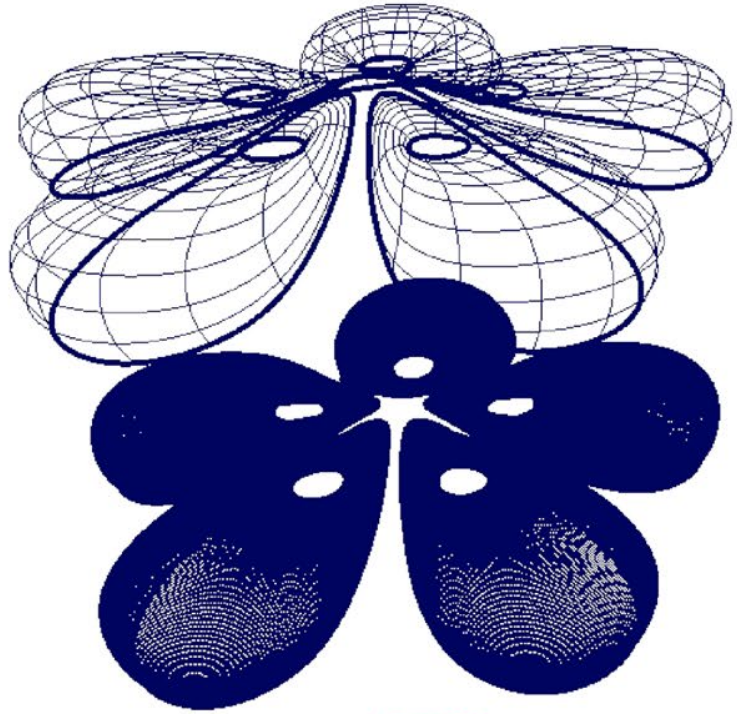


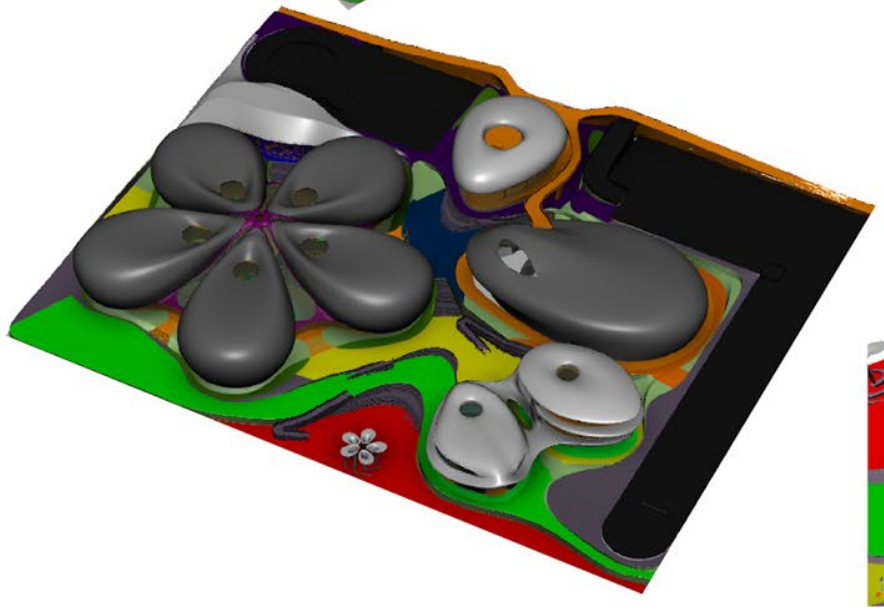
BEAM

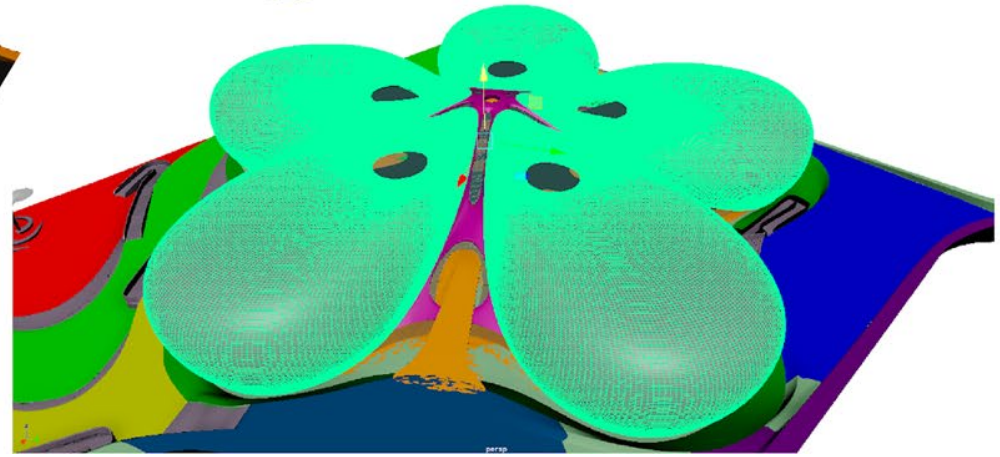
Rhinoceros and Revit interoperability tool

Rhinoceros · AUTODESK REVIT · Dynamo · grasshopper

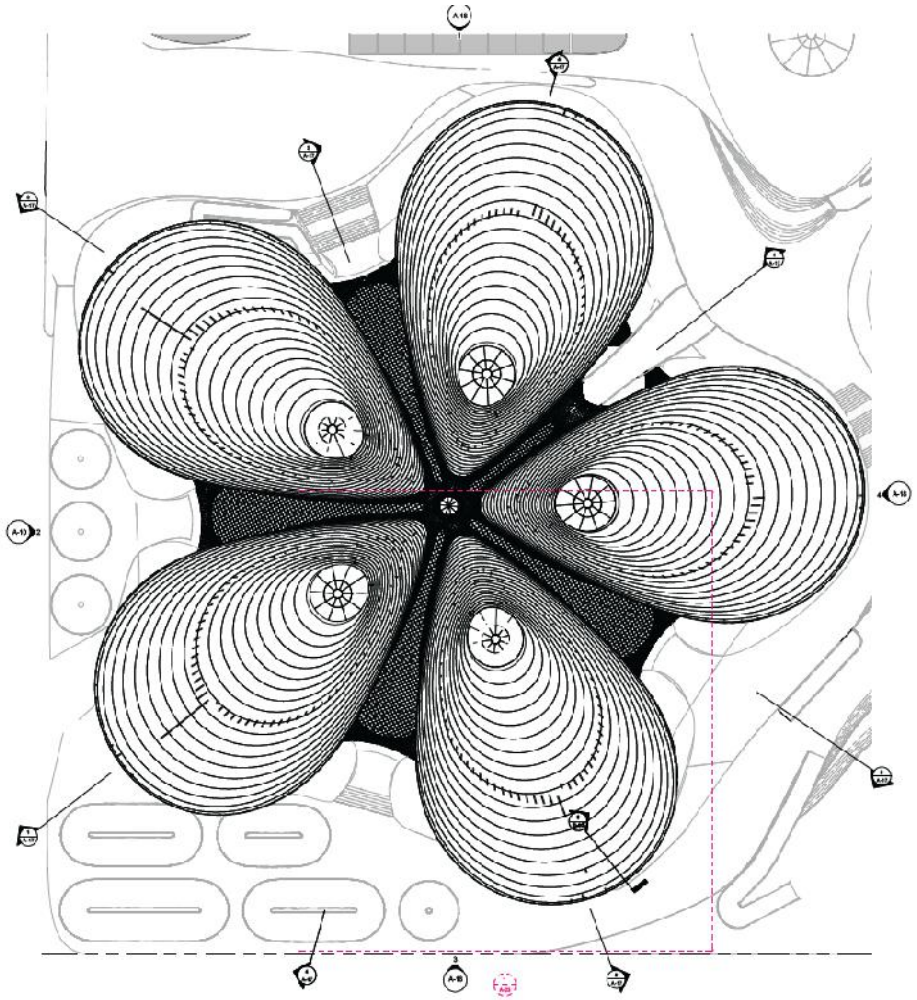


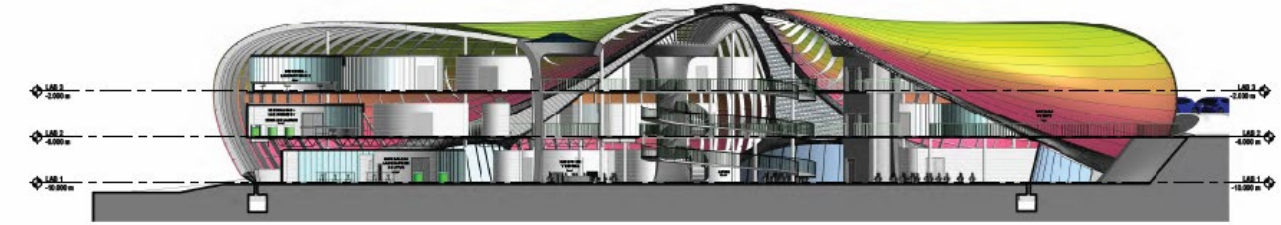




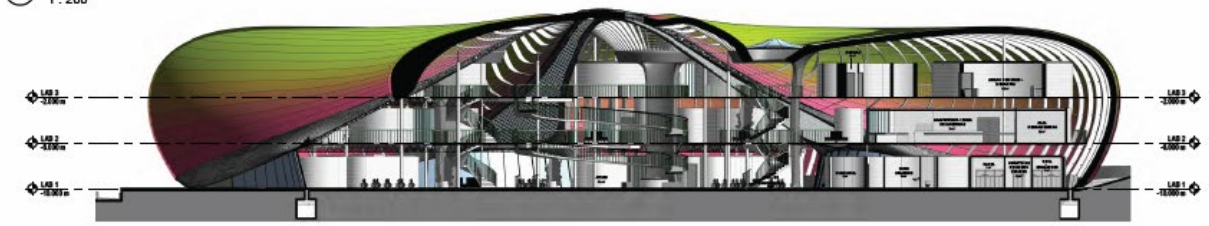


Secciones del Área de Investigación y Procesamiento

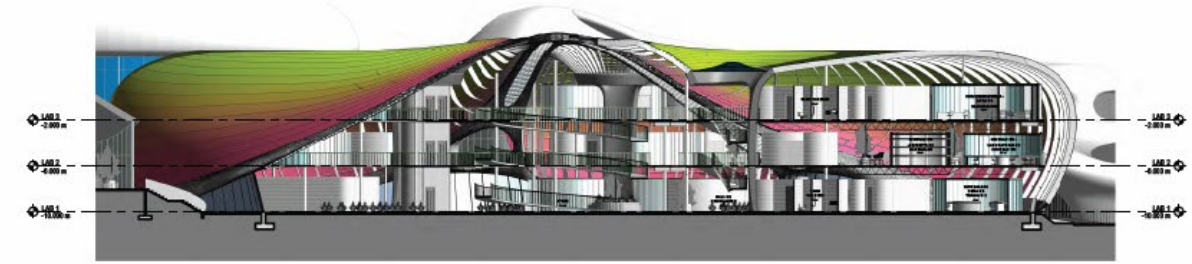




1 SECTOR B - CORTE A-A
1 : 200



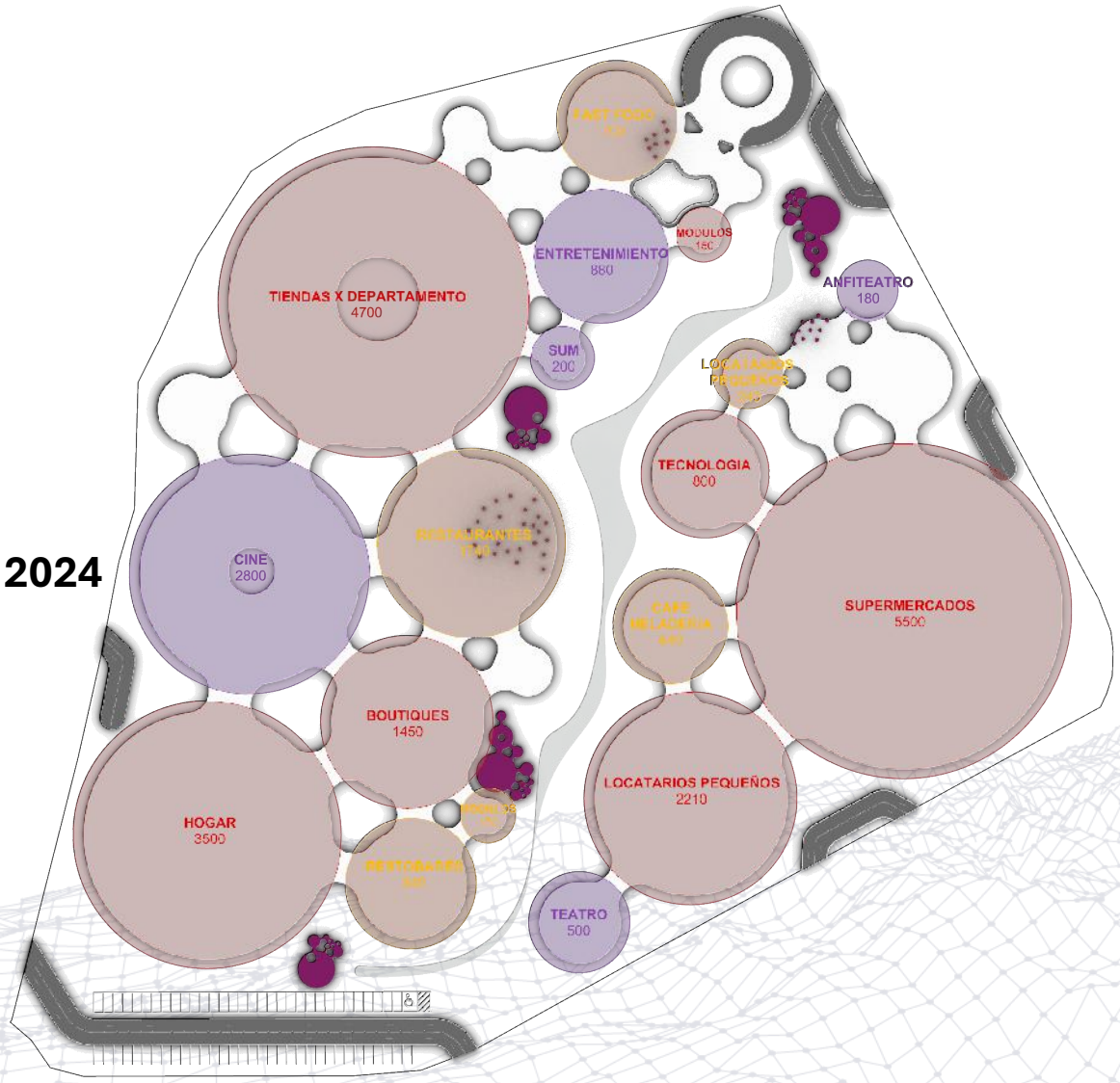
2 SECTOR B - CORTE B-B
1 : 200

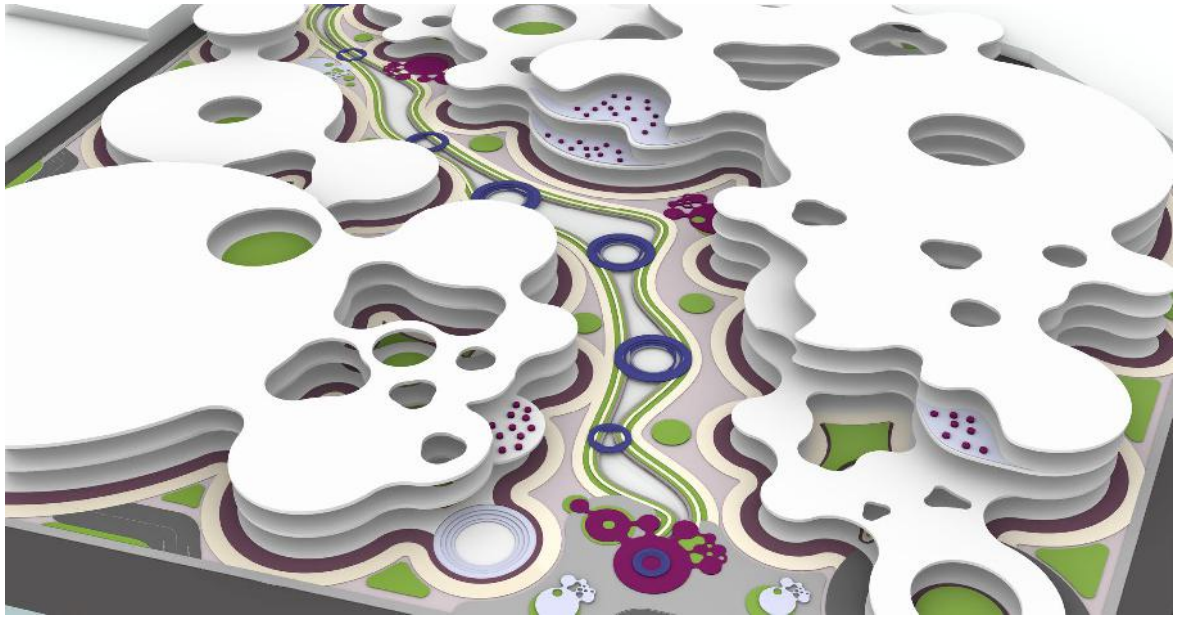


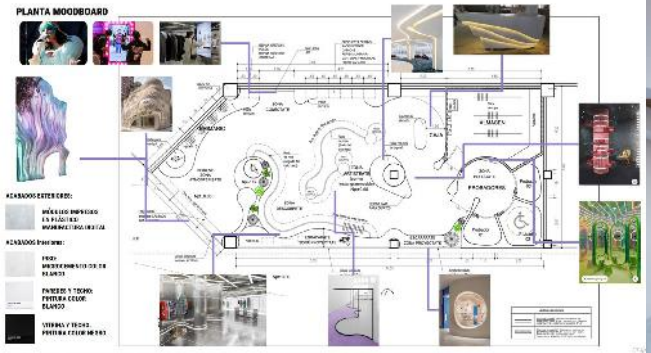
3 SECTOR B - CORTE C-C
1 : 200

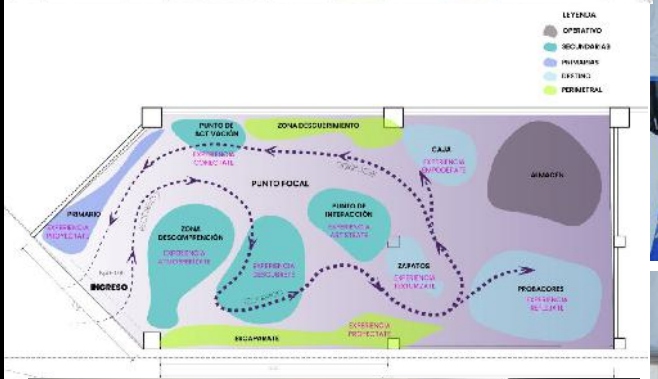
4 SECTOR B - CORTE D-D
1 : 200

2024


FAST FOOD
ENTRETENIMIENTO
880
MODULOS
150
TIENDAS X DEPARTAMENTO
4700
ANFITEATRO
180
SUM
200
LOCATARIOS PEQUEÑOS
TECNOLOGIA
800
RESTAURANTES
CINE
2800
CAFE HELADERIA
SUPERMERCADOS
5500
BOUTIQUES
1450
HOGAR
3500
LOCATARIOS PEQUEÑOS
2210
MODULOS
RESTOBARES
TEATRO
500




PLANTA MOODBOARD


PUNTO DE ACTIVACIÓN
ZONA DESCUBRIMIENTO
CAJA
PUNTO FOCAL
ALMACEN
PRIMARIO
ZONA DESCONTEMPLACIÓN
PUNTO DE INTERACCIÓN
ZAPATOS
INGRESO
PROBADORES
SECUNDARIAS
EXPERIENCIA PROYECTUAR

2024

INTELIGENCIA ARTIFICIAL
Estrategia híbrida

PHYGITAL
Estrategia híbrida

EXPERIENCIA MULTISENSORIAL
Estrategia híbrida

REALIDAD AUMENTADA Y VIRTUAL (AR Y VR)
Estrategia híbrida

OMNICANALIDAD
Estrategia híbrida

SOSTENIBILIDAD
Estrategia híbrida

CO-DISEÑO
Estrategia colaborativa

TECNOLOGÍAS DE VANGUARDIA
+
CREACIÓN DE EXPERIENCIAS MULTISENSORIALES
+
ADAPTACIÓN DE PRÁCTICAS SOSTENIBLES

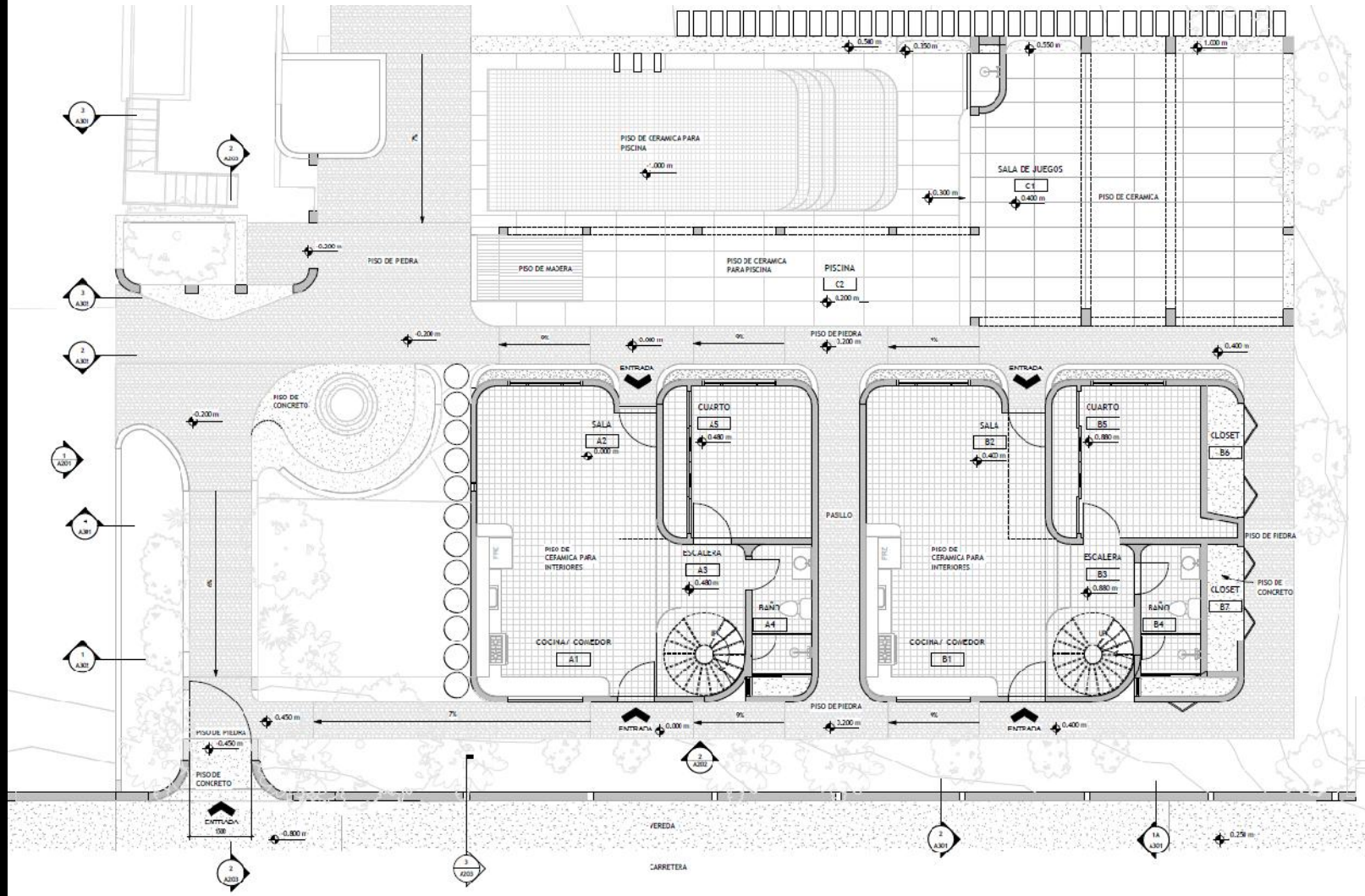
La integración de estas estrategias con tecnologías avanzadas y un enfoque centrado en el cliente *está transformando el retail*

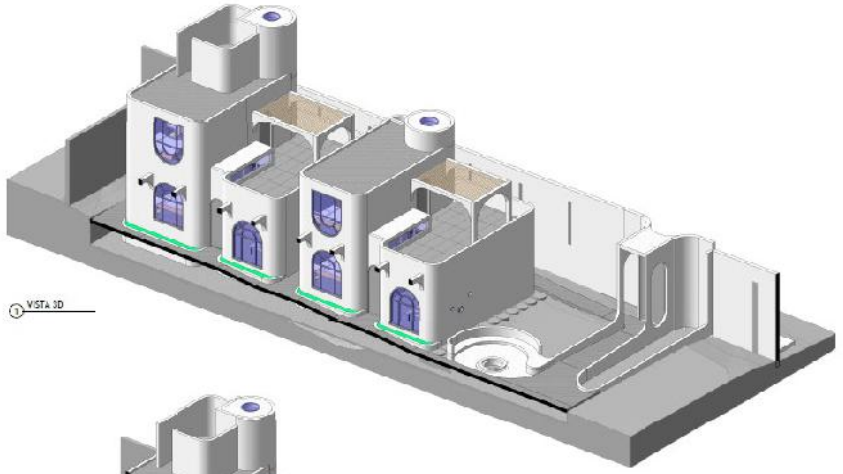
PROYECTO CIENEGUILLA

2025

Convergencias en la Innovación Académica Maker:
La Arquitectura y el Diseño en la Era de la Transformación Digital.

PROYECTO CIENEGUILLA





PROYECTO CIENEGUILLA

AI-AIDED COLLECTIVE URBAN ADAPTIVE REUSE

Tatjana Crossley, Daniel Escobar, George Guida, Giovanna Pillaca Morote

Location:
La Biennale Architettura 2025

Project Team:
George Guida
Daniel Escobar
Tatjana Crossley
Giovanna Pillaca
Carlos Navarro
Jean Santos
Andrew Witt

3D WORLD RECONSTRUCTION

_USER PROMPT
_TESTO UTENTE

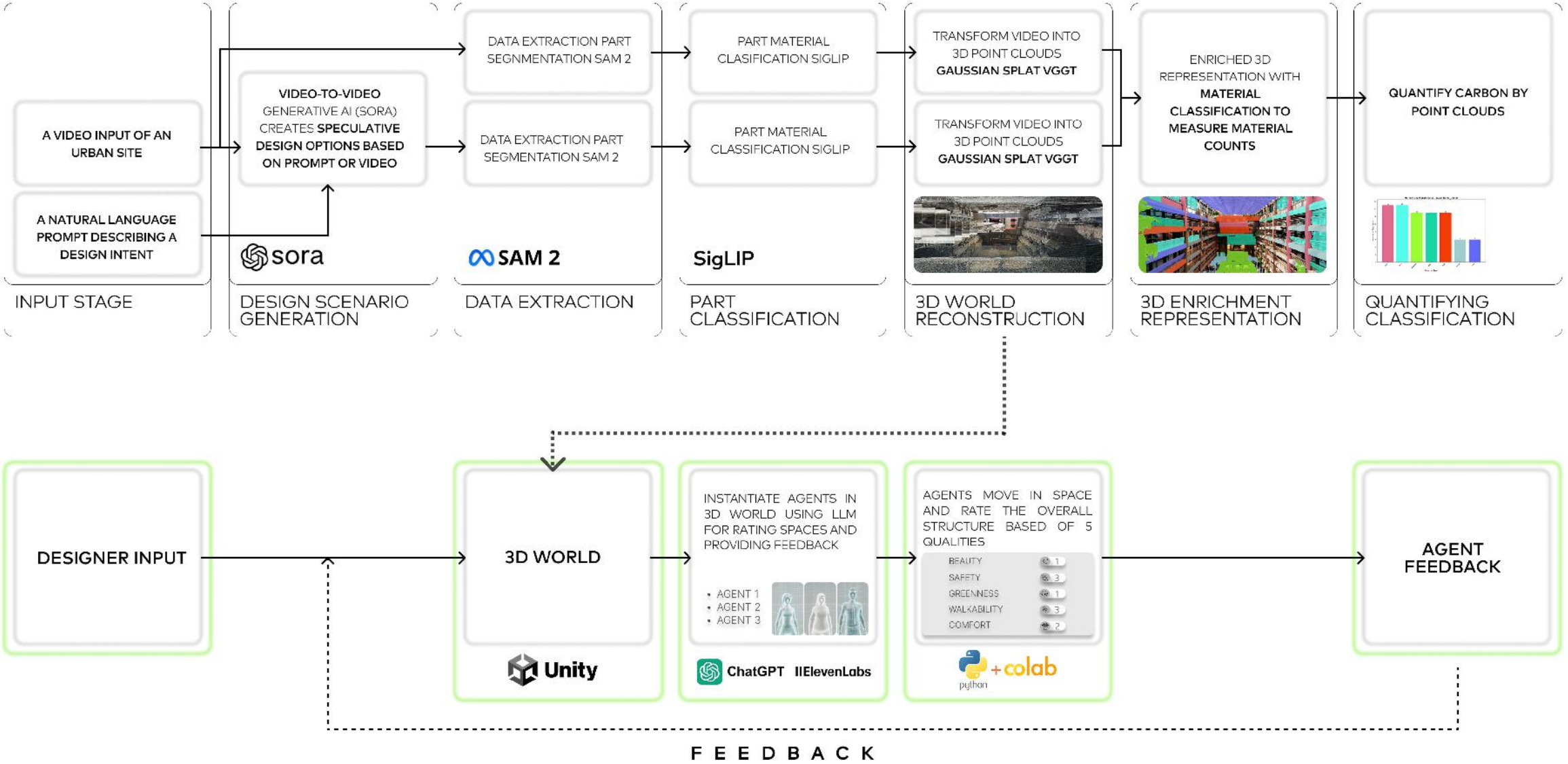
Sustainable futuristic residential building with a fluid white form, soft ovals, smooth curves, and organic design.

Edificio residenziale futuristico e sostenibile, dalla forma fluida e bianca, ovali morbidi, curve morbide e design organico.

INITIATED
AVVIATO

AGENTS FEEDBACK

AI-AIDED COLLECTIVE URBAN ADAPTIVE REUSE: ZERO-CARBON FUTURE



EXTERIOR CAMERA RECONSTRUCTION

INTERIOR CAMERA RECONSTRUCTION

DIAGRAM OF INPUT STAGE:
DATA SET UP FROM SITE RECONSTRUCTION

FOR EACH CAMERA: SAVE LOCATION (EXTRINSIC MATRIX) AND INTRINSIC PROPERTIES (FOCAL LENGTH)

VISUAL HULL VOXELS

IN FUSTRUM VOXELS

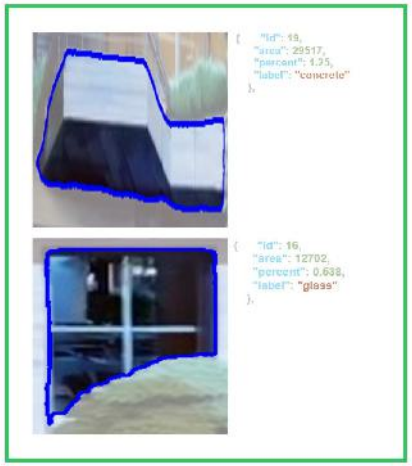
GIOVANNA PILLACA

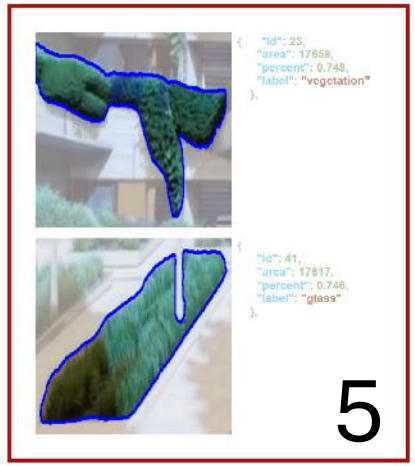
DIAGRAM OF DESIGN SCENARIO GENERATION: WORKFLOW OF EXTERIOR AND INTERIOR

MODIFY FACADE BASED ON PROMPT

MODIFY INTERIORS BASED ON PROMPT

MERGE 3D MODELS





1. IDENTIFYING NON-BUILDING OBJECTS
2. OBJECT MASK
3. INFILL AND INPAINT MASKS.
4. IDENTIFY MATERIALS
5. CLASSIFY AND REPROJECT TO 3D MATERIALS FOR FINAL COUNT

DIAGRAM OF DATA MATERIAL EXTRACTION + PART CLASSIFICATION

GIOVANNA PILLACA

AGENTS PERSONALITES

AGENT #01

The Inclusive Urbanist

Dr. Sofia Mendes

Universal Design & Accessibility Expert

Focus Areas:
- Barrier-Free Urban Planning
- Public Transport & Sidewalk Accessibility
- Smart Cities For Disability Inclusion

BEAUTIFUL	SAFETY	GREENNESS	WALKABILITY	COMFORT
4	5	3	4	3

AGENT #02

The Urban Ecologist

Dr. Olivia Carter

Climate Scientist & Ecological Planner

Focus Areas:
- Green Infrastructure & Biodiversity
- Air Quality & Sustainability
- Climate Adaptation & Urban Forests

BEAUTIFUL	SAFETY	GREENNESS	WALKABILITY	COMFORT
2	3	4	3	2

AGENT #03

The Computational Architect

Rafaella Domínguez

Transport & Safety Expert

Focus Areas:
- Public Transit & Cycling Infrastructure
- Safe Urban Design For All Users
- Data-Driven Risk Analysis For Crime Prevention

BEAUTIFUL	SAFETY	GREENNESS	WALKABILITY	COMFORT
4	3	2	4	3

AGENT #04

The Community Connector

Amina Patel

Social Equity & Community Engagement Specialist

Focus Areas:
- Inclusive Urban Planning
- Public Participation In City Design
- Social Accessibility & Local Culture

BEAUTIFUL	SAFETY	GREENNESS	WALKABILITY	COMFORT
4	5	3	2	3

AGENT #05

The Security & Mobility Analyst

Leo Nakamura

Smart Cities & AI Urban Designer

Focus Areas:
- AI-Driven Urban Layouts
- Sustainable Materials & Energy-Efficient Design
- Digital Twin Simulations For Smart Infrastructure

BEAUTIFUL	SAFETY	GREENNESS	WALKABILITY	COMFORT
3	5	4	3	5

AGENT #06

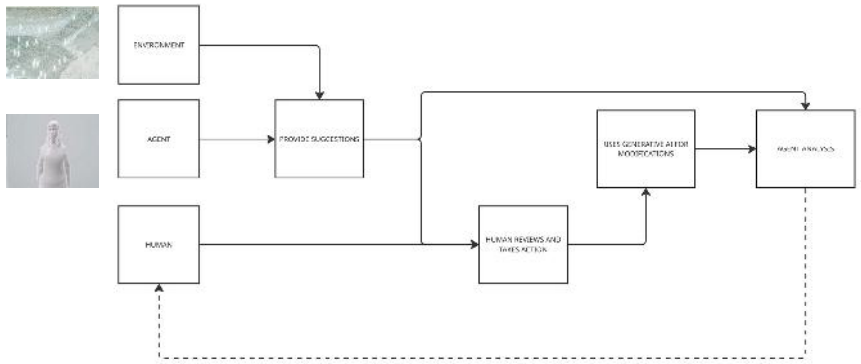
The Circular Economy Innovator

Javier Torres

Waste & Sustainability Strategist

Focus Areas:
- Urban Recycling & Zero-Waste Strategies
- Renewable Energy & Carbon-Neutral Solutions
- Community-Driven Circular Economy Systems

BEAUTIFUL	SAFETY	GREENNESS	WALKABILITY	COMFORT
4	4	3	2	3



DESIGN OVERVIEW / *SINTESI PROGETTUALE*

	INTERIOR DESIGN OPTION 01		INTERIOR DESIGN OPTION 02		INTERIOR DESIGN OPTION 03	
EXTERIOR DESIGN OPTION 01						
EXTERIOR DESIGN OPTION 02						
EXTERIOR DESIGN OPTION 03						

What if the city itself could become a collective interface?

≥ ẽħṁūƵḷ ḷ Ƶǿђј́Ƶǻ̃Ƶḷ ṅȍ̈ṅṣď
≥ ḷ Ƶṣďȍ̈ħƵ₄Ƶť ȍ̈Ƶј́——
≥ čħẹẹť řħṁḷ ½Ƶȍ̈ǻĝħṣďǻ̃ṣť ȍ̈ď
——

ẽħṁūƵḷ ḷ Ƶǿђј́ƵǻƵ≥ ẽḷ Ƶђ₄ǻ̃ṅḷ
ü ü ü ₄ẽħṁūƵḷ ḷ Ƶǿђј́ƵǻƵ₄ǻ̃ṅḷ