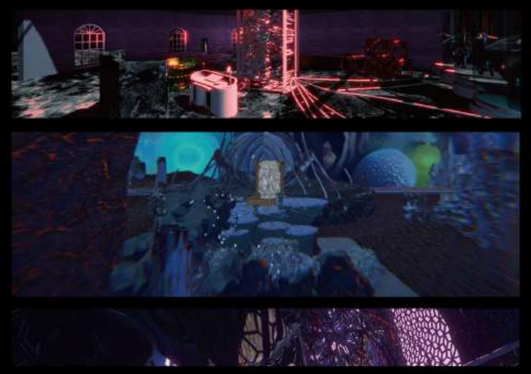
Portfolio

SHU YEN NUNG

National Yang Ming Chiao Tung University

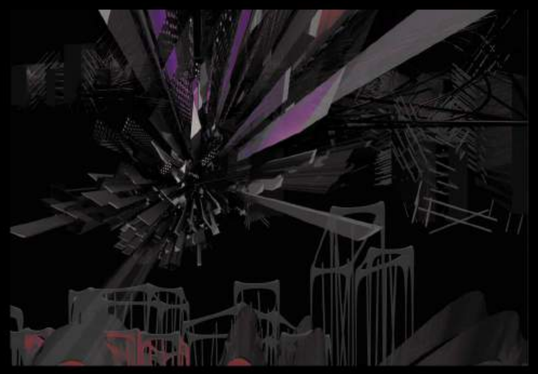
Graduate Institute of Architecture

Content



XR Project

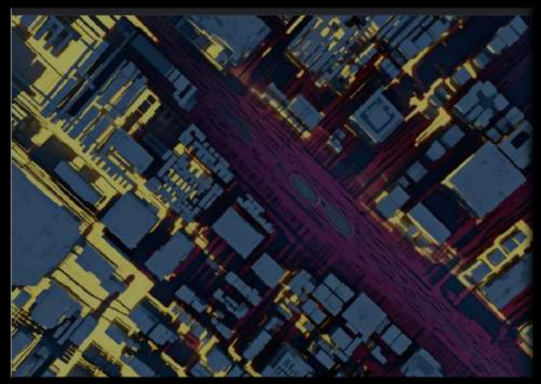
Architectural Algorithm



Graduation Design

Big Data

Digital Architecture Competition

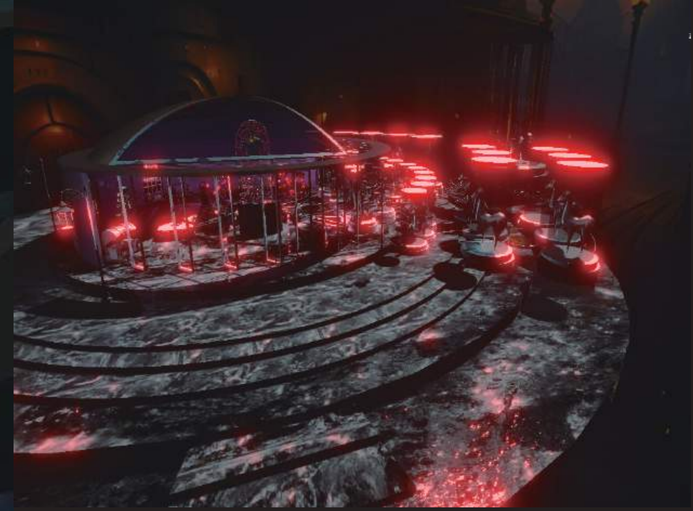


Big Data

XR Project

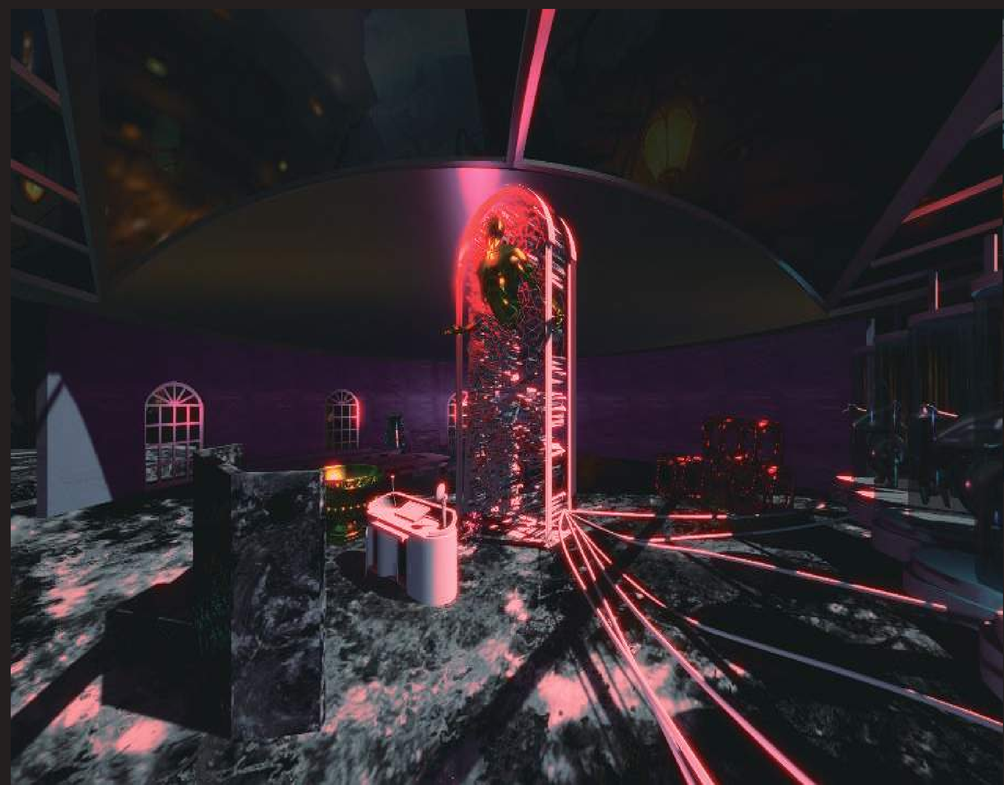
XR Project:
Refining Love,
Third Eye,
DISORIENTATION

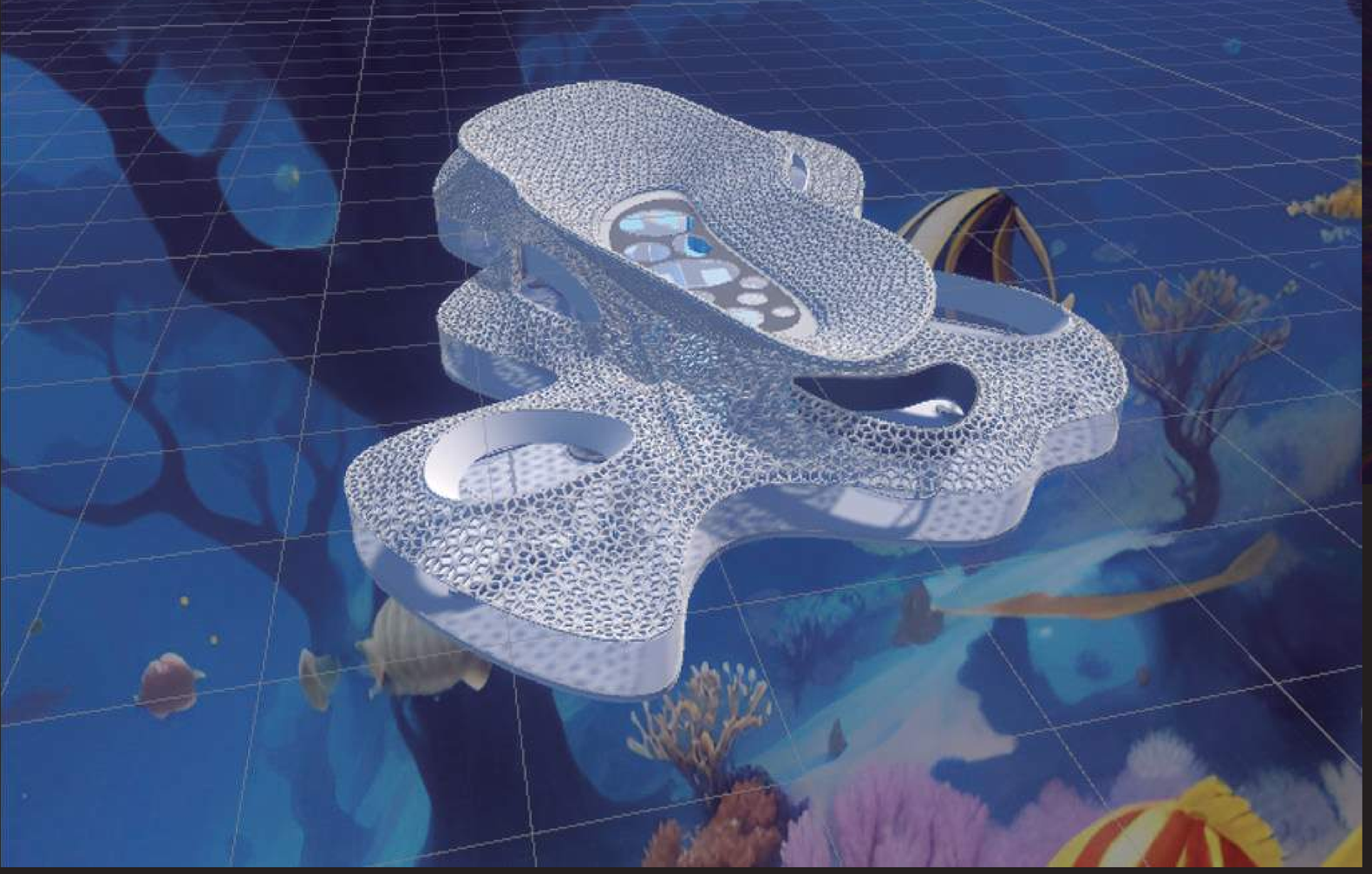
Software Used:
Unity3D, Blender, Rhino, Rhino Grasshopper

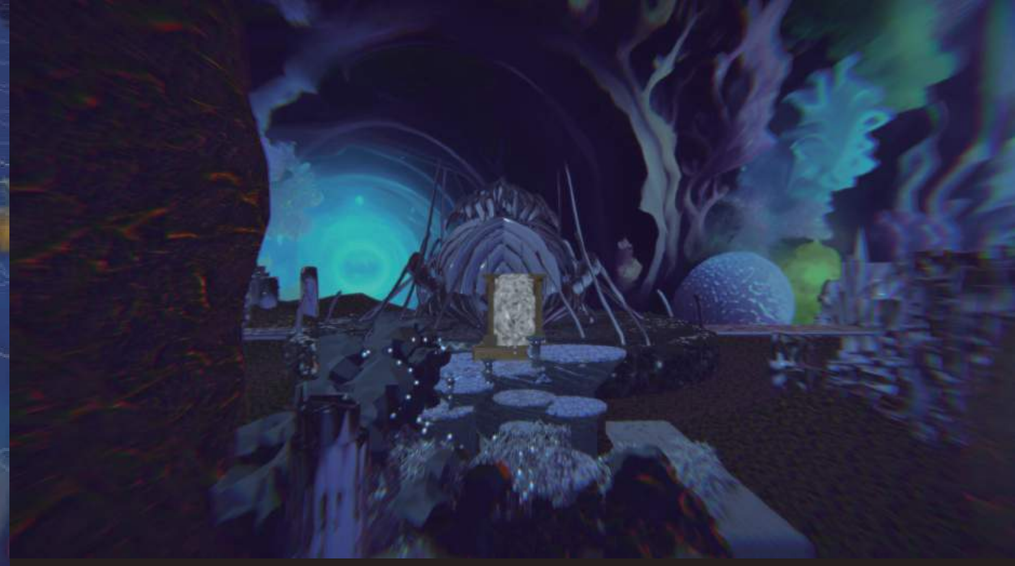


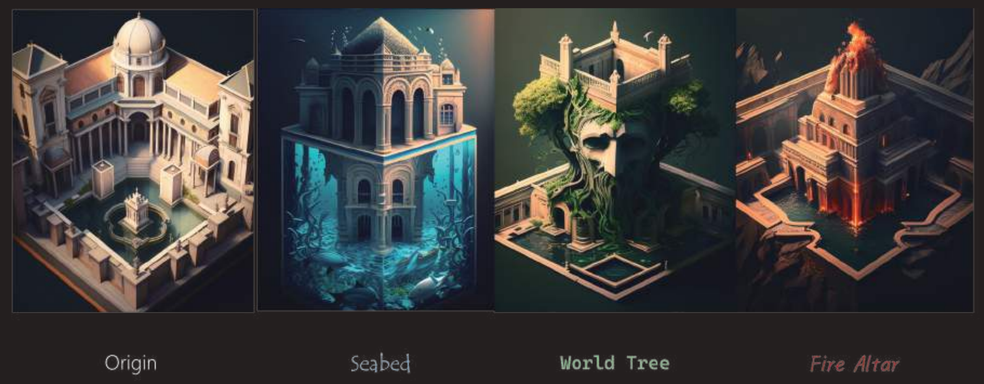
Refining Love

This project is the first assignment of the XR course, set in a steam-punk world where an alchemist conducts a series of experiments to resurrect his childhood sweetheart. In this project, I served as the scriptwriter, as well as the scene and overall visual designer.



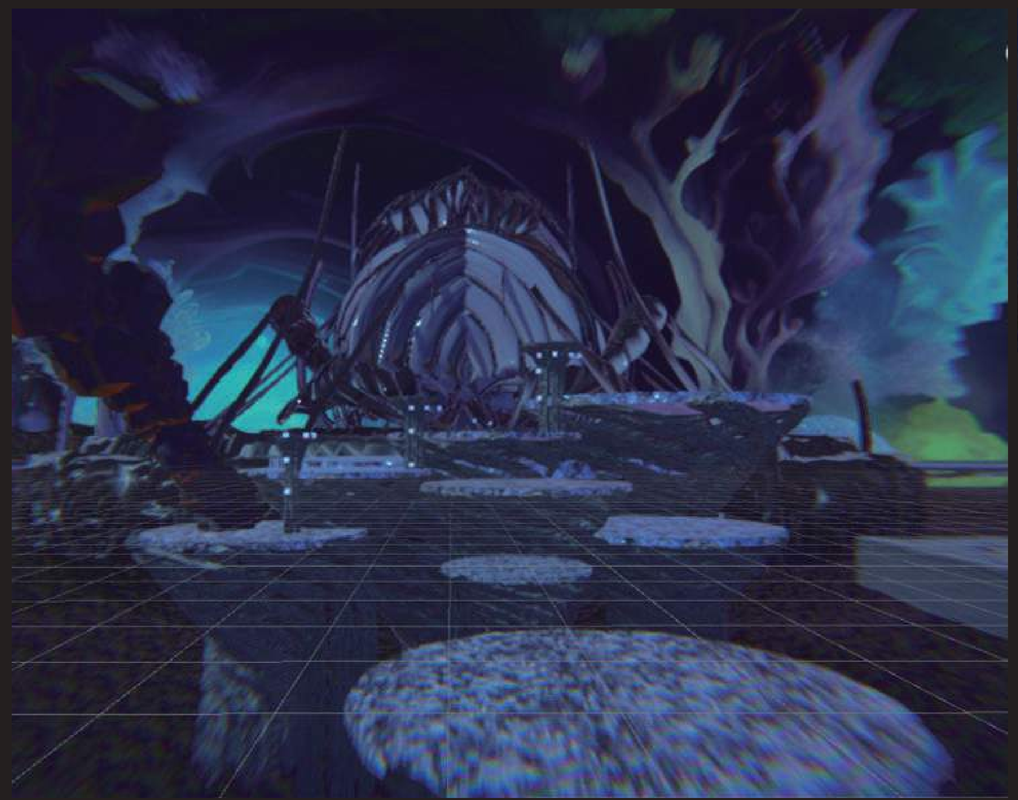


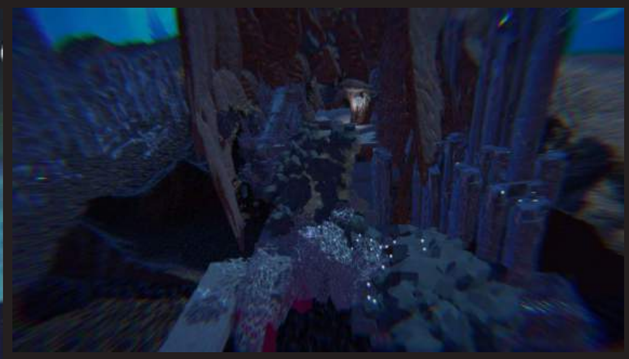


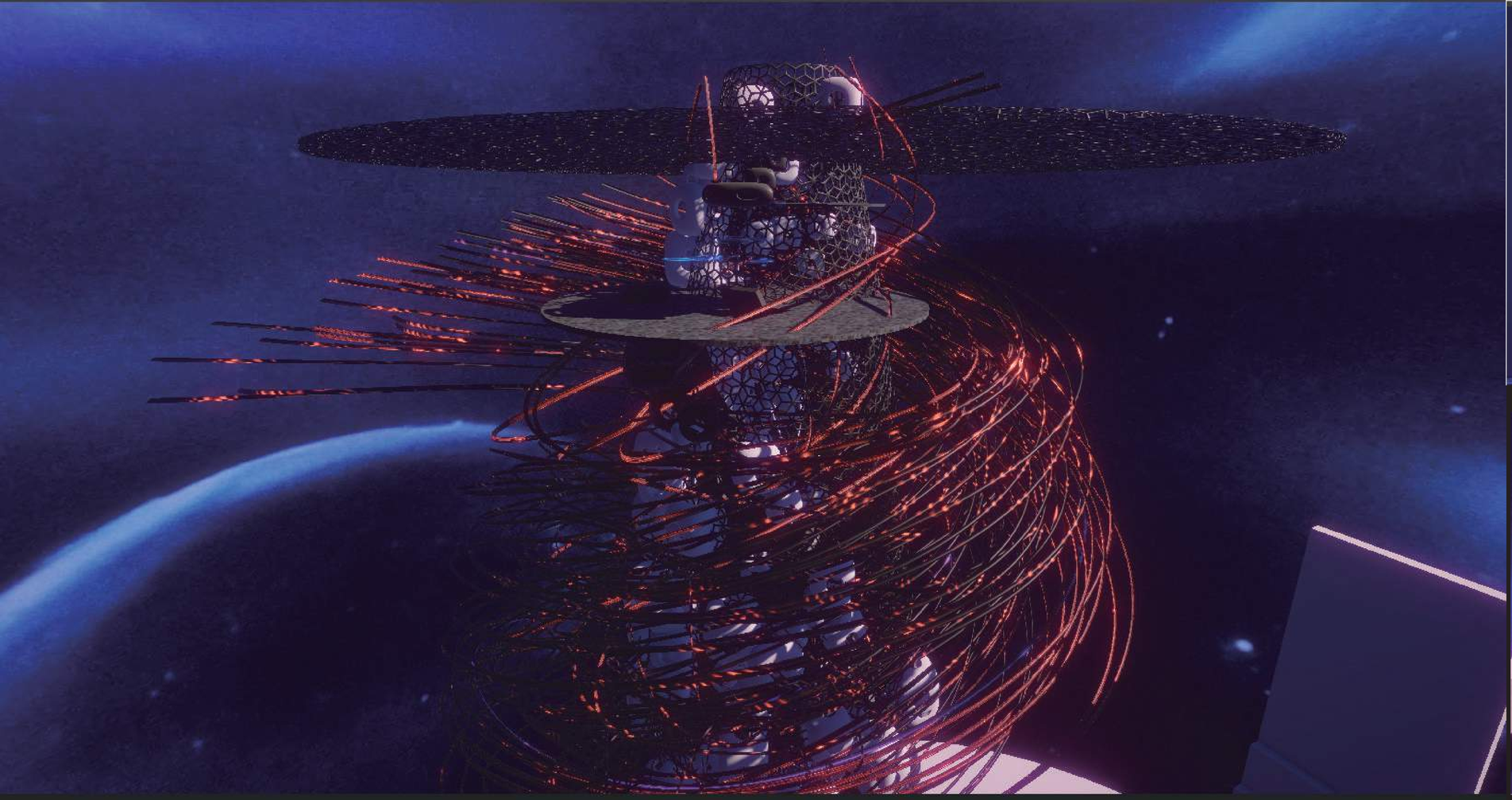


Third Eye

This project is the first assignment of the XR course, set in a steam-punk world where an alchemist conducts a series of experiments to resurrect his childhood sweetheart. In this project, I served as the scriptwriter, as well as the scene and overall visual designer.

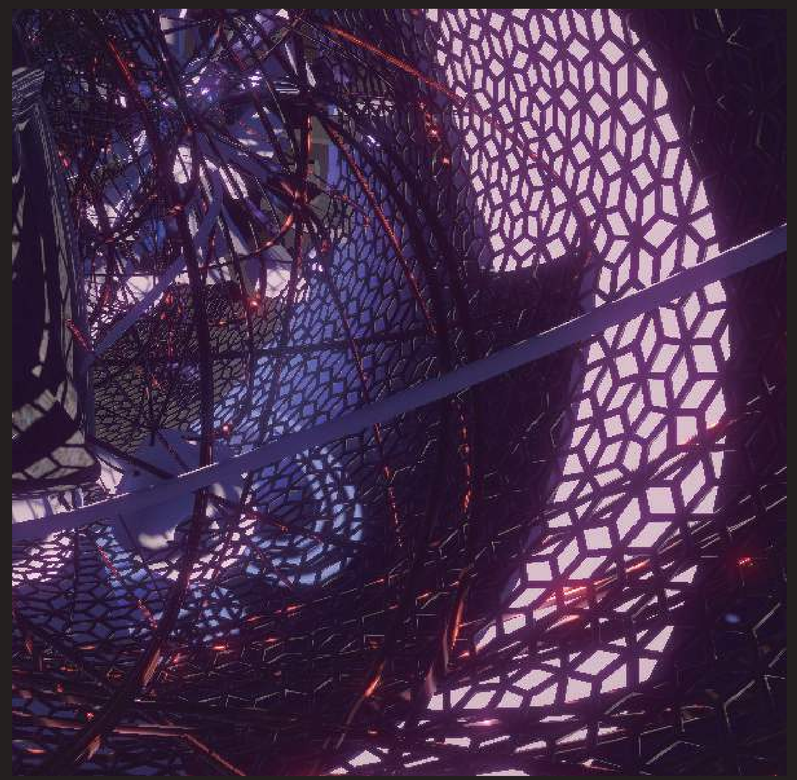


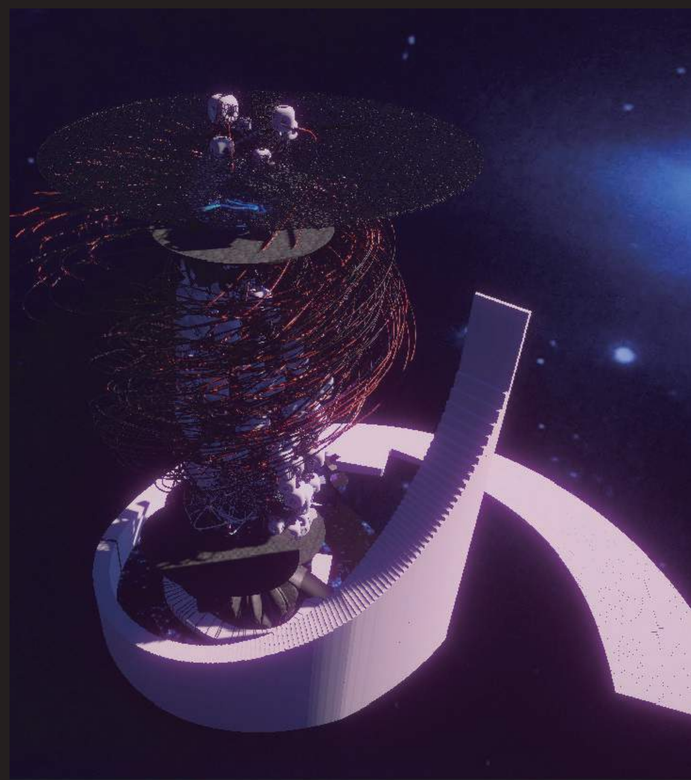




DISORIENTATION

This project is the second assignment of the XR course, notable for using point cloud models to construct the scenes and interactive segments of a VR game. The uniqueness of this project lies in the associations with the scenery, such as certain scenes having spatial scales and atmospheres reminiscent of an aquarium. We utilize people's associative thinking towards spaces and develop three different interactive scenes.

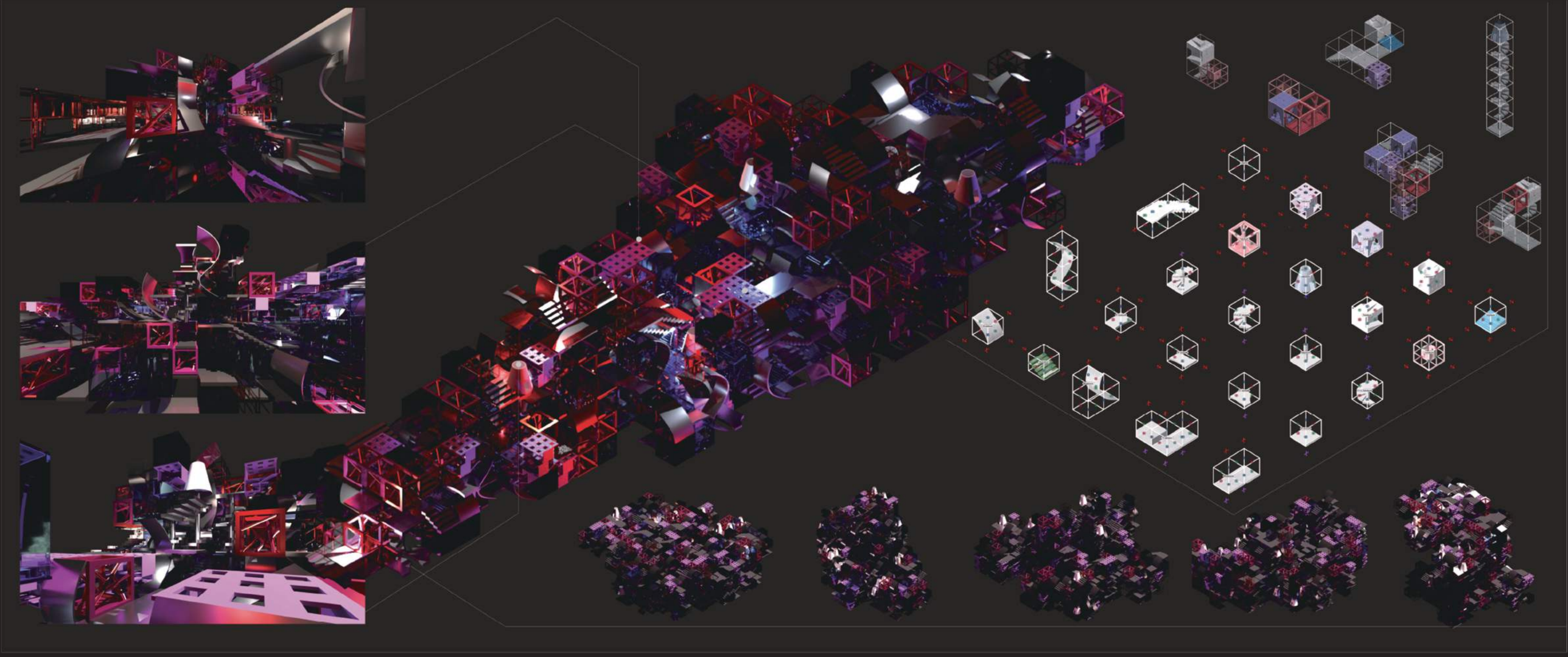




Digital Architecture Competition: The Dream Revealer

Software used: Rhino, Rhino Grasshopper, Twinmotion, V-Ray, Adobe

*This project was a team effort, and my responsibilities included algorithms, model design, planning and framework, as well as model rendering.



Team 03
夢境揭露所
The Dream Revealer
A Generative VR Model Network

2022 GIA DESIGN COMPETITION
Architectural Design Starting with AI Drawings

吳孟霈 Wu Meng-Pu / 謝博宇 Hsieh Po-Yu / 舒彥農 Shu Yen-Nung / 陳子媛 Chen Zi-Yuan / 游筠如 Yu Jun-Ru

AI Text-to-Image Generator	Midjourney
Artist Reference/Style Guide	Deconstructivism / Futuristic
3D Model	Rhino / Grasshopper / Twinmotion
Rendering	Rhino / Vray / Twinmotion / After Effects
Design Concept	The Dream Revealer Corp. was aimed to recreate every individual's dream in virtual-reality space based on their contents of dreams. In general, dreams can be classified into different catogories defined by 32 emotions. Through the dream reveal engine, each emotion is specificly matched to certain VR unit which was designed on the basis of AI drawings generated by all sorts of prompts as well as descriptions. Experiencing in this data-based VR spaces could be recognized as a progressive arousal in order to stimulated each indivudual's memories of dream.

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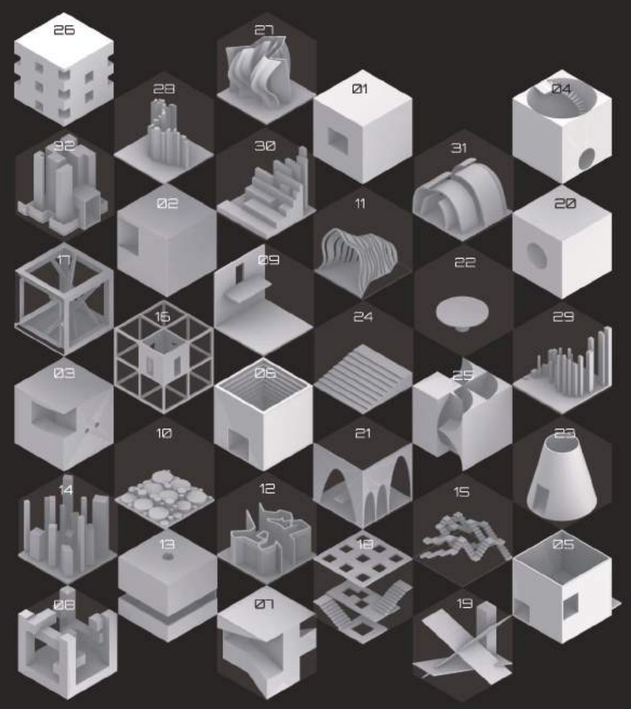
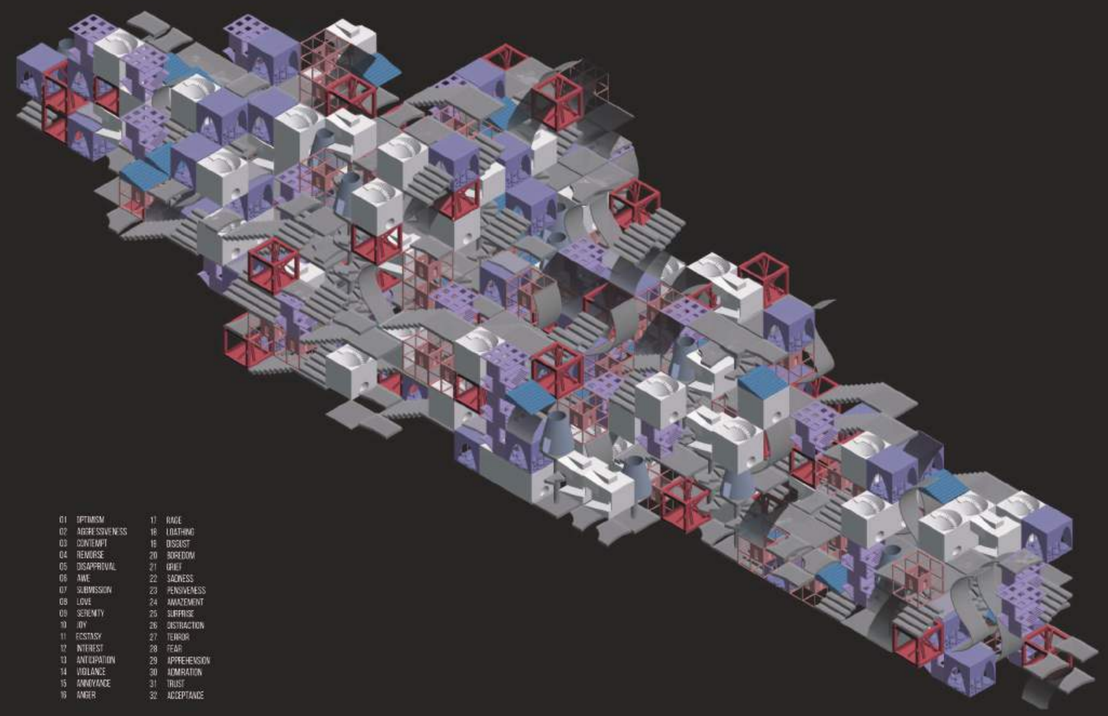
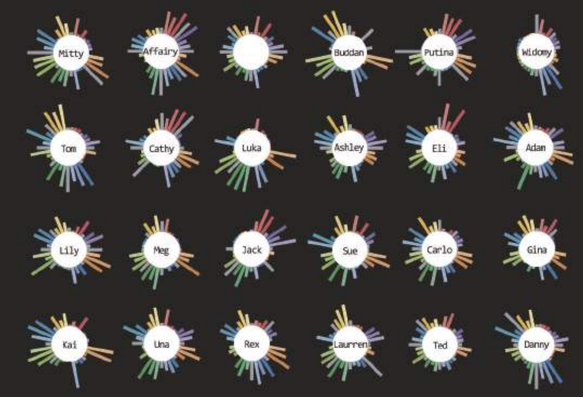




01 OPTIMISM
02 AGGRESSIVENESS
03 CONTEMPT
04 REMORSE
05 DISAPPROVAL
06 WAE
07 SUBMISSION
08 LOVE
09 SERENITY
10 JOY
11 ECSTASY
12 INTEREST
13 ANTICIPATION
14 VIGILANCE
15 ANNOYANCE
16 ANGER
17 RAGE
18 LOATHING
19 DISGUST
20 BOREDOM
21 GRIEF
22 SADNESS
23 PENSIVENESS
24 AMAZEMENT
25 SURPRISE
26 DISTRACTION
27 TERROR
28 FEAR
29 APPREHENSION
30 ADMIRATION
31 TRUST
32 ACCEPTANCE



Every dreamer could use the space forming engine to generate their own combination of emotional spaces. Each color bar represents one emotion and the porportion of it inside their dream. Therefore, when we have more dreamer, the space will become more interesting and can turn into different types of shape, the way of form each space depend on the engine links.

Plutchik's Wheel of Emotions

Dreamer / Input 1 | Input 2 | Input 3 | Input 4 | Input 5 | Input 6 | Proliferation

Emotion Space A — Object A
Emotion Space B — Object B, Object C
Emotion Space C — Object D
Emotion Space D — Object E, Object F
Emotion Space E — Object G
Emotion Space F — Object H

Test 4 - Wave Function Collapse

Designer /

Voyager VR Space | Dream Space 1 / 6 | Dream Space 2 / 6 | Dream Space 3 / 6 | Dream Space 4 / 6 | Dream Space 5 / 6 | Dream Space 6 / 6

Dream Reveal Container

After collecting people's dream, every set of emotion space will stick together through connection space or directly connect. This final result sample model select 6 emotion as modelling type. Also we put connection stairs and ceiling/wall/floor to make space more controll. Every group of units represent one persons dream reality. The whole model represents collective dream revealing. Through this space we create for the future, people could get to know what exactly happened in their dream by the incubator container (the space).

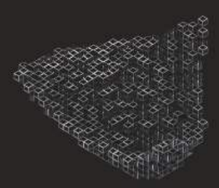
Collective Space Oder

Collective Emotions' Combination

Test 1

Seperate each part of emotion box to reform a combined space.

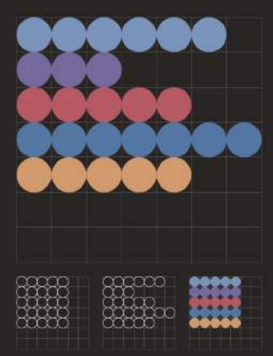
Test 2

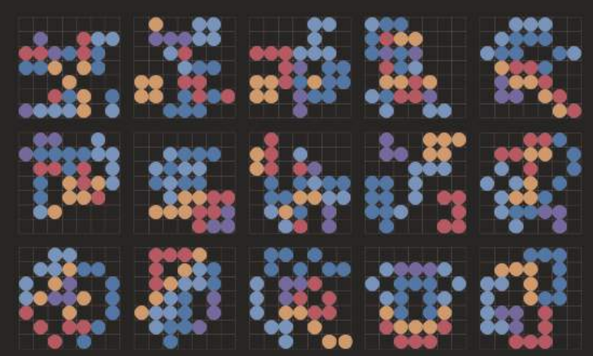


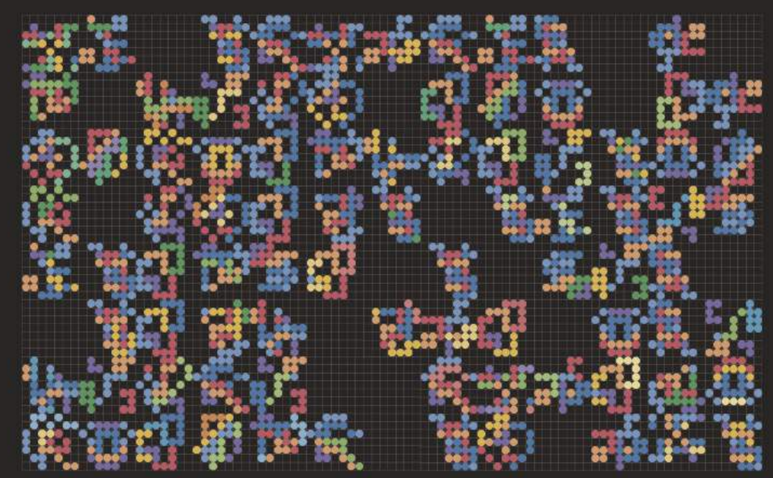
Square faces fully stick to each other, follow a free form.

Test 3

Squares fulfill another square, no connection or intermediate space.







We select part of emotional spaces as the statistic base to simulate one sample model. The portion of collected emotions are lightly different, thus we try to put it into the dream engine to form several rule based space with calculated void. Every small group of space formed by the dreamer's inside-head image I while using the ai text to image engine, and then link to emtional spaces and form the real personal space oder to put it into the original site combined with other's spaces.

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National Yang Ming Chiao Tung University

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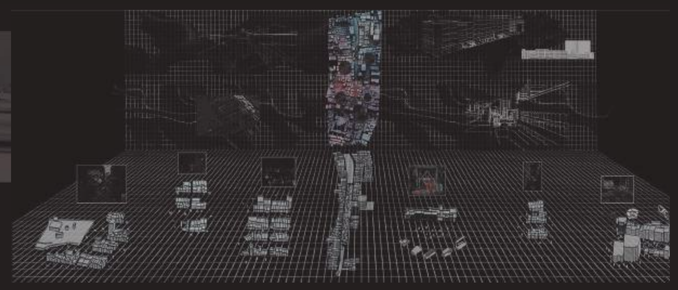
Graduation Design: Parallel Cities - Integration of Information and Impressions

Software used: Rhino, Rhino Grasshopper, Twinmotion, V-Ray, Adobe

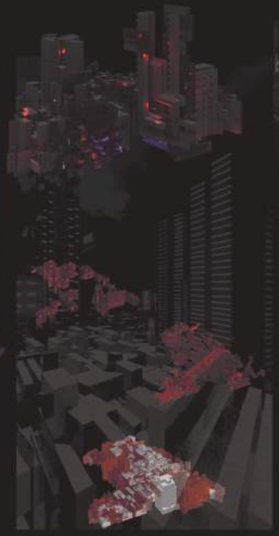
中山商圈在不同的區域 有不同的場域特質



在中山區存在著城市新維度:數據、符號、網路社群、意識形態甚至是元宇宙

ZONE A

ZONE B

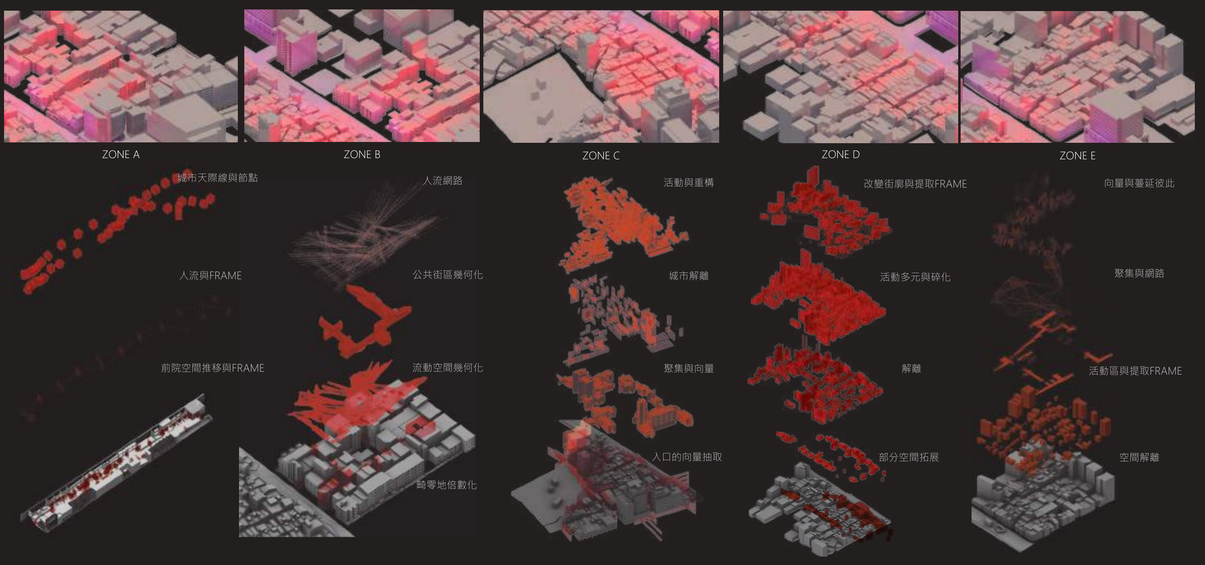


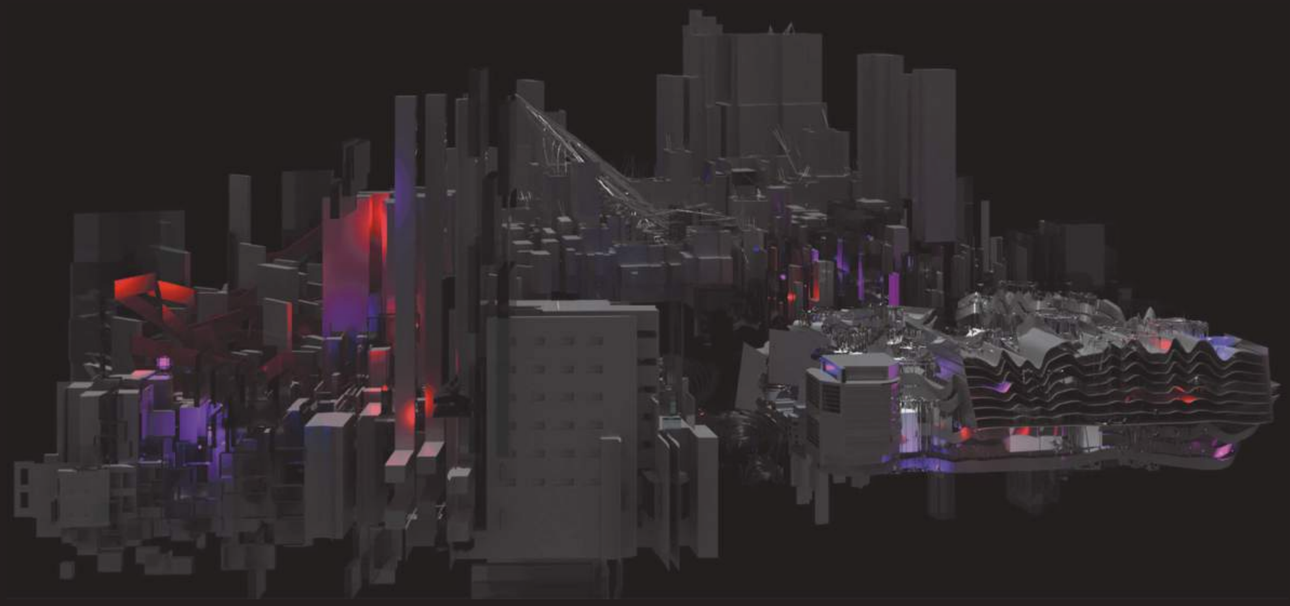
ZONE C

ZONE D

ZONE E

感知參數化



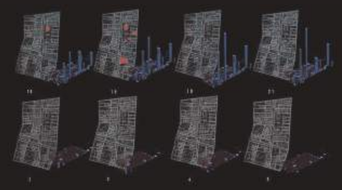


ZONE A - E的綜合體

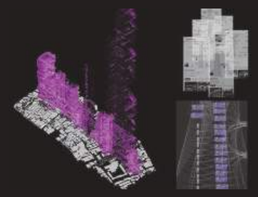
Database Of Urban Impressions

'database of urban impressions.' If we have a digital twin model of the city, where the perception, feelings, emotions, and context of the city can be transformed into a parametric model, and these are integrated with a digital version of the real environment, then we can concretely represent and present the information and emotions of the city in a digital environment.

數據模型與情境模型



人流與時間關係



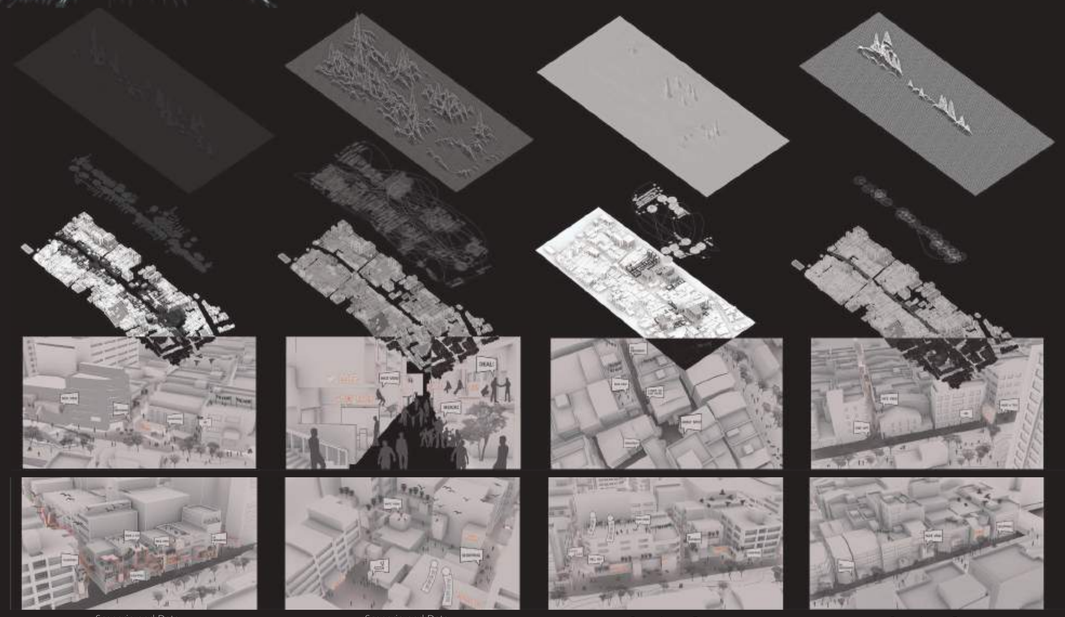
網路社群觀點與虛擬世界介入

解構的中央廣場真實存在

不同情境 城市有不同版圖

人流熱點邊界與重要節點

城市新維度

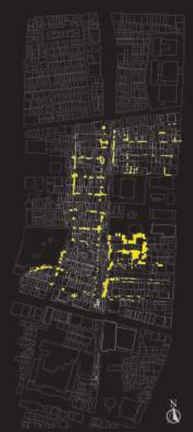


Scenario and Data
中央綠帶

Scenario and Data
ZONE A-E

Scenario and Data
流動區域

Scenario and Data
即時活動

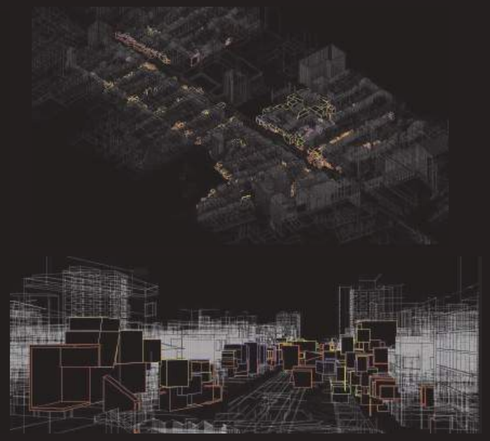


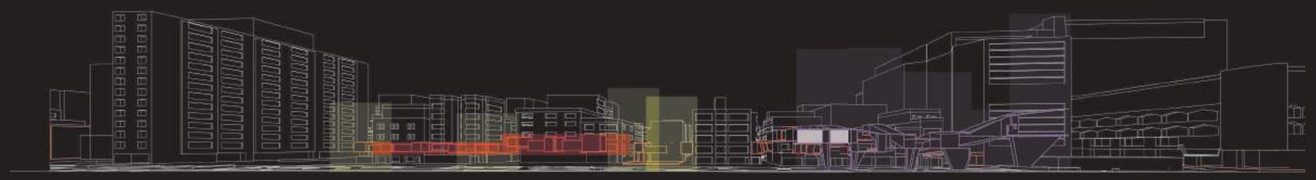
10 點平面圖 S=1:200

15 點平面圖 S=1:200

19 點平面圖 S=1:200

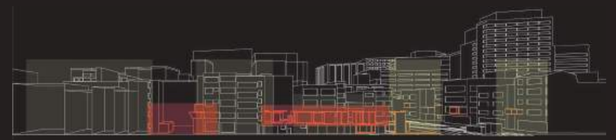
23 點平面圖 S=1:200





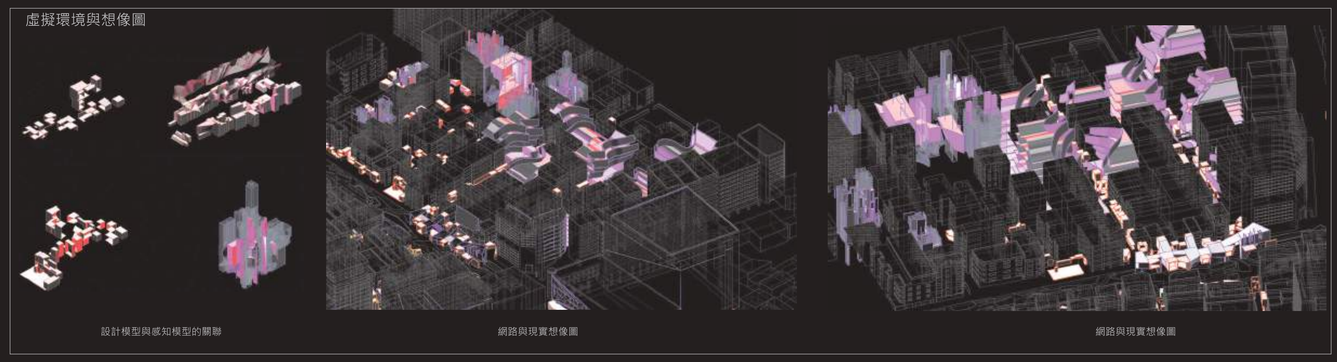
AA' 剖面 S=1:200

BB' 剖面 S=1:200



CC' 剖面 S=1:200

虛擬環境與想像圖



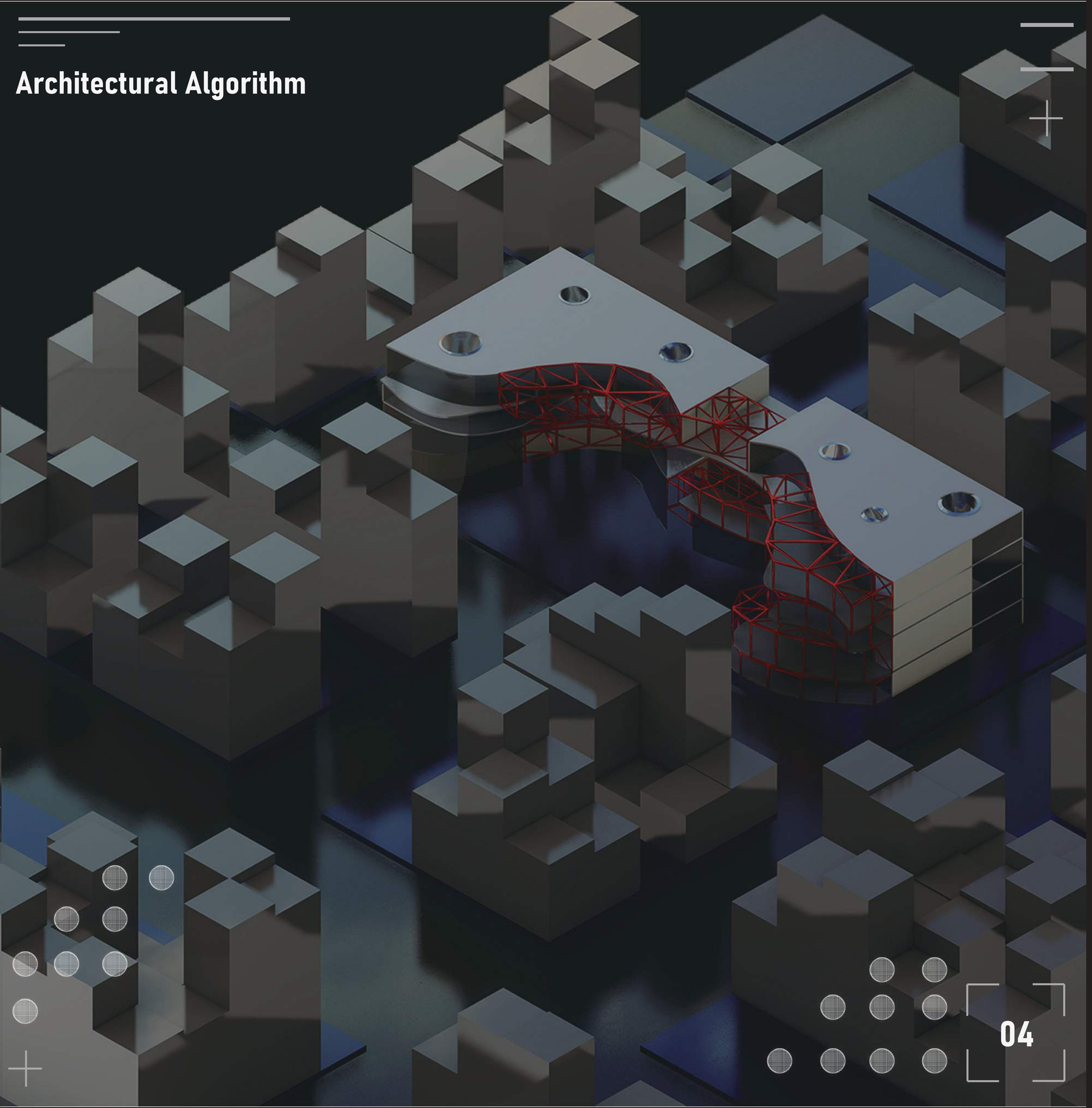
設計模型與感知模型的關聯

網路與現實想像圖

網路與現實想像圖

Visualization Of Urban Activities

'visualization of urban activities.' I hope to present the city's information in real-time on digital models. The emphasis of this part is on identifying the appropriate spatial arrangements and activities in the city for various situations and times. Additionally, I strive to integrate the urban impressions from the previous part into the overall planning and design.



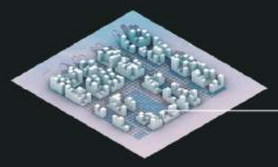
Architectural Algorithm:
Shadow Player

Software used: Rhino, Rhino Grasshopper, Twin-motion, V-Ray, Adobe

Shadow Player:空間演算法

城市陰影路徑模擬(數據收集)

虛擬的城市作為操作對象，將陰影設定為影響人行動的參數，並以偏好陰影區的行走方式。

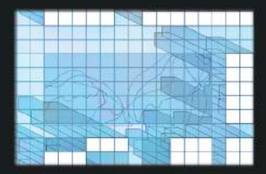


以虛擬城市為基底

Mapping數據化

希望以此演算法，獲得人活動範圍與陰影的交集，

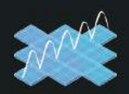
利用參數化的方式輔助設計，試圖去找到新的生成空間方式。



運算結果圖形化

規則參數化

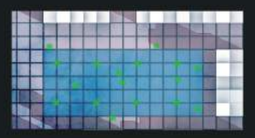
每次移動時，會往七個向量移動，且不走回頭路



每個格點皆為八公尺寬

判定是否存在於陰影邊界

陽光的向量隨著時段而不同

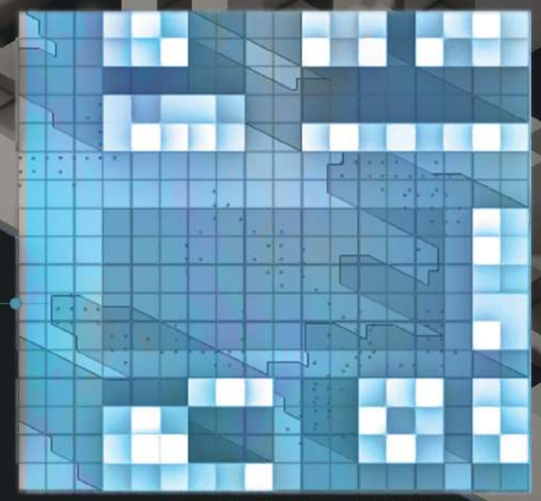


安排八個平均點與五個隨機點當作人的起步

模擬人在城市中的空地上行走35回合

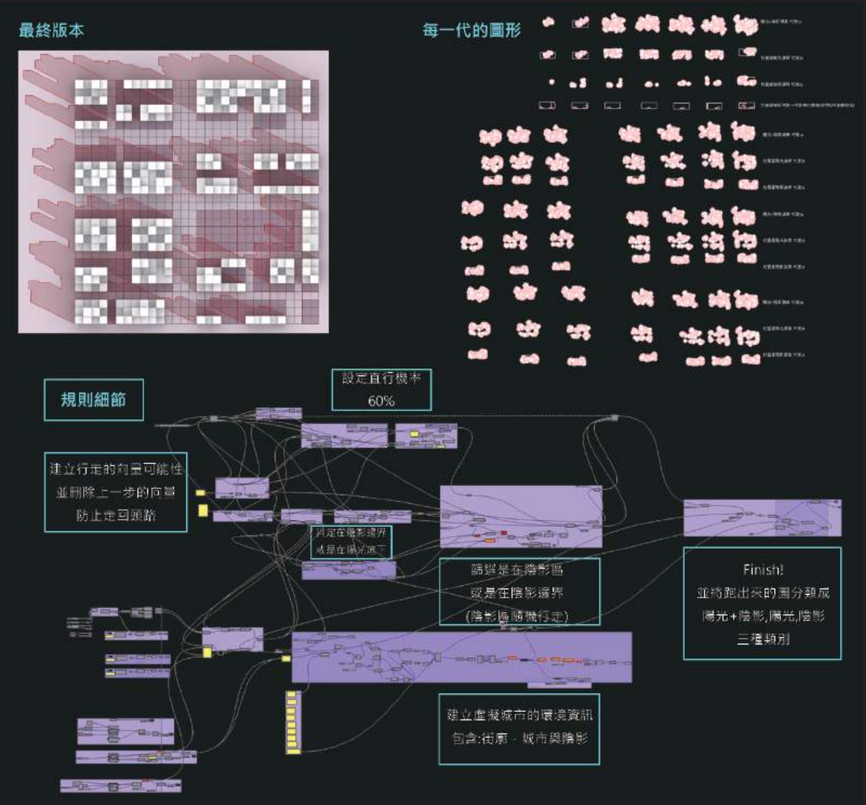
人在陰影區會隨機走動

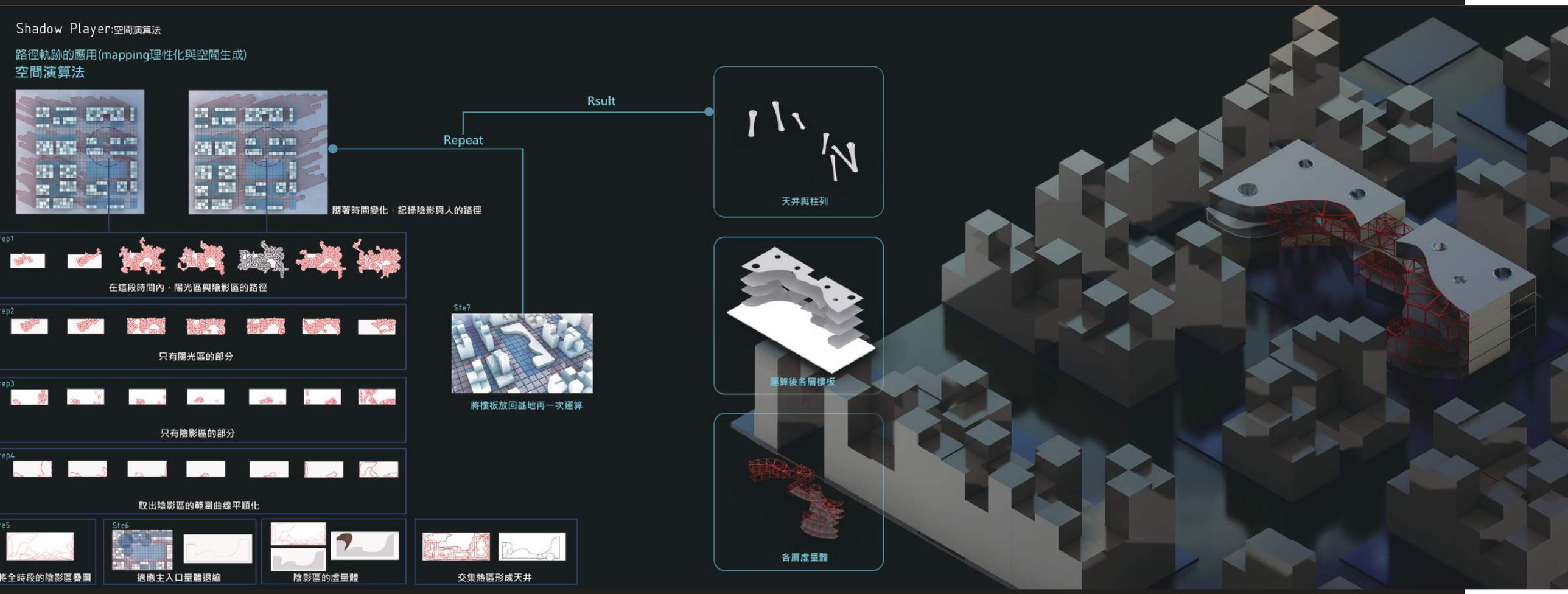
在陽光區時會直行，直到進入陰影區



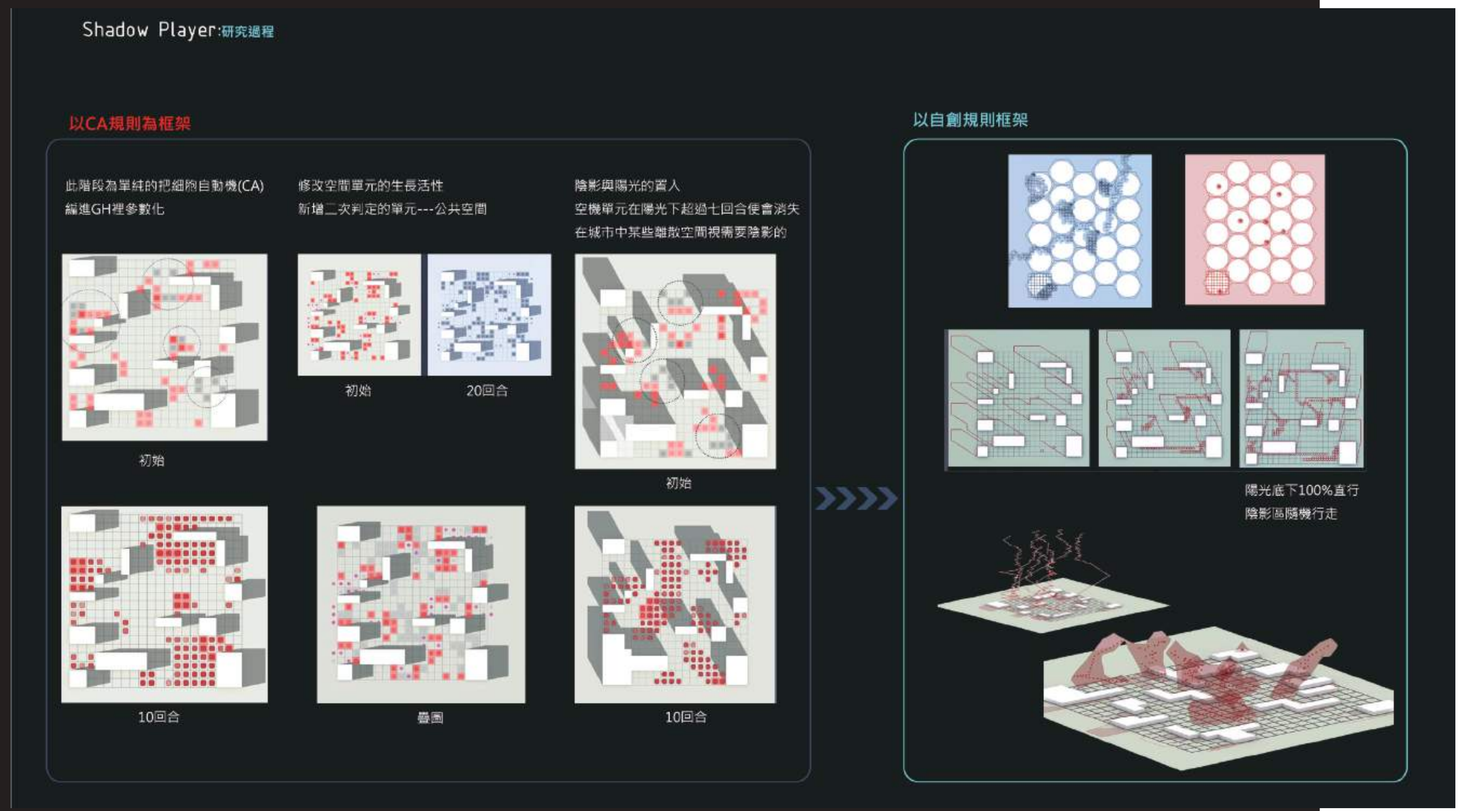
在規則下，紅點（人）的行動軌跡

This part introduces my own agent-based model, which is based on environmental psychology. It simulates people's tendencies in shadow and sunlight and collects data to form spatial configuration and scope.





This section involves converting spatial data from paths and behaviors into gradually layered and 3D forms. These processes are part of my learning journey in simulating 'architecture, environment, and human activity'.



Big Data:
The Space Of Consciousness Stream

Software used: Rhino, Rhino Grasshopper, Twin-motion, V-Ray, Adobe,Stable Diffusion,Blender

The Space of Consciousness Stream

台北市慾望、療愈、刺激的平行世界

META PLATFORM

Decentraland:

目steam的中心化高額手續費風險為驅動，以開放的經濟導向，為了創造平等自由的多元市場，即後續構建構各種社會性，滿足虛擬元宇宙的世界觀。

DCL地圖變化歷史

DCL區域各別名稱　　DCL區域各別名稱

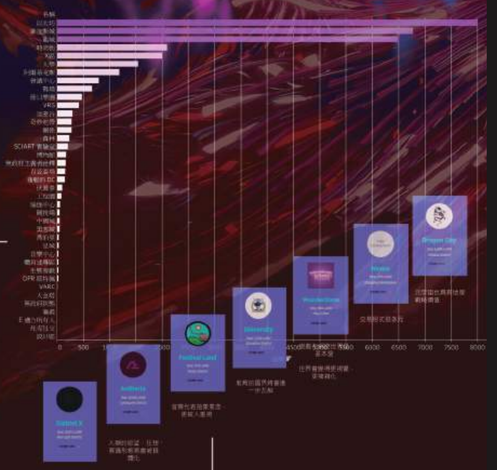
深藍是社區，綠色是官方設立的開放空間，灰色條狀是道路，深灰色色塊是開放以家園

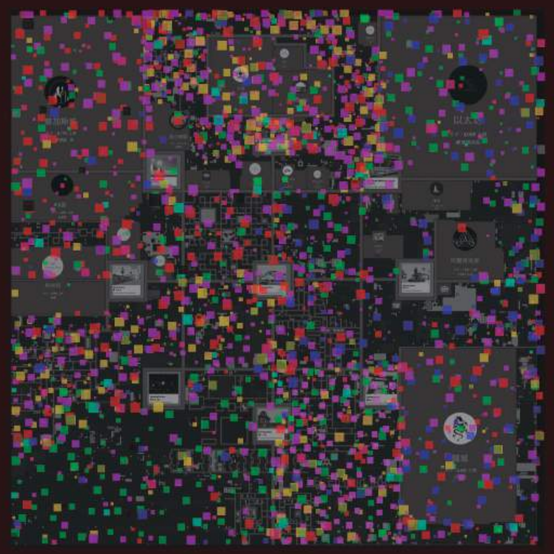
DCL深藍色社區組節

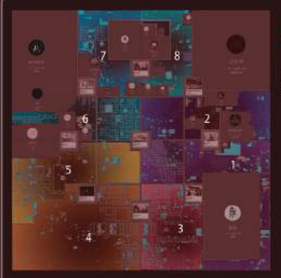
DCL社區版圖

Decentraland社區數據:

DCL的世界有許多社區，最大規模的是賽博龐克區，有樂多資想空間與娛樂空間和商業空間，再來是賽博區、與中國文化區、與紅燈區和其他區域。

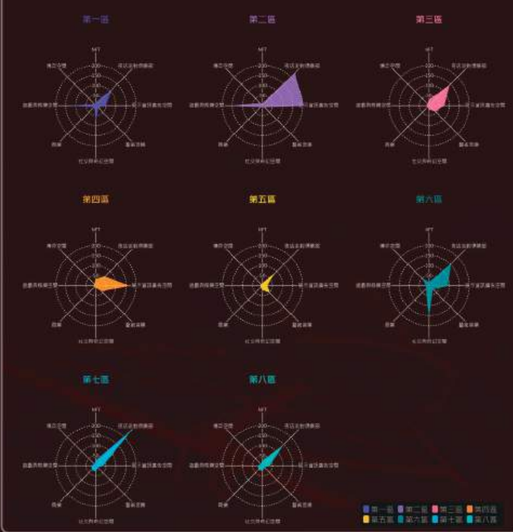


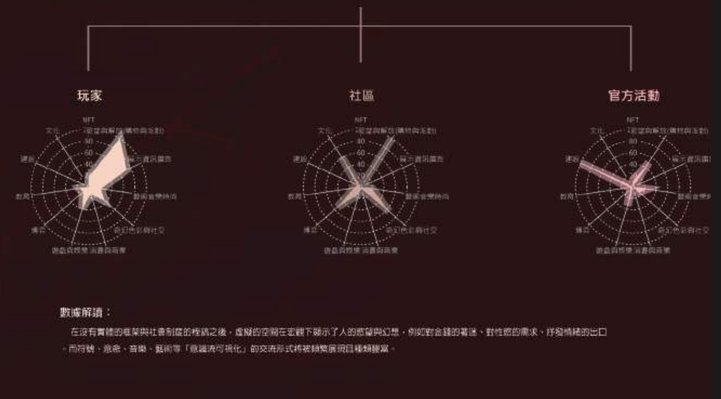




Decentraland玩家地圖數據:

每一區有自我的文化與生態，在虛擬的世界也有熱門區與冷門區，或是動線流通熱區與邊緣地帶，為此希望收集DCL的建築類型數據，來思考未來XR之間的城市會如何發展。



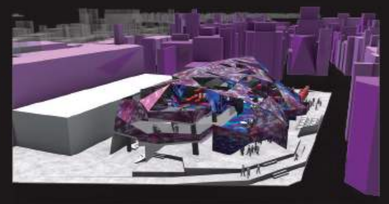


數據解讀：

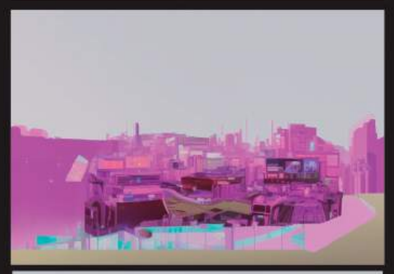
在沒有實體的條件與社會制約的條件之後，虛擬的空間在密碼下顯示了人的慾望與幻想，例如對金錢的著迷、對性慾的需求、宣洩情緒的出口。而符號、意象、音樂、藝術等「意識流可視化」的交流形式將被頻繁展現日常類聚窩。

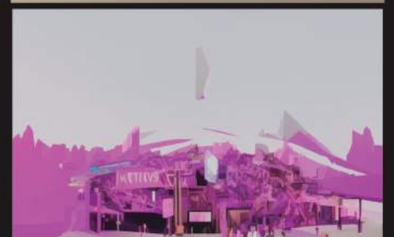
台北XR

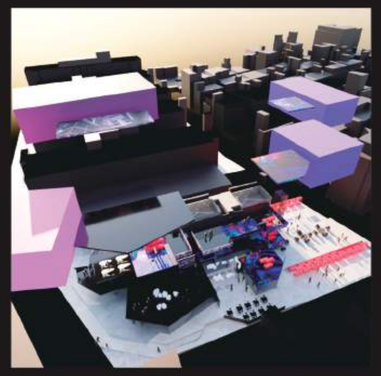
未啟動的XR



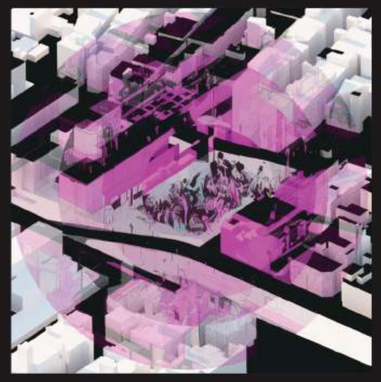
啟動後XR



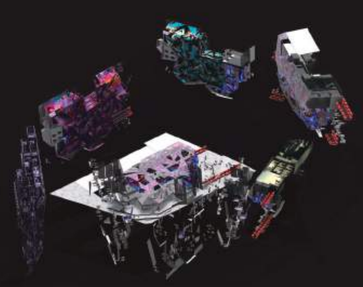




XR下的體驗的空間-傳送其他地方的空間與訊息疊加

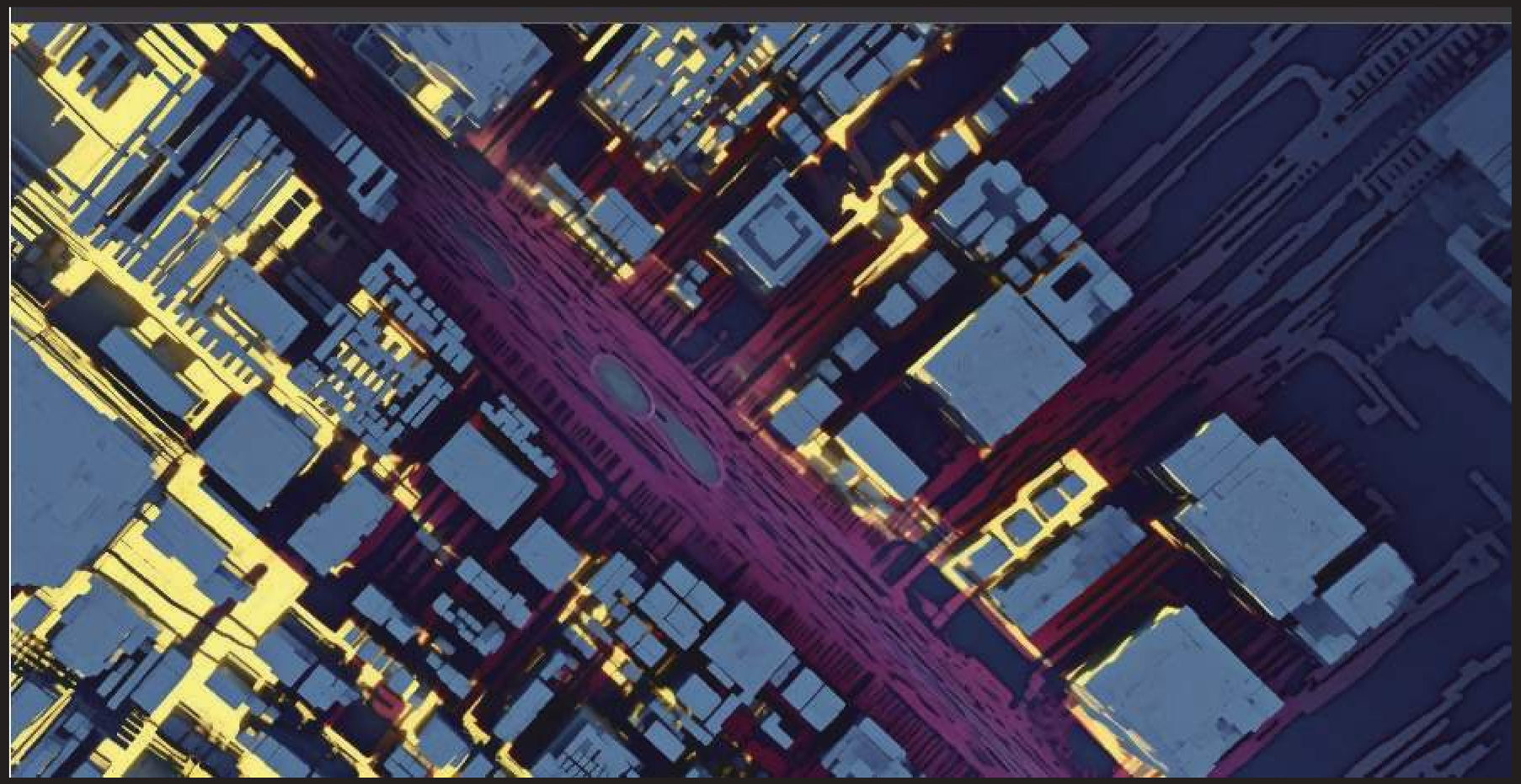


XR下的自我時空
VR與XR下訊息量越大在都市中空間扭曲與豐富程度更高



XR下的多維空間-拼貼的空間

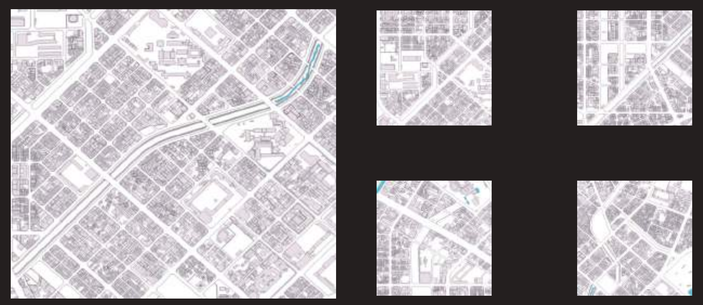
Digital Twins
因為所有物品都有虛擬後分或是屬性
當物體人或物進入空間範圍時 空間屬性會改變



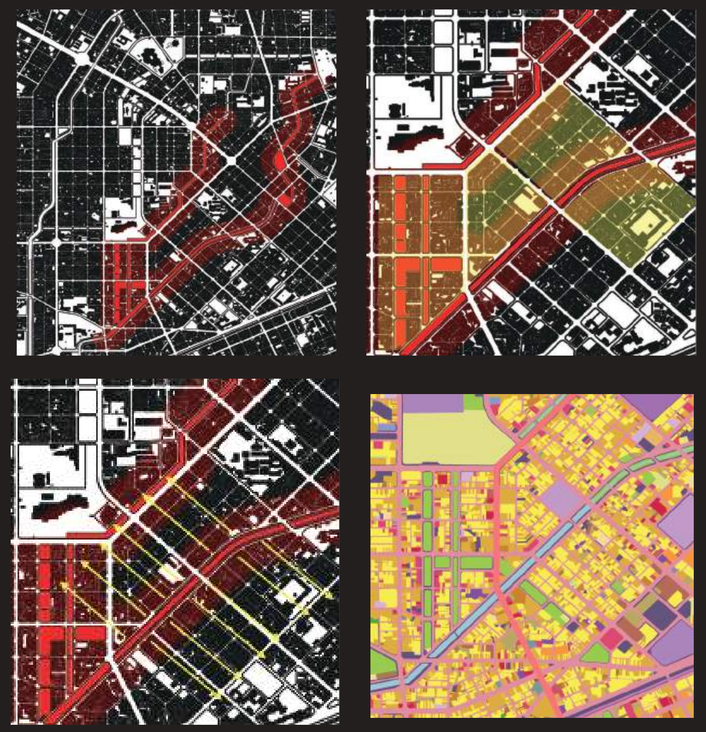
Urban Learning:
The learning and generation of city features

Software used: Colab,Rhino, Rhino Grasshopper, Twinmotion, V-Ray, Adobe,Stable Diffusion

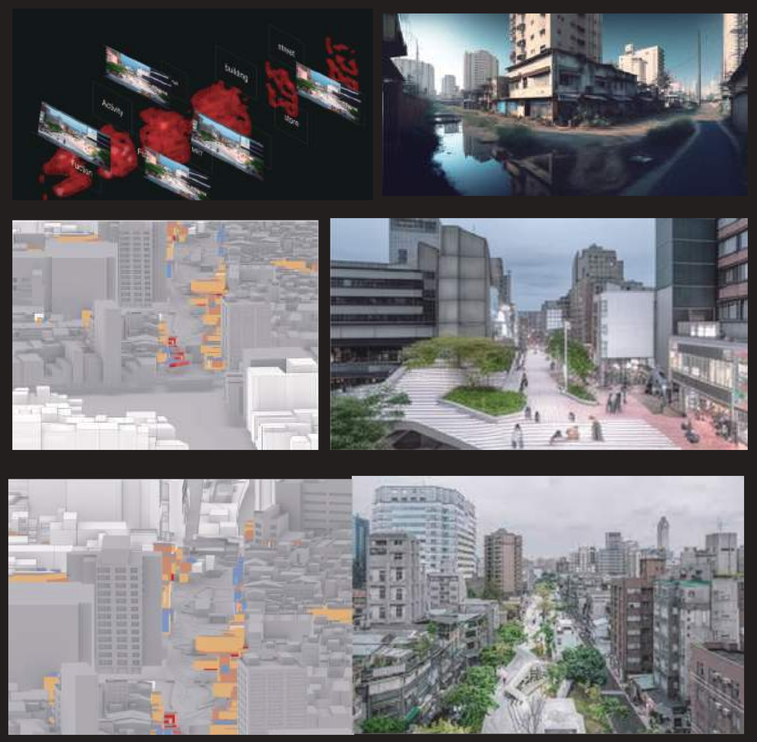
以deep learning(gan)的pix2pix為基礎，而該深度學習可以讀懂城市街廓與空間語意，以此為基礎學習城市特徵。



台中市的柳川城市型態很有想像力，在碰撞城市與圖底理論的分析中，轉角與城市的連接處往往是有亮點存在，然而事實並非如此，柳川的綠帶城市空間空間經驗單調平凡。



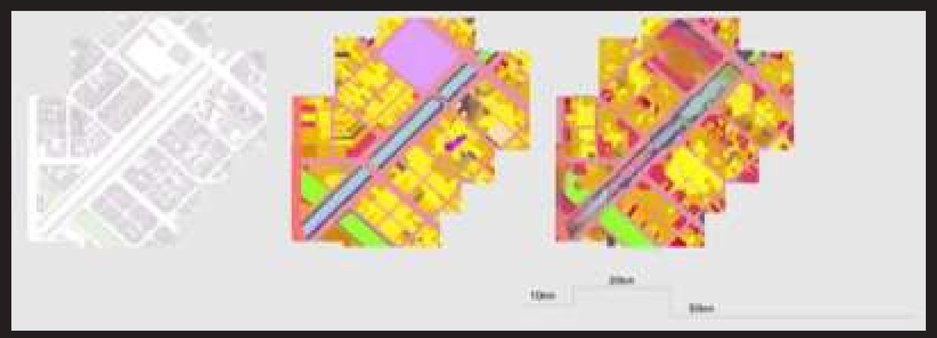
因此我對於這樣的城市板塊有一些期待，如果我們能改變使用模式單一的城市狀態，並應用於柳川有趣的城市型態上，或許精采有趣的城市將會被產生。



所以我開始調查台灣各個有良好型態且有良好城市活動的綠帶廣場，例如：中山區。

並且在全台灣各個地方尋找類似的空間品質，例如淡水黃金海岸、西門町、中山區或是台南海安街，以此為基礎他們是我的訓練的數據庫。最後我希望在型態與使用形式互相疊圖

型態版本



空間使用現況版本

Thank You