Portfolio

KITAE KIM

Selected Projects

2018 ~ 2024

Bachelor of Architecture
Master of Science in Computational Design Practices

KITAE KIM

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EDUCATION

Columbia University, New York, United States

GSAPP, Master of Science in Computational Design Practices

Soongsil University, Seoul, South Korea
Bachelor of Architecture; School of Architecture, Major in Architectural Design

Dual Major; Bachelor of Science in Electrical Engineering

SYNOPSIS

My objective lies in observing and envisioning the complexities of urban life and the human condition intertwined with architecture, using various data-driven techniques. I believe that being an architect involves starting from communication, understanding the interactions between individuals and the surrounding environment and context, and serving as a mediator to coordinate, adjust, and propose solutions. I foresee that computational approaches can translate the dynamics of contemporary society into understandable scales and serve as a foundation for providing a better environment. In the past six years of architecture and computation studying, I have explored social phenomena, such as people's behaviors, customs, and ideas, through computational methods, analyzing them with mapping and formula-based approaches. These analyses were visualized as maps or web pages, allowing for a clearer understanding of complex dynamics. Building on this foundation, I developed computational strategies to propose solutions for addressing these challenges. Each project integrates these computational insights with architectural design, reflecting on the current environment and society, and communicates these ideas through an architectural language.

CONTENTS

I Liminal Urbanism

Mixing attributes to create a modern Public & Commercial network

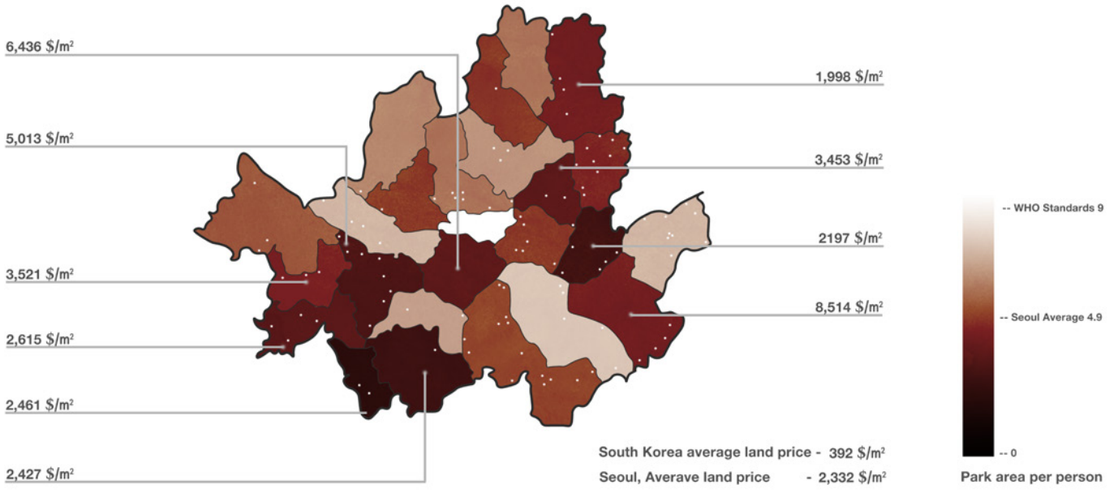
Advisor : Choi WonJun
Type : Academic, Studio project
Location : Gangbuk-gu, Seoul, South Korea
Individual Work, 2023

Soongsil Engineering Award, Soongsil Univ: Graduation project 2023

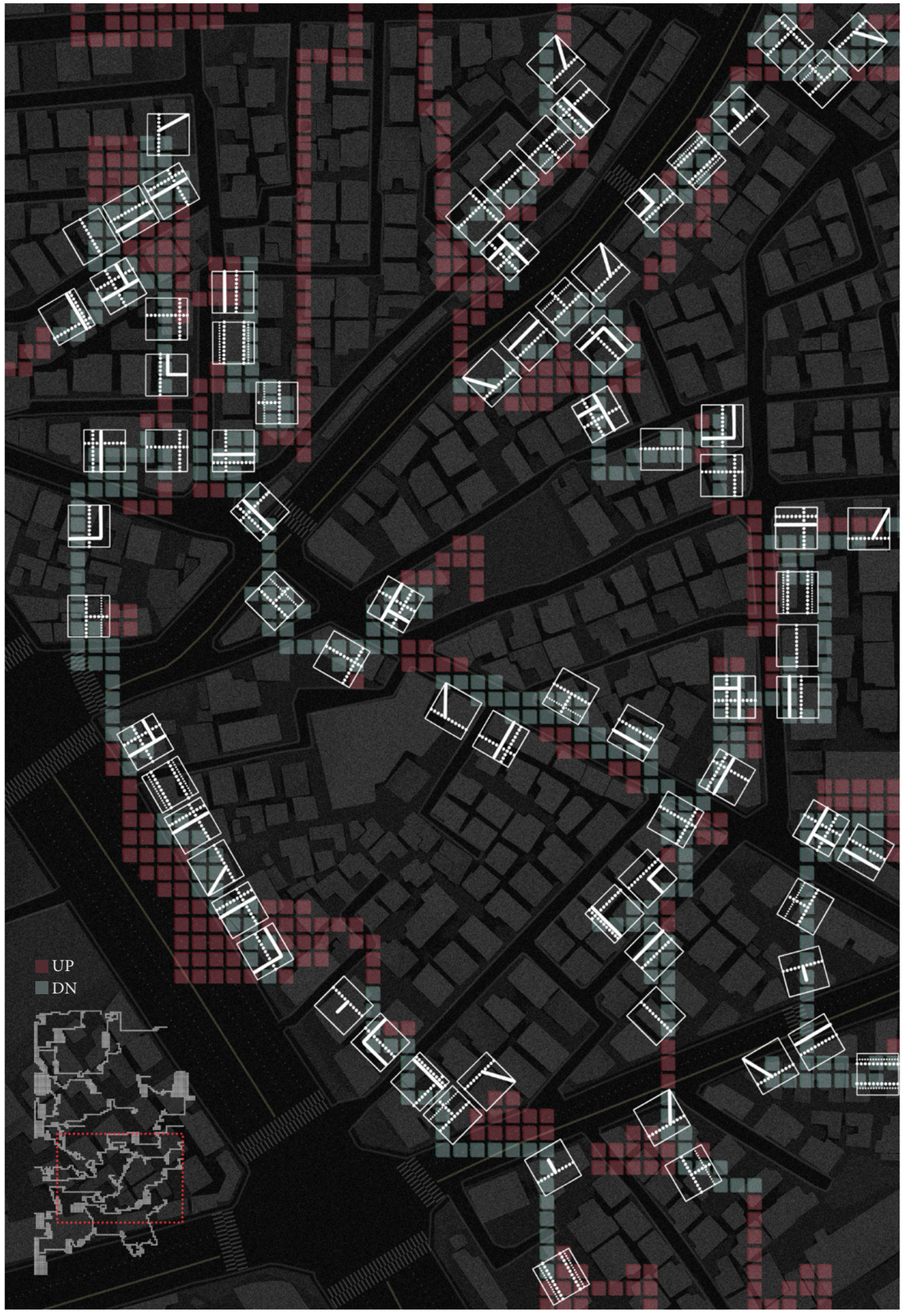
The shortage of public spaces in Seoul has been a persistent issue due to urban overcrowding. South Korea's capital, Seoul, has various natural landscapes such as the Han River, Gwanak mountain, and many public spaces like Gwanghwamun Square and Seoul Forest. However, compared to the high population, the public space is insufficient. As public spaces hold significant connection to the lives of urban residents, that should be formed and utilized in a closer relationship with the daily lives. Nevertheless, due to the high land values and real estate prices within Seoul, creating and offering public spaces has become a task requiring considerable financial investment. These factors have contributed to an imbalance in public spaces due to poor residential conditions and the dense population within downtown Seoul.

In this regard, focusing on the characteristics of contemporary spaces, I propose a solution through the integration of two types of spaces. Presently, activities considered "public" don't solely occur within designated public spaces, and conversely, the same applies. At cafes, for example, people pay for a cup of coffee and utilize private commercial spaces, yet they use these spaces much like they would public ones. Furthermore, temporary shops emerge in parks, squares, and other public spaces for various activities and facilitating private use. These composed activities don't hinder the space but rather infuse it with vitality, creating a synergistic effect that transcends the distinction between public and private activities.

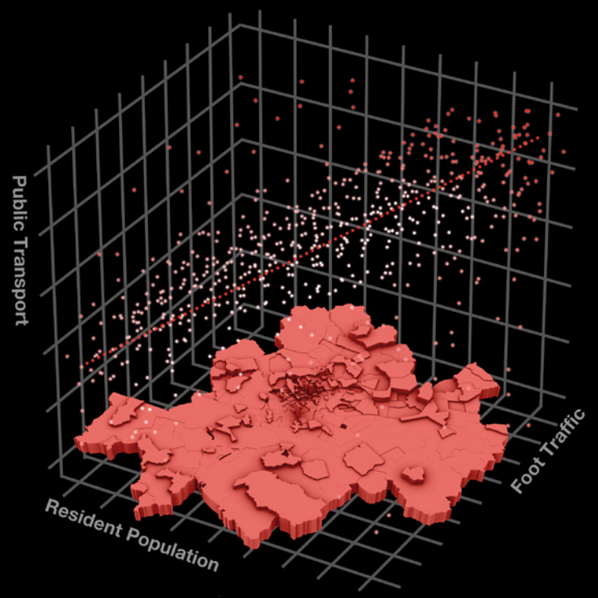
By analyzing the public and commercial spaces, integrate the form and layout of public spaces with commercial areas. This integration involves a grid network established based on an analysis of public spaces, residential populations, and commercial vacancy rates in Seoul. Utilizing existing commercial spaces through this mixture, the network of relations is formed with neighboring residential areas, emphasizing connectivity rather than isolated distribution of public spaces.

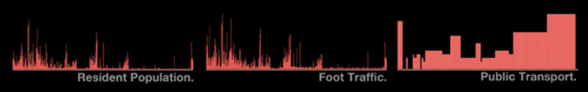


Public Inequality & Land Price of Seoul (Left)
Grafting, applying 12 types into the network (Right)

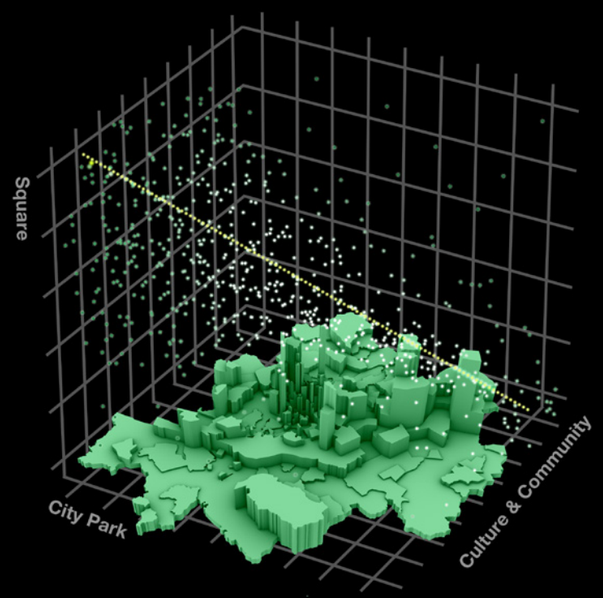


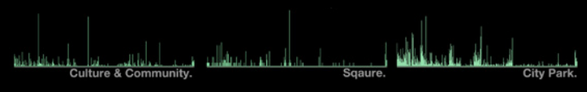
PEOPLE



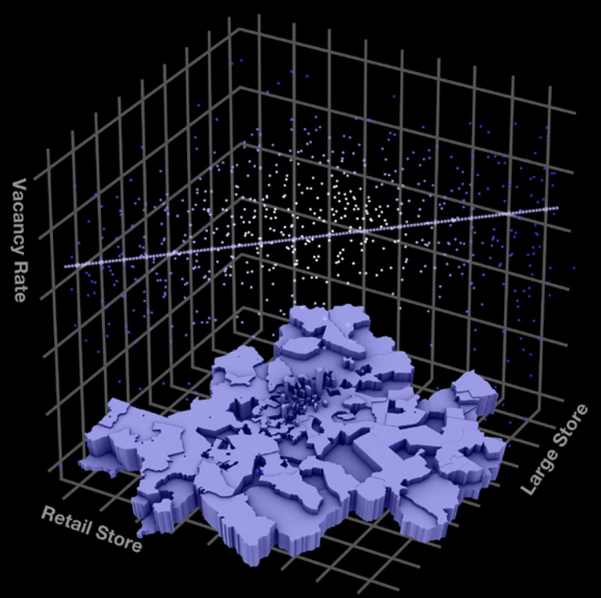


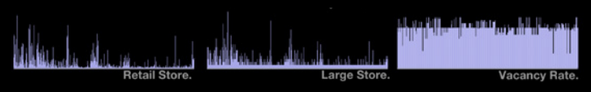
PUBLIC

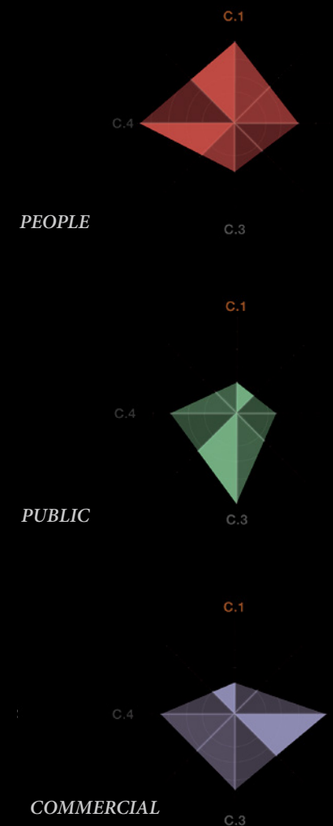




COMMERCIAL







Seoul Data analysis
People(red), Public(green), Commerce(blue)

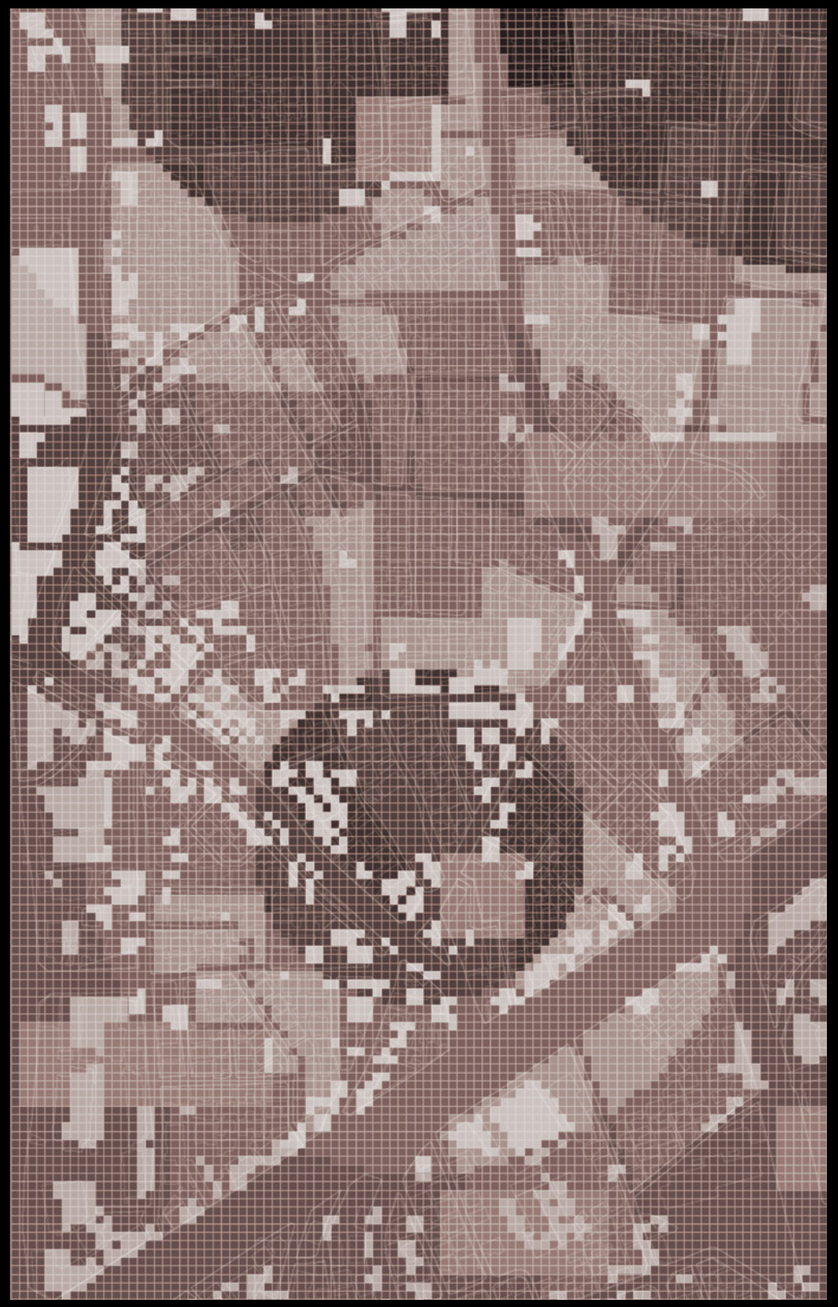
Analyzing Seoul by sector

Seoul Data was grouped into three units, People, Public, Commerce. PCA(Principle Component Analysis) was performed to aggregate each data into one dimension.

While the population is relatively evenly distributed throughout Seoul, the public sector shows the largest deviation, and the vacancy rate of commerce is up to 30%.

	PEOPLE	PUBLIC	COMMERCE
CLUSTER 1	0.122241	-0.462222	-1.069802
CLUSTER 2	-0.026455	-0.443635	0.305017
CLUSTER 3	-0.162065	1.339941	0.250578
CLUSTER 4	0.136408	1.160834	0.228304

Seoul Clustering, dividing Seoul into 4 cluster

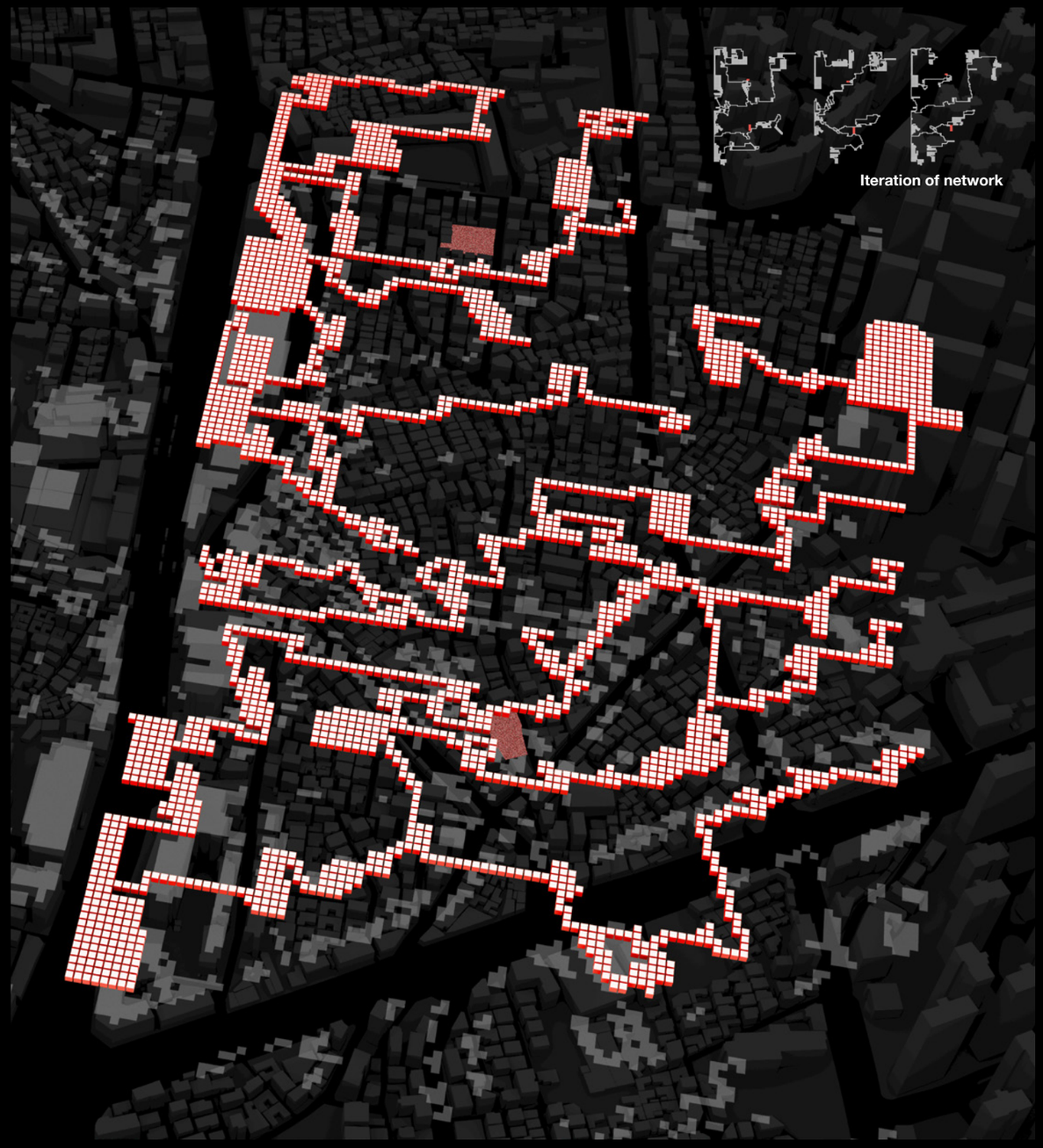


Mia intersection in Mia-dong, Gangbuk-gu, was selected from among "cluster 1" through clustering of administrative district in Seoul.

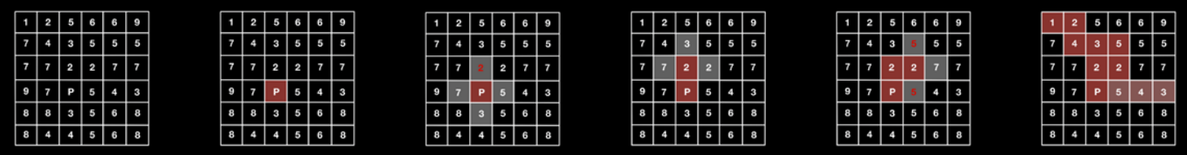
Based on a rough analysis like commercial level, residential population, road grid, commercial spot and public diameter, the site was converted into a 5*5 grid and clustering by 9 stages(The brighter it gets, the more intervention is required). Through this, it was intended to analyze the publicity degree, commerciality, and population flow of detailed alleyways. The analysis operates as a blueprint for proposals that align with the observed genuine needs of urban residents.

Public	Commerce	People
-0.97264	-0.11385	0.54745
0.06765	-0.29611	1.19273
0.90220	-0.32089	5.18168
-1.17547	-0.09326	-0.78769
-0.99798	0.05173	-0.43570
0.61267	-0.34037	0.04720
-0.41691	3.30090	0.01391
1.48118	-0.02121	1.37007
1.34366	-0.26040	-0.59374

5*5 m^2 Grid Clustering Micro grid area(Top)
Analyzing Cluster 1, Mia intersection in Mia-dong, Gangbuk-gu(Bottom)

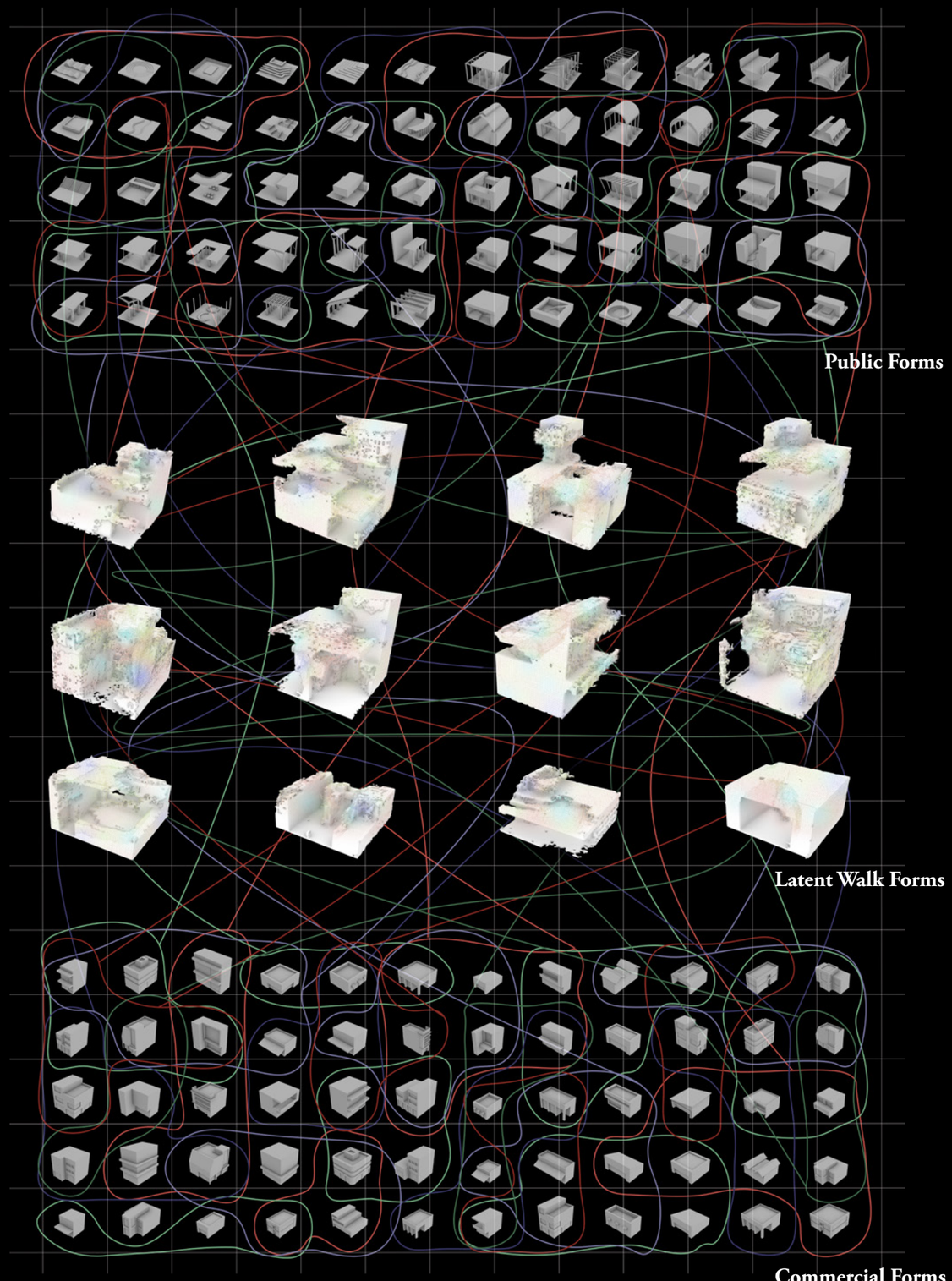


The network begins where existing public spaces and public is most needed, then grows until they are met and connected



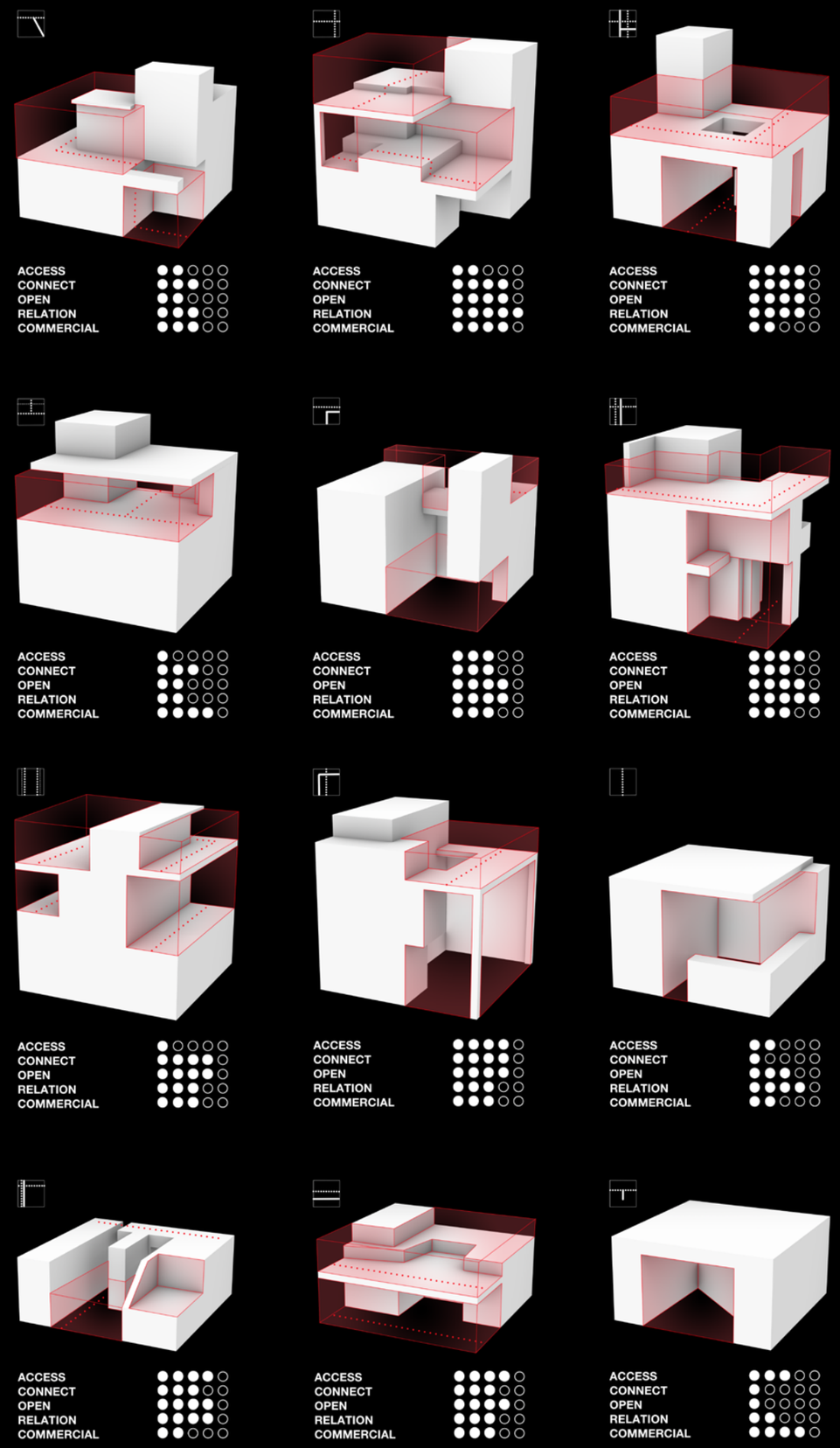
By criteria of grid cluster, algorithm grows from starting P and progresses to the highest-priority location(lower number).
If there are multiple locations with the same priority, they differentiate and form a network.

Public Growth Network, Iteration & Algorithm



Training 3D GAN model with various morphological features of two types : Public; that contains the possibility of meeting people and events, Commercial; that are often boxed and closed form in Seoul for efficiency of space. With AI model, learns spaces with two different characteristics, Latent Walk, interpolate in the latent space, is performed to seek morphological discoveries with the character of the two spaces.

3D model latent walk of characteristic of spaces



Liminal Space Form, Type 12

II Cities of Bail

People in urban counties mortgage thier homes to secure a bail bonds

Type : Professional, Research project
Location : Six Counties, United States
Role : Data analyzing, Designed and implemented interactive web-based visualizations
Part of a research team under Laura Kurgan, Center for Spatial Research, 2024.
Co-work with E.J. Shin.

Research Site Making
Columbia, Center for Spacial Research, Research Assistant

Cities of Bail visualizes how urban county residents in the U.S. mortgage their homes to secure bail bonds for themselves or loved ones. The project maps six diverse cities from 2000 to the present, showing where bail liens were created, satisfied, or foreclosed. Approximately 60-75% of those in local jails are unconvicted defendants awaiting trial, often detained because they cannot afford bail. Secured money bail systems remain widespread, with commercial bail bond companies requiring nonrefundable premiums and collateral like home mortgages. Every year, the bail industry issues $14 billion in bonds and collects $2 billion in profits. While providing an alternative to pretrial detention, this system can entrap families in debt, leading to lost income, child custody, and even homes. Even without foreclosure, bail-related mortgages can harm credit and block access to financial opportunities for years. Users can explore any of the six cities from the landing page to understand why they were included and what they reveal about the commercial bail industry. Map overlays provide demographic data and other contextual details, while a Stories tab offers guided narratives. Data is sourced from public records, but individual details are often locked behind paywalls and fragmented systems. To protect privacy, personal information is anonymized, but researchers can request access to de-anonymized data by contacting the project director.

Introduction

Every year, the commercial bail industry underwrites billions of dollars in bonds promising to return criminal defendants to court, often securing those bonds with liens on real property. Relying on public real estate data, Cities of Bail visualizes the practice of mortgaging property to secure bail in six U.S. counties. Click below or on the map to explore the impact of bail bonding on urban communities and the connections between bail markets and marginalized populations.

Albuquerque, New Mexico — read more>
Signed/Released/Foreclosed/Ammount/Duration/Company

Charlotte, North Carolina — read more>
Signed/Released/Amount/Duration

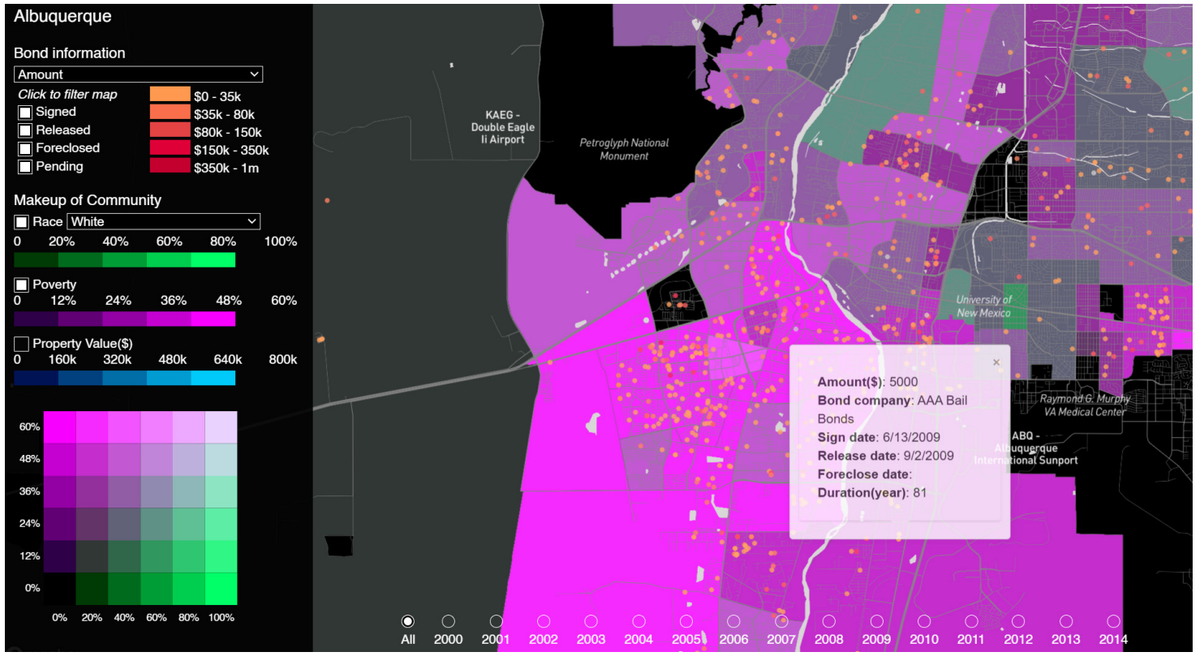
Cleveland, Ohio — read more>
Signed/Released/Ammount/Duration

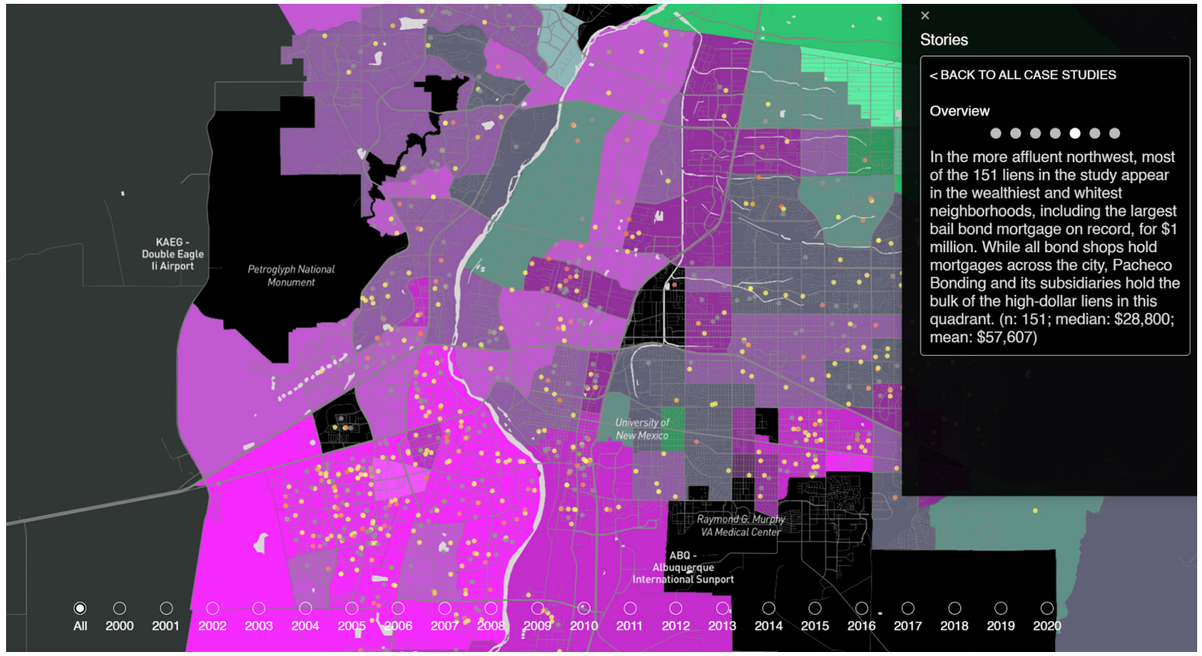
Newark & Jersey City, New Jersey — read more>
Signed/Released

Pittsburgh, Pennsylvania — read more>
Signed/Released/Ammount

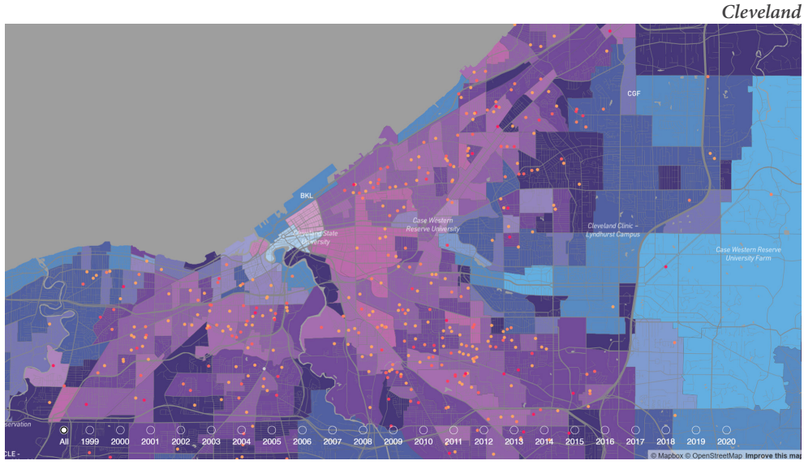
San Francisco, California — read more>
Signed/Released/Ammount

Tucson, Arizona — read more>
Signed/Released/Ammount

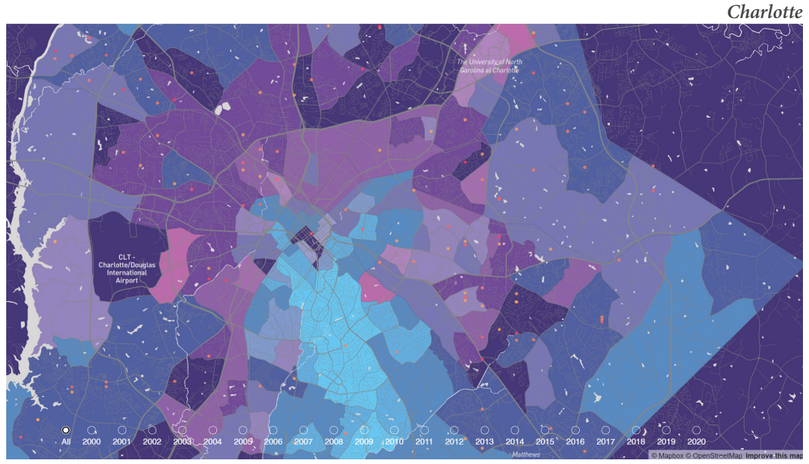




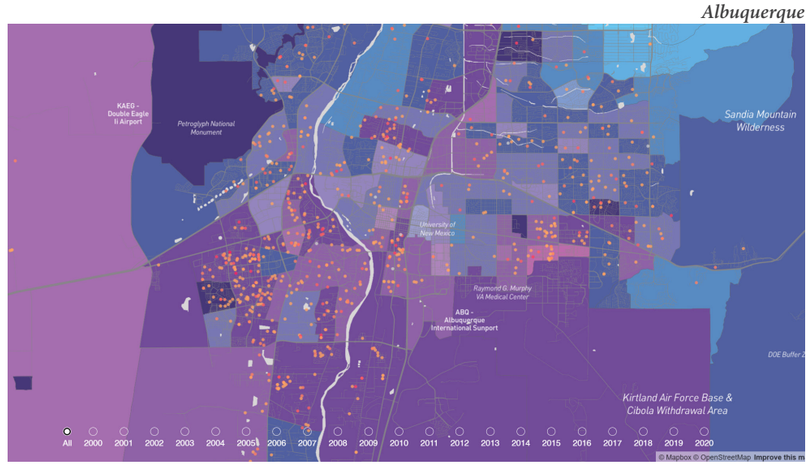
Cleveland



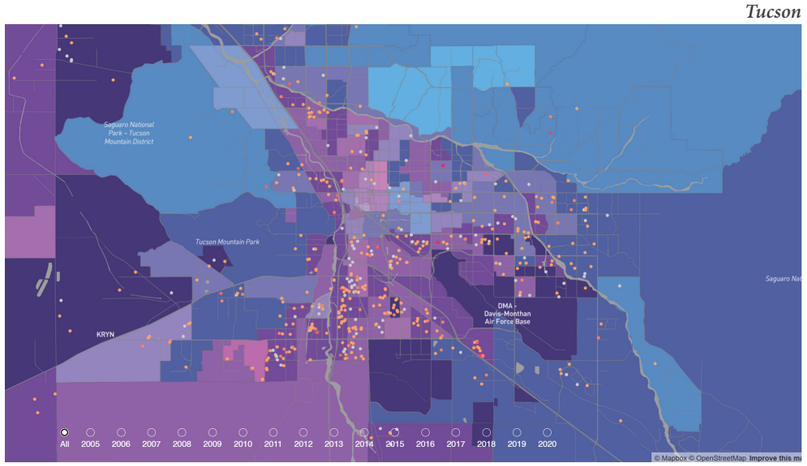
Charlotte



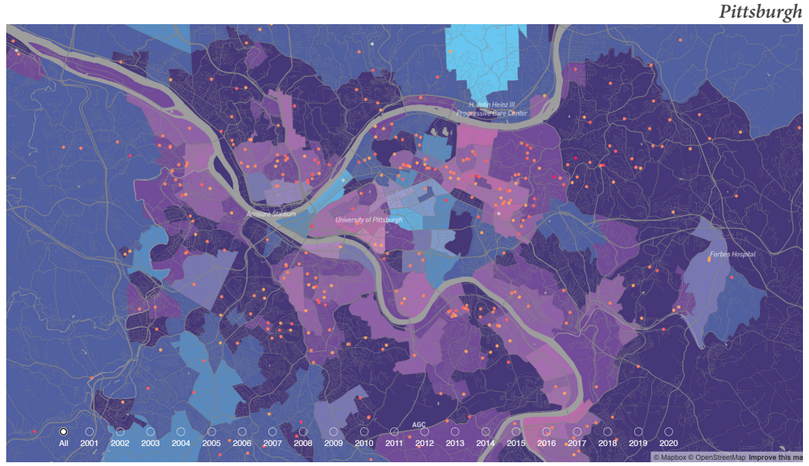
Albuquerque



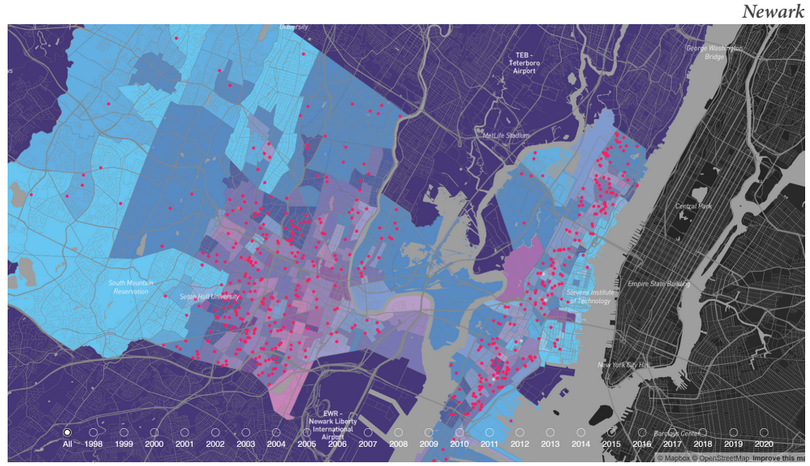
Tucson



Pittsburgh



Newark



Data Pop-Up and layers for Bails in City (Top Left)
Story Layout for Bail in Each City (Top Right)

Layout for Bail Data by City (Bottom)

III Ignite Behavior

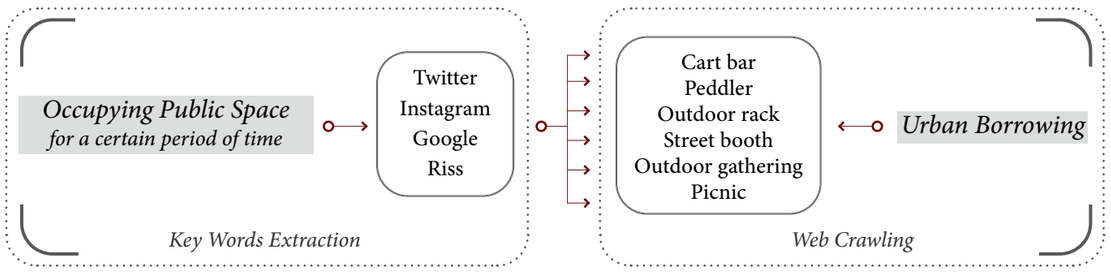
Diversification of urban behavior and enrichment of urban situations

Advisor : Kim Soomi
Type : Academic, Studio project
Location : Yongsan-gu, Seoul, South Korea
Role : Data crawling, Analyze pattern, Section/ Detail plan, 3d modeling, Main model
Co-work with Ahn Junpyo in Architecture studio, 2021

Soongsil Award: Winning entry for Architecture Project of semester,2021

A city is not only a space where buildings exist, but also place where people lead their lives together. There are a variety of things that occur in these cities, and we think these actions gather to make the city more colorful and vibrant. Among them, the project was started with focusing on borrowing the city space as privately used space as needed. These urban space borrowing activities, which are common in South Korean cities, appear with a variety of objects, and these activities make unexpected events in the grid-organized urban system. It also focused on the rooftop structure commonly found in South Korean cities. It is common for Korean houses that built flat roofs for the installation of water tanks to use the space in the residential style of rooftop, and this is illegal under the Building Act, but we focused on it as something that happens openly.

The city can be stipulated that it was a compiles composition including the lives and actions of humans along with buildings. Therefore, this project focus on human urban behavior. It may seem confusing to look at a city made of numerous different forms and scales from the sky, but just as it is not a situation of chaos from human perspective. Urban regeneration on this human scale can concentrates on human behavior of urban.



Prior to the urban project, pre-thoughts (Top)
Public borrowed space Crawling & Image segmentation (Bottom)

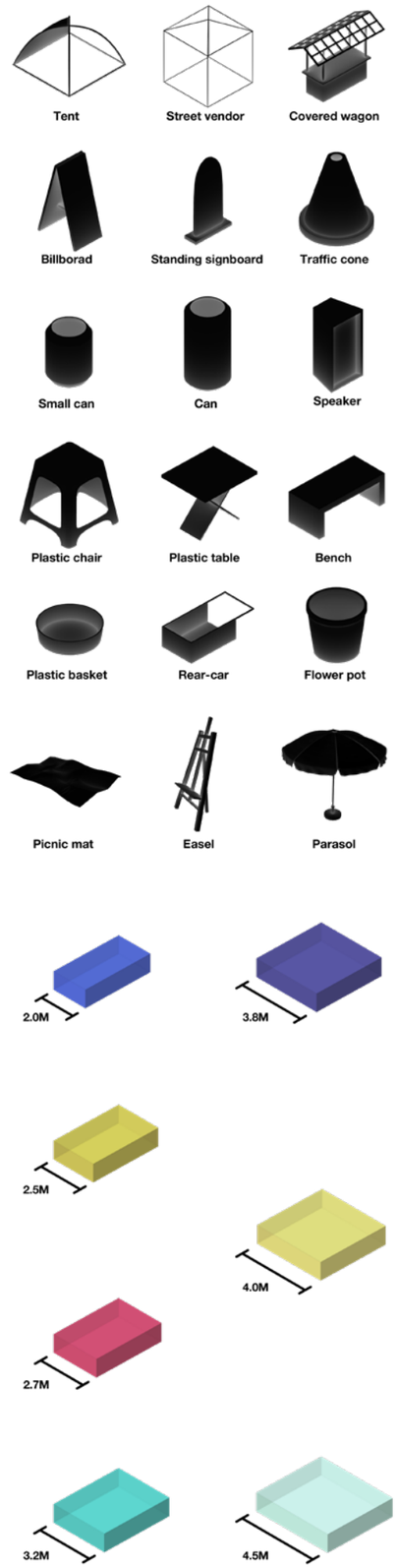
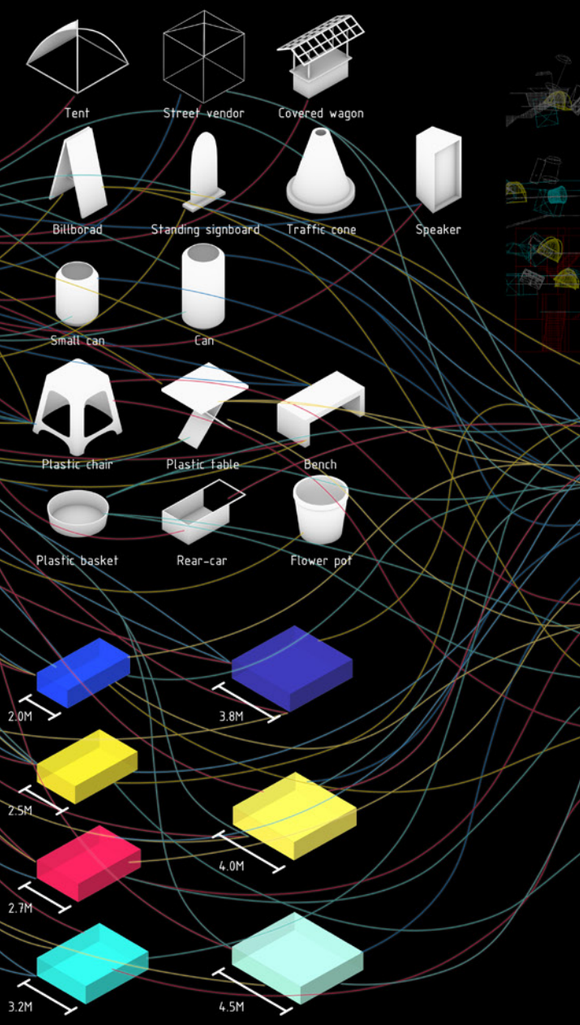
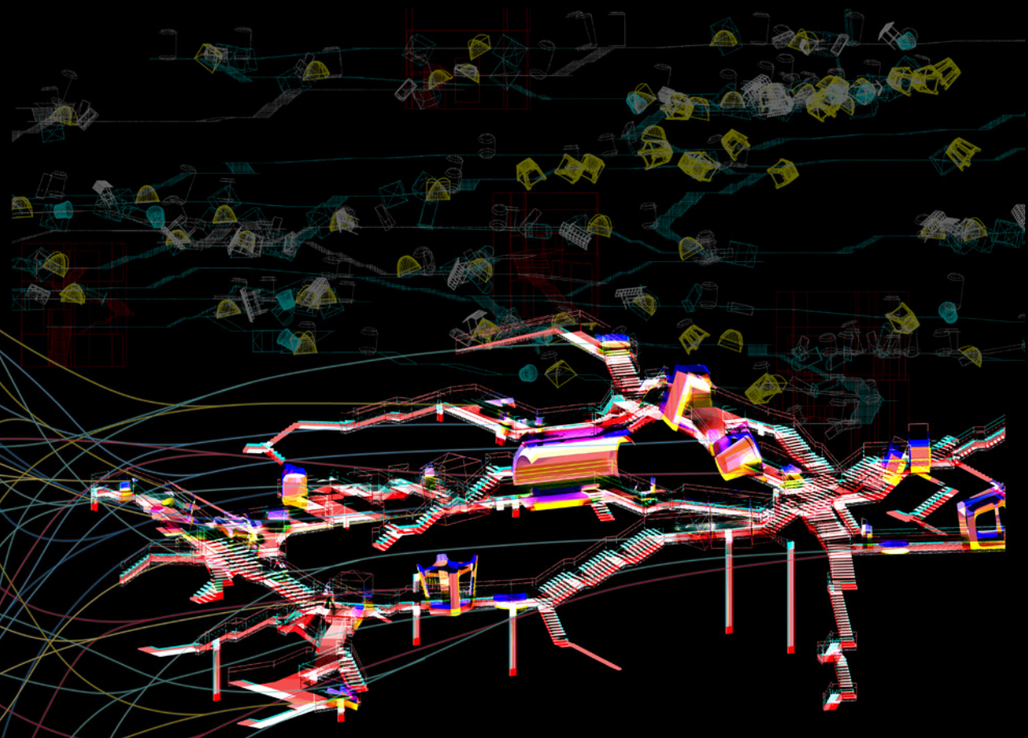


Image segmentation analysis
Elements of actions & Scope of borrowing space

People's Private Actions in Public Spaces

The Space that could change into a Rental Space
(Flat Rooftop of Korean Houses)

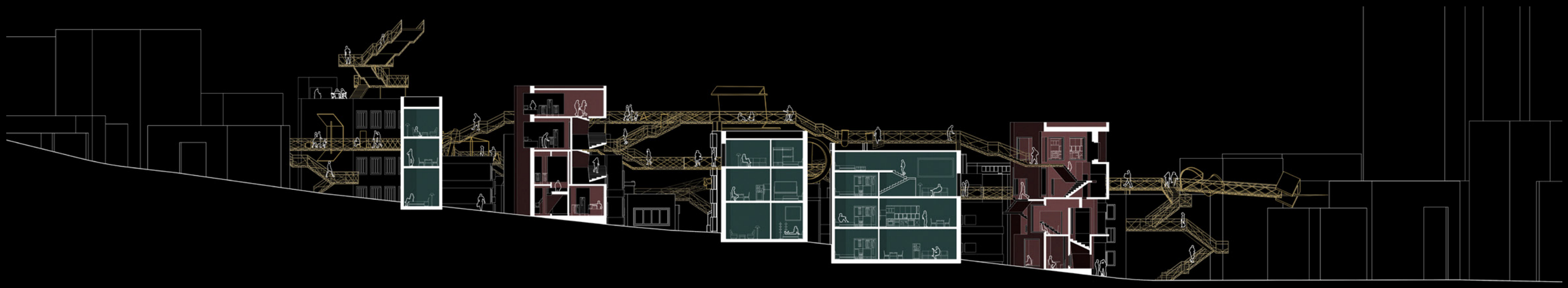




A new path that randomly changes objects and spaces related to what happened on the road and combines them to connect the rooftop of South Korean houses.

The mere existence of everyday but simple objects on the road leads to more diverse situations and actions in the city than before. We pulled out a list of objects in the act seen on the Korean road. From elements that create a space like tents, street vendors, and stalls, to space that spend shorter hours such as benches, simple chairs, and the tables at convenience stores, we organized and modularized small elements such as flower pots, vending machines, standing boards, and rubber cones.

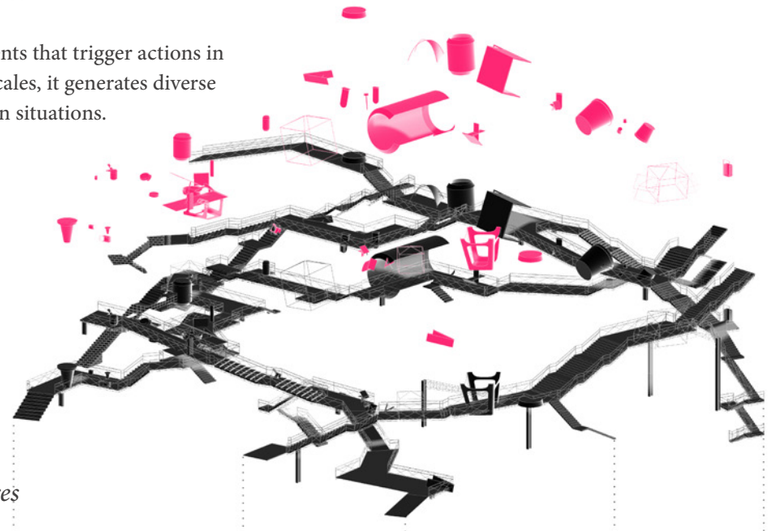
Along with such objects, the scale of the space where the action takes place was organized and modularized. We randomly diversified the objects that promote activities and the modules in the space containing such behavior, and hoped that in the space created by combining the two, or more unpredictable and diverse urban situations would arise.



Modularization and Linking of borrowed Spaces (Top)
Section of urban landscape 1:500 (Bottom)

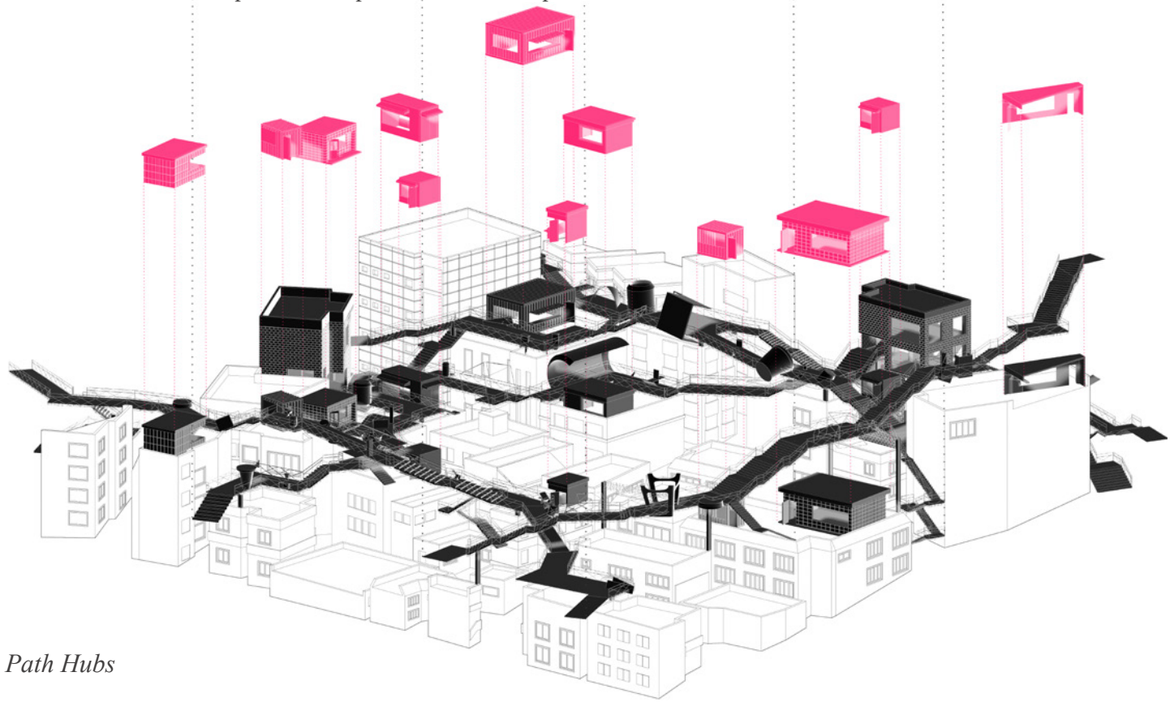
Behavior Structures

By dispersing elements that trigger actions in the city at various scales, it generates diverse and numerous urban situations.



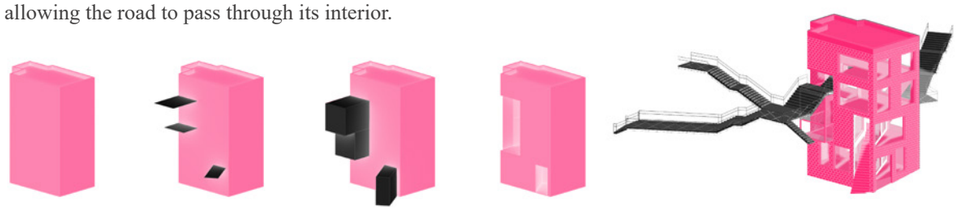
Rooftop Structures

Residential rooftops serve as spaces, but they are elevated above the ground, accessible only through the houses, and restricted by current regulations to build anything other than simple structures. Consequently, the newly created connection with the road presents new possibilities for this space.

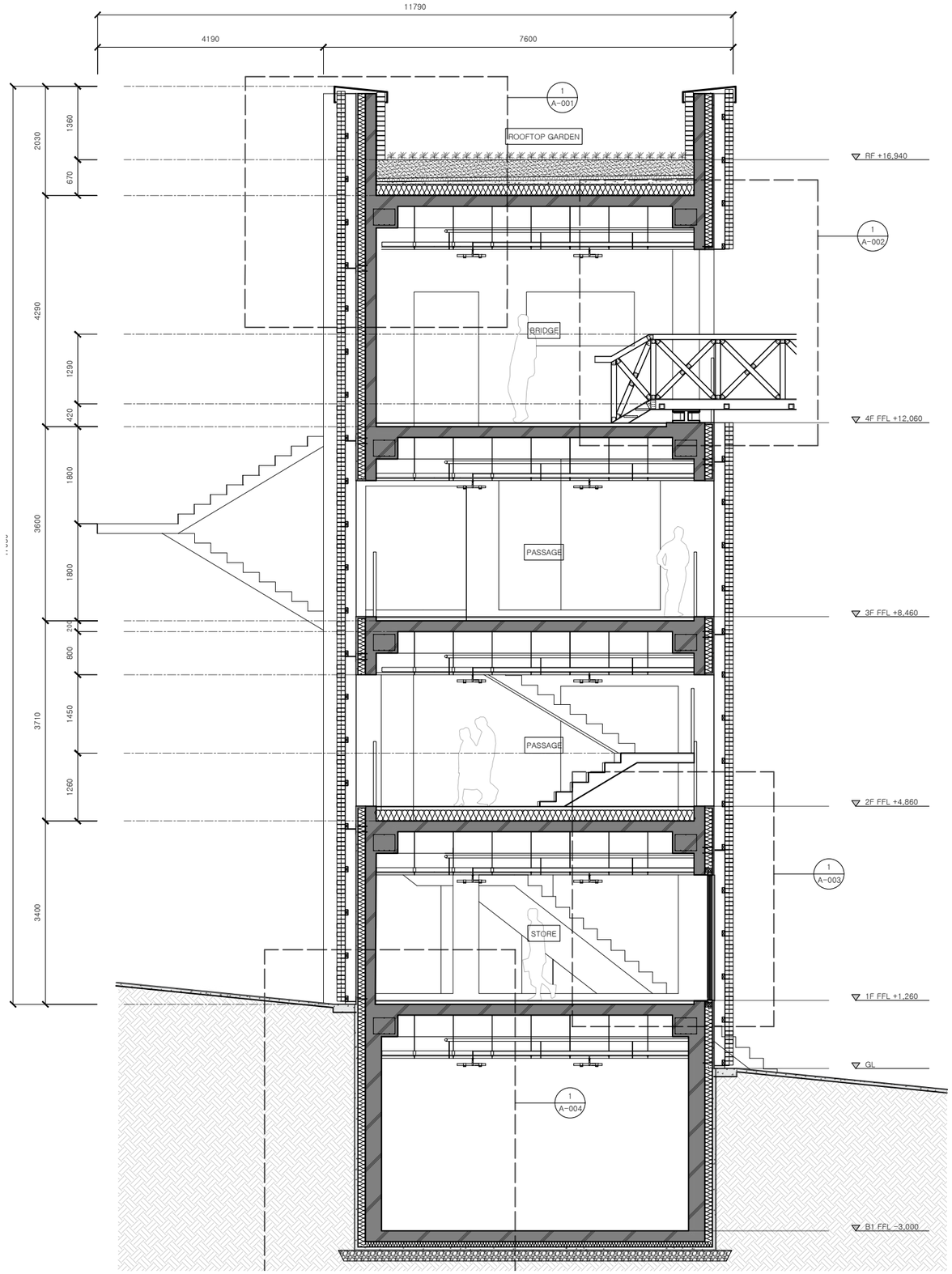


Path Hubs

Repurposing the highly deteriorated building as a hub of the new path. This building is reconfigured along the path of the road, allowing the road to pass through its interior.



Elements of Ignite behavior



Detailed section of Path Hub

IV Urban Stereoscopic Expansion

The phenomenon of urban elements in three dimensions

Advisor : Kim Jung-in
Type : Academic, Studio project
Location : Dongjak-gu, Seoul, South Korea
Individual Work, 2021

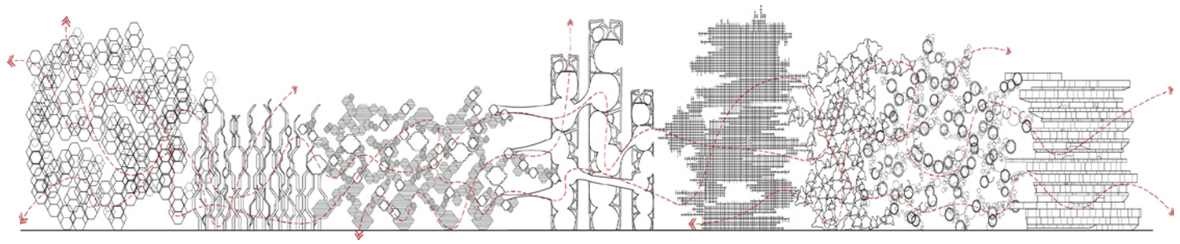
Soongsil Award: Winning entry for Architecture Project of semester,2021

In city, there are various urban elements such as housing, commerce, leisure, nature and so on. There were phenomena that elements spread or shrink, bump, stray, merge into one as needed. Even around the site, Seoul, South Korea, when the residential area is located in front of the park or educational facilities, the elements spread through each other.

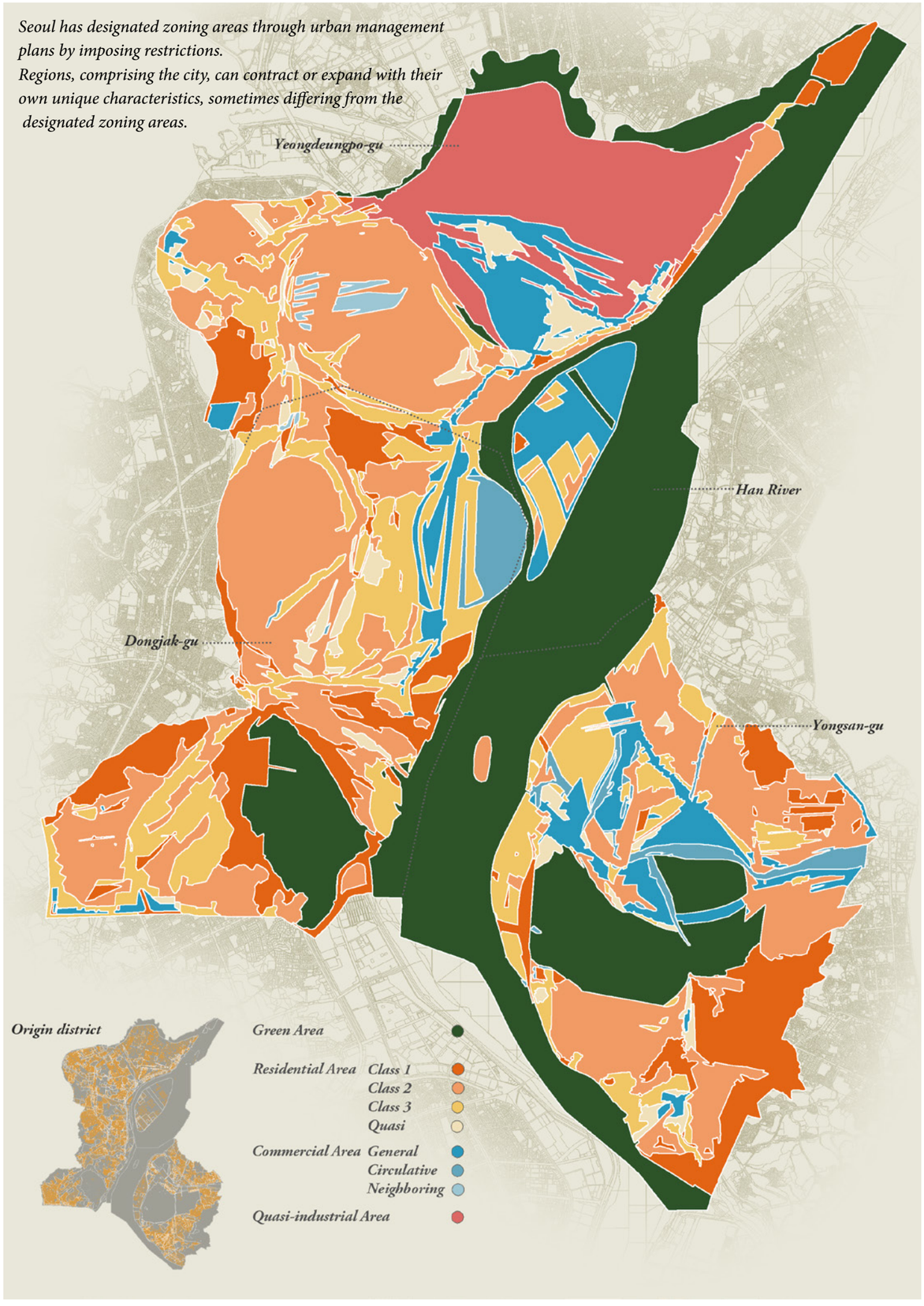
Spaces that spread and overlap in this way can also give rise to new characteristics. The convergence of residential and commercial areas can sometimes form small-scale commercial zones, and the merging of nature and habitation can lead to the creation of low-altitude, low-density structures that make it easier to access nature.

The analysis was initially conducted through QGIS, where each urban element area is formed according to the designated zones set by local authorities. However, due to a certain degree of flexibility within the established framework, these areas are relatively loosely configured. The formation of these areas was redefined by applying weights based on the characteristics of the fluctuating population and influence, resulting in a new area map. Through this process, the emergence of new spaces between each area was identified.

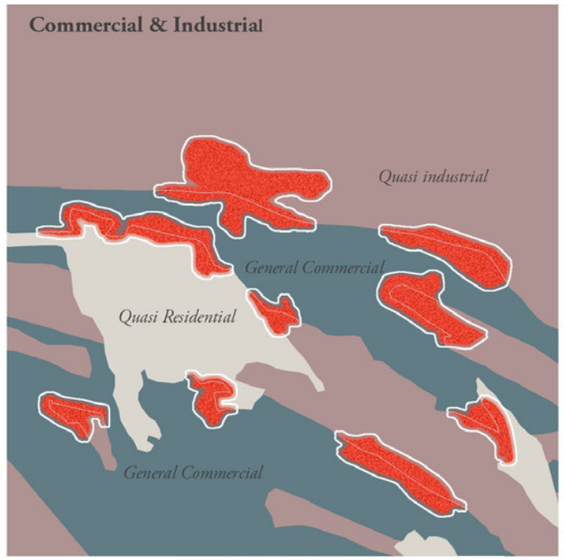
The project started with "What if urban elements meet in three dimensions, not just in a plane?" In vertical city, urban elements have starting point that are inflated by their own forces, meeting and crushing in various directions to create areas. The changes brought about by these numerous directions of transformation can create more points of contact between various spaces, increasing opportunities for the emergence of new character spaces among them.



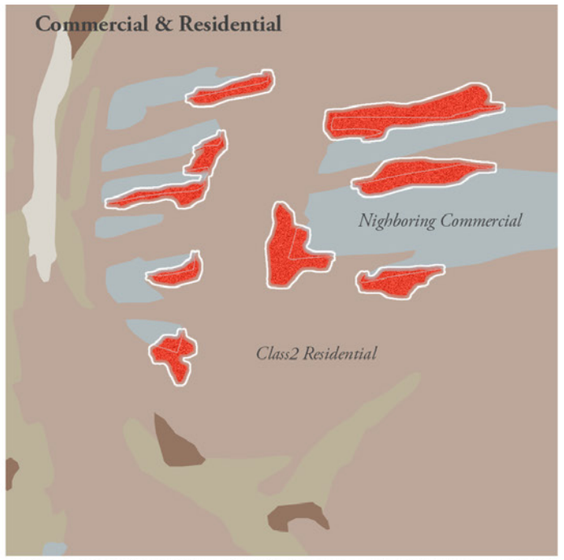
Linkage of vertical cities by studio(left)
Overview of three dimensional expansion city(right)



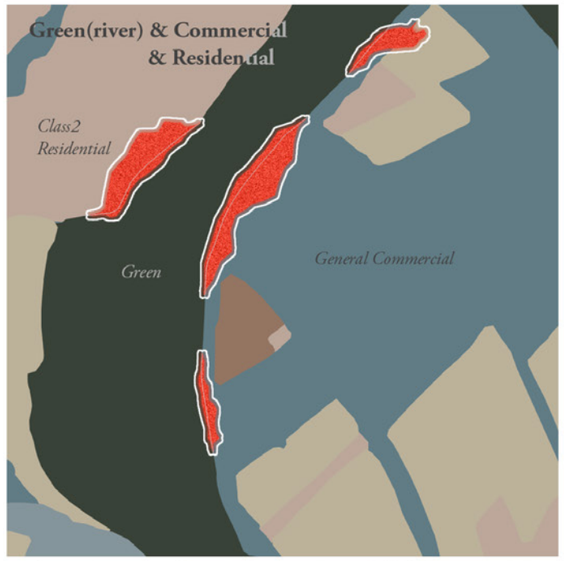
Cartogram map, Seoul three district



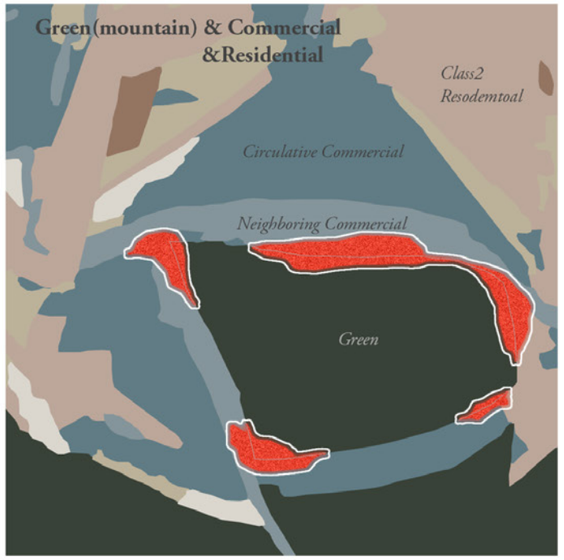
The meeting of industrial zones, such as factory districts, and commercial areas can also blend into new forms of commercial spaces



The intersection of commercial and residential can lead to the creation of neighborhood shops that provide the goods they need, as well as spaces for their convenience

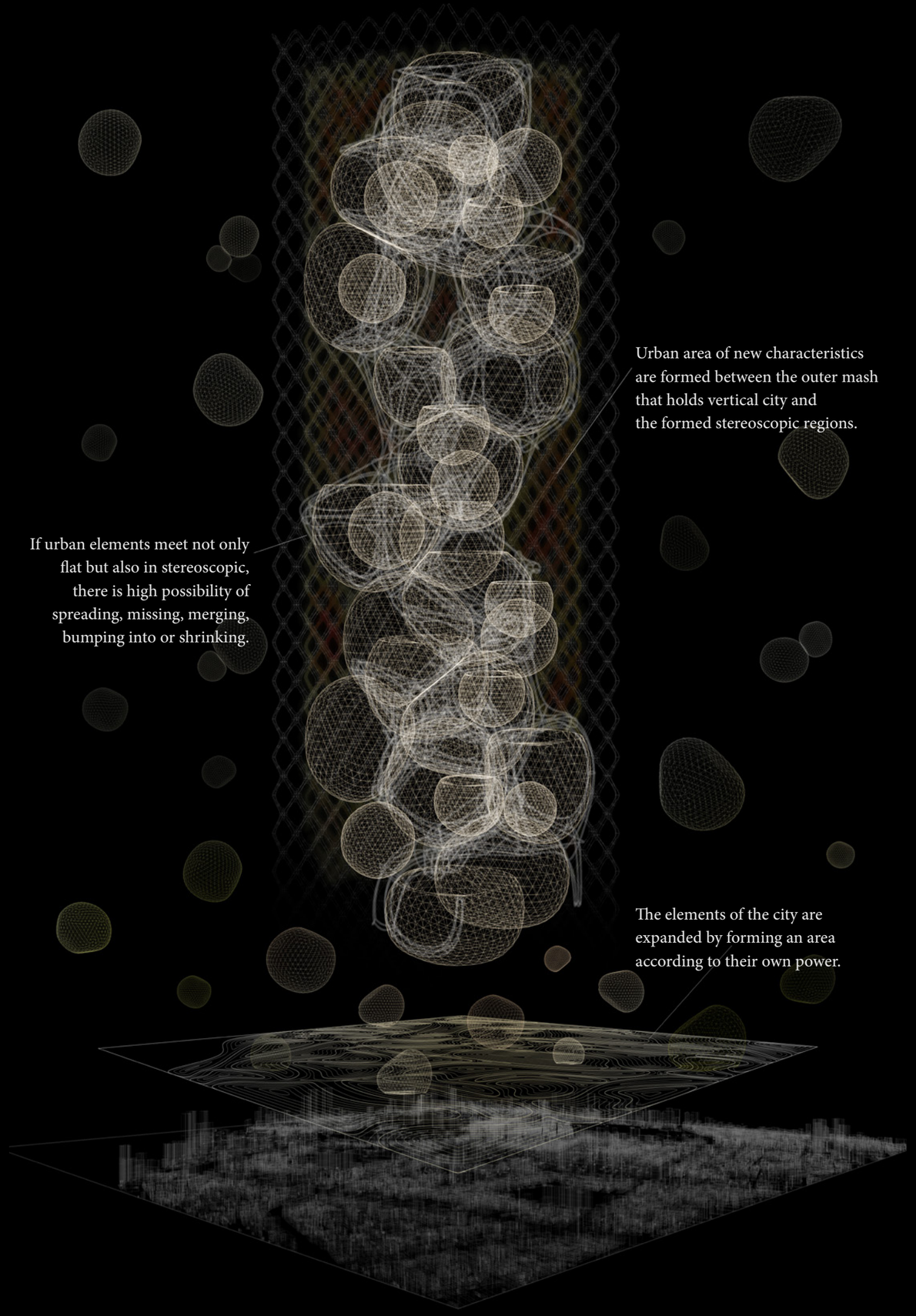


The convergence of green(rivers), residential areas, and commercial zones can also blend in a new way by infusing natural elements into each designated zone



The meeting of green(mountains), residential areas, and commercial zones can incorporate natural elements while also giving rise to new forms due to the slopes

Types:
The possibilities arising from the meeting of different land-use zones



Vertical city arising from urban area characteristic

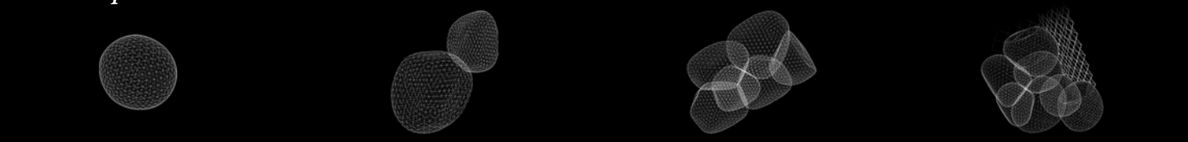
Two-dimensional cityscape

Various urban elements such as housing, commerce, nature, and business

Each urban element are constructed differently depending on the properties of each element

Each urban element spread, collide, miss, shrink and merge by own power

Stereoscopic element



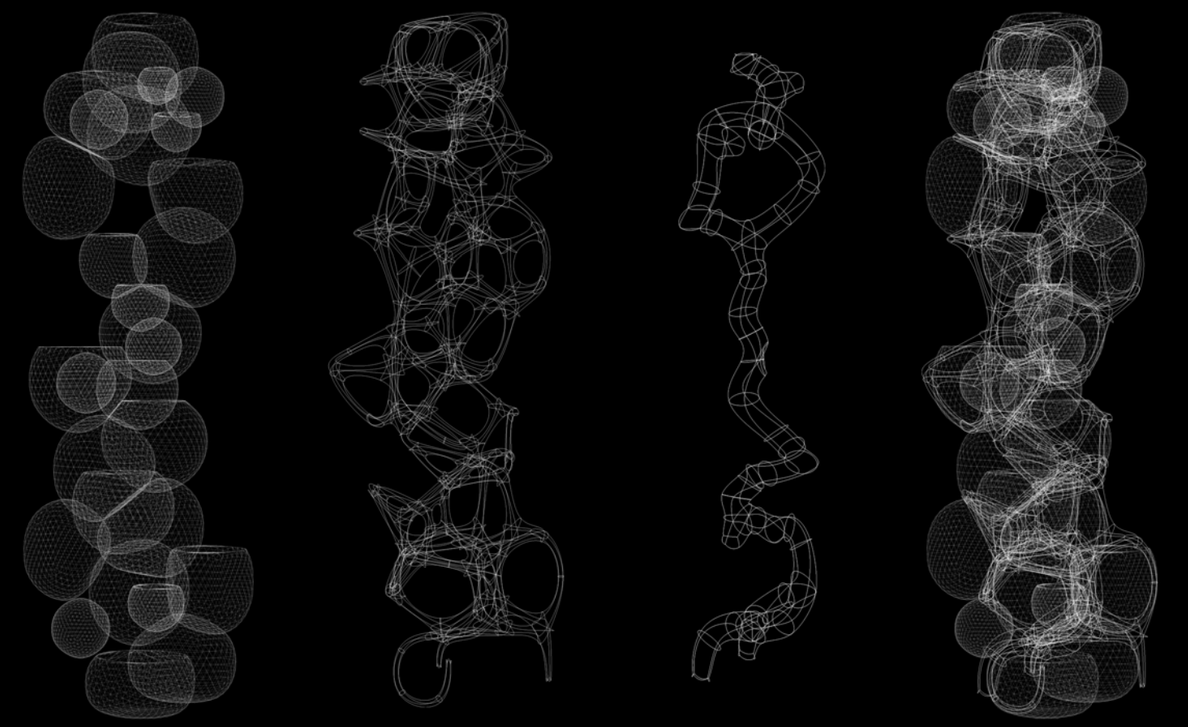
Urban elements in 3D extend in all directions

3D transformation by encounter of urban element

The encounter of factors brings various changes

New elements arise between and around of urban elements

Structural support



The composition of 3D urban elements and new elements

The elements is flexibly supported by a streamlined structure

The expansion of the structure facilitates vertical movement

The Structural support and vertical movement become easy

Elements interior

The expansion and overlap of urban elements create one

Possibilities are also created between membranes and urban elements

V Autonomous Vehicles on Urban spatial

Housing price distribution according to changes in travel opportunity cost

Type : Paper research project
Location : Seoul, Metropolitan area
Role : Data crawling, Hedonic model code, Literature review, Scenario Analysis, Diagram
Co-work with Park Chiyoung, 2022

Publication: Journal of Architectural Institute of Korea, Vol.39 No.5, May 2023

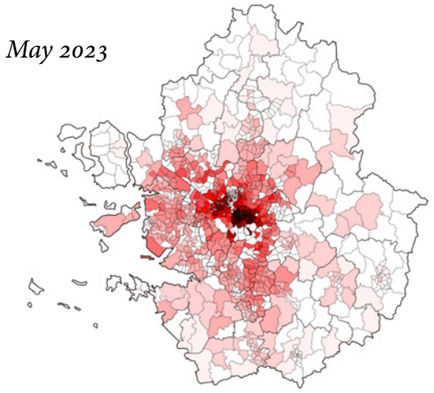
The changes in travel opportunity cost due to the spread of autonomous vehicles are expected to reduce the burden of long-distance travel and affect preferred residential areas of urban households. This study aims to predict the impact of the spread of autonomous vehicles on urban spatial structures, focusing on the distribution of hosing prices in the Seoul metropolitan area as it relates to the changes in travel opportunity cost.

The current housing price and travel opportunity cost were analyzed through a hedonic price model, and the future housing prices of different scenarios considering the changes in travel opportunity cost were predicted and compared.

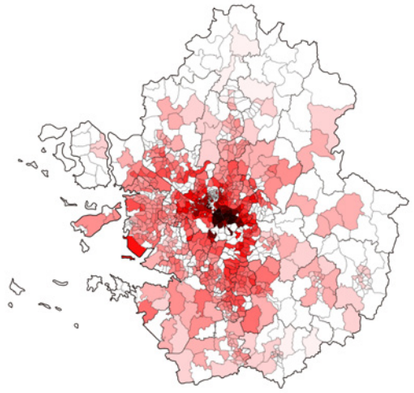
The scenarios were constructed based on prior research regarding changes in travel time, both increases and decreases, as well as changes in travel time value and fuel savings resulting from the fleet size of autonomous vehicles. Travel time changes were categorized into three stages: 20%, 60%, and 100% adoption rates, while changes in travel time value and fuel savings were set at two levels each, from the minimum to the maximum. Based on these factors, four potential scenarios for the future were estimated to determine housing prices in the metropolitan area.

Compared to the present, the relative housing price distribution or relative price index (RPI) decreased, the distribution of the median range of housing prices shifted from downtown Seoul to the adjacent Gyeonggi region.

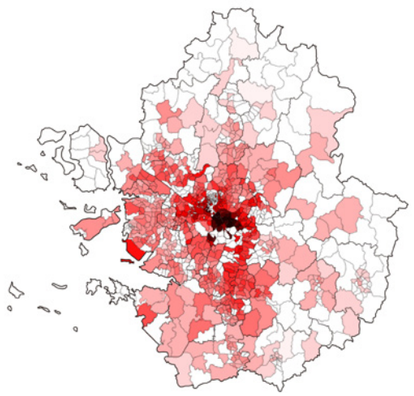
The results of this study suggest that the reduction in travel opportunity cost due to the spread of autonomous vehicles may allow urban households to prefer areas other than the city center as residential areas and mitigate the housing price gap in the Seoul Metropolitan Area.



Base (AV 0%)

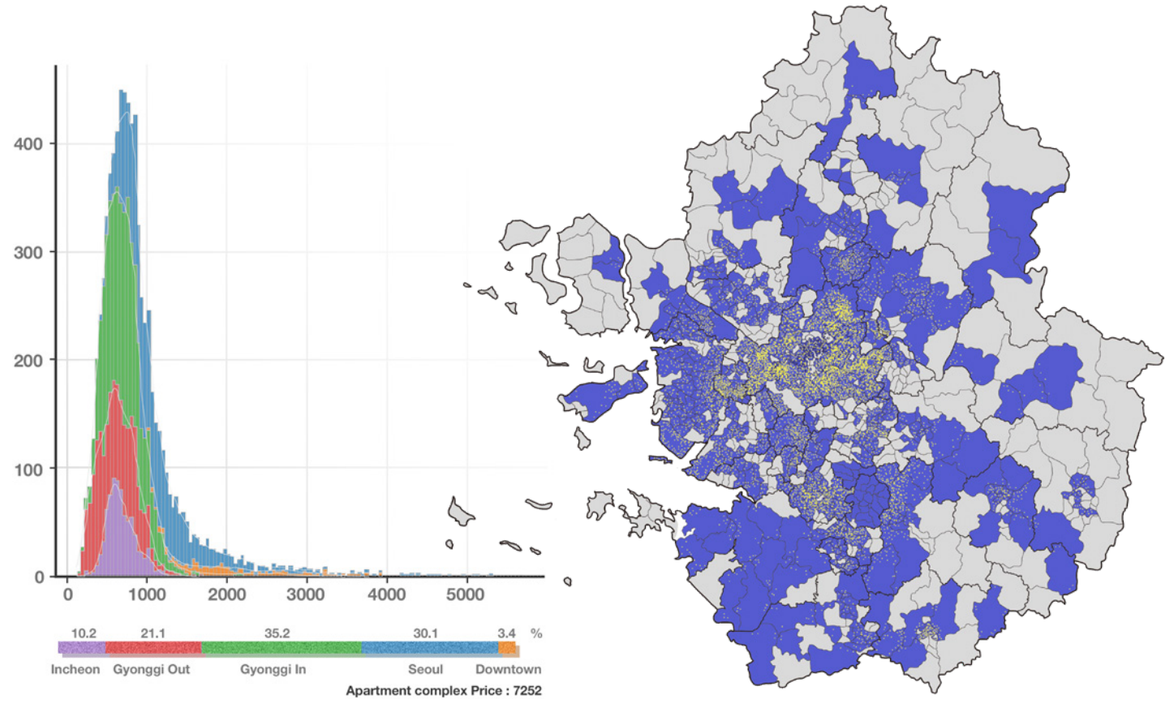


Scenario I (AV 100%)

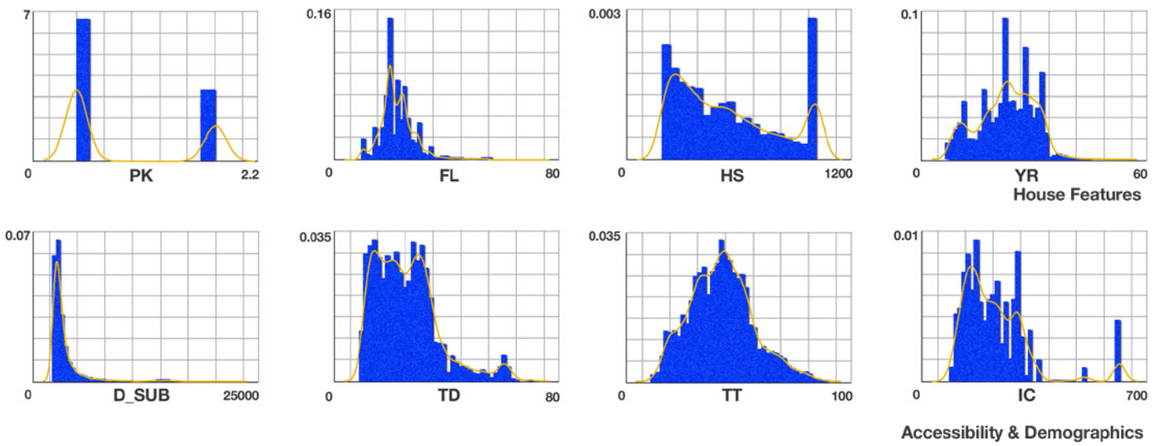


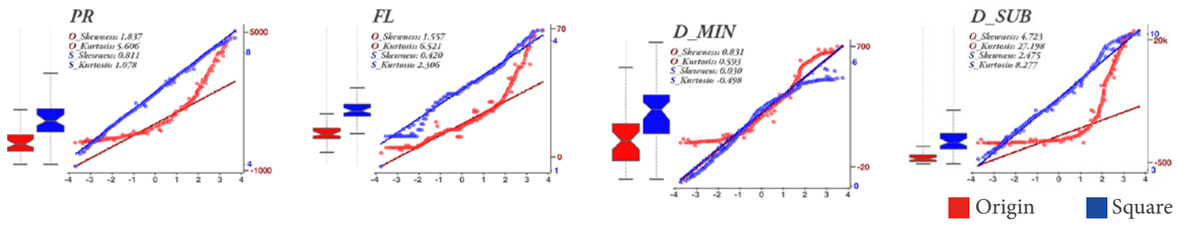
High low Scenario IV (AV 100%)

Relative Price Index(RPI) comparison of Scenario I and IV



PK	*Existence of parking facility*	*1(yes) 0(no)*	*D_PRK*	*Distance to the nearest urban park*	*meters*
FL	*Number of apartment floors*	*number*	*D_SCH*	*Distance to the nearest school*	*meters*
HS	*Number of households*	*number*	*D_SUB*	*Distance to the nearest subway station*	*meters*
YR	*Years after completion*	*years*	*TD*	*Travel distance to city center*	*kilometers*
D_HOS	*Distance to the nearest hospital*	*meters*	*TT*	*Travel time to city center*	*minutes*
N_STR	*Number of retails*	*number*	*IC*	*Local average income*	*10k won per month*





Spatial scope: 772 neighborhoods of Seoul Metropolitan Area(Top)
Data Variables and Normality(Bottom)

Scenarios		Changes in TT in regards to AV fleet size(%)				TTV reduc. (γ)	FC reduc. (δ)
		0	20	60	100		
1	TT increase	1	1.046	1.134	1.148	0.690	0.890
2						0.590	0.792
3	TT decrease		0.879	0.734	0.610	0.690	0.890
4						0.590	0.792

TC (Travel Value)

$= 2 \bullet \{TT \bullet IC_t \bullet (V_{cv} + \alpha \bullet \gamma \bullet V_{av}) + TD \bullet FC_d \bullet (V_{cv} + \delta \bullet V_{av})\}$

TC: Travel value(10otwon)

TT: Travel time(Hour)

TD: Travel distance(Km)

IC_t: Hourly wage

= IC/209(10twon/hour)

FC_d: Fuel cost per distance

= 1,919(won)/24.3(km)•1/(10twon)

α: Rate of travel time change

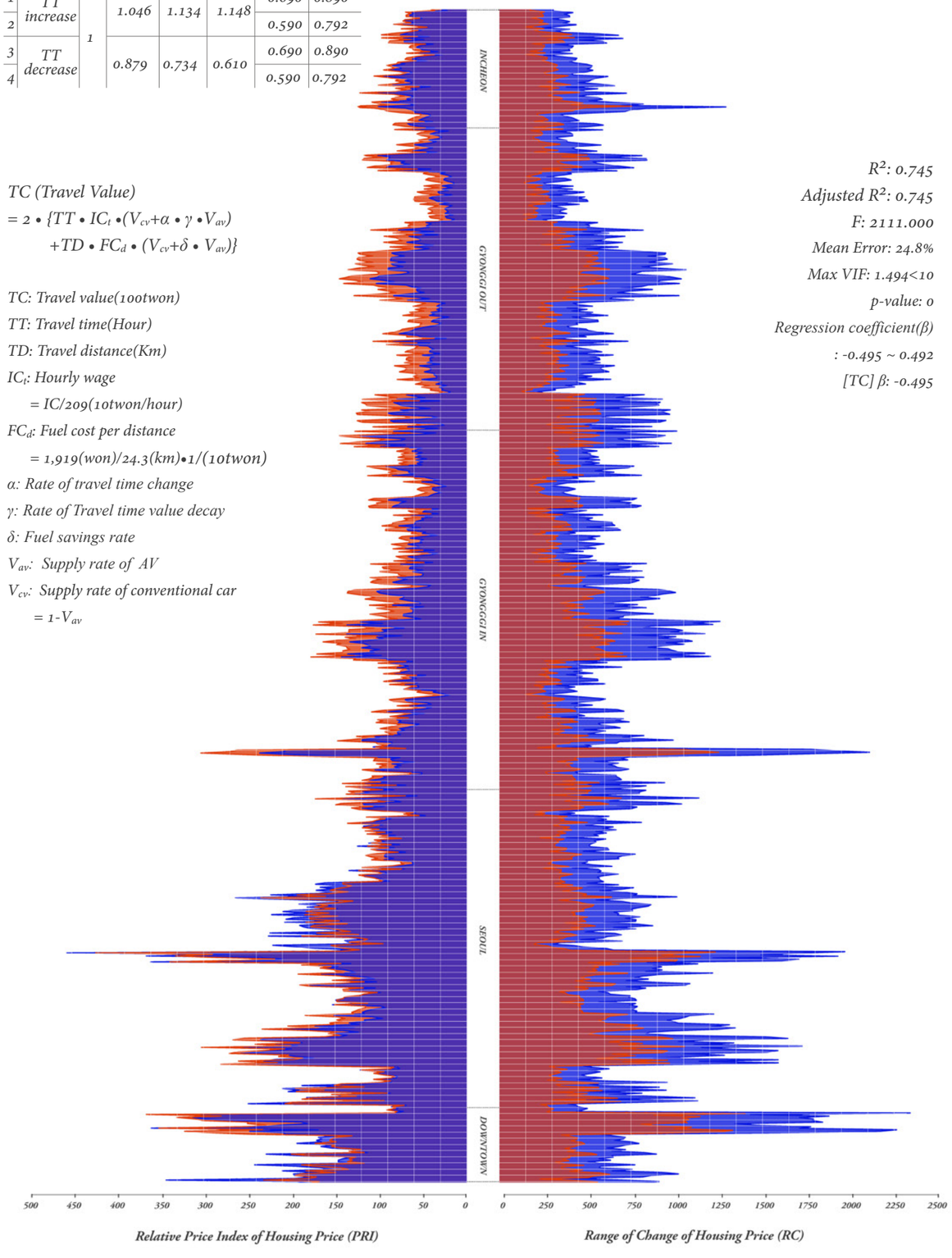
γ: Rate of Travel time value decay

δ: Fuel savings rate

V_{av}: Supply rate of AV

V_{cv}: Supply rate of conventional car

= 1-V_{av}



R^2: 0.745

Adjusted R^2: 0.745

F: 2111.000

Mean Error: 24.8%

Max VIF: 1.494<10

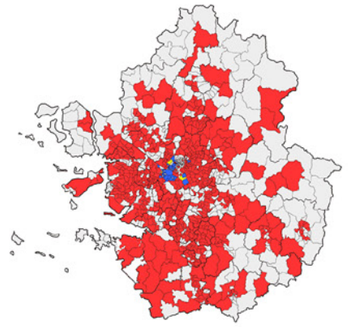
p-value: 0

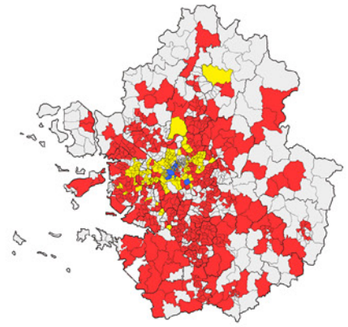
Regression coefficient(β)

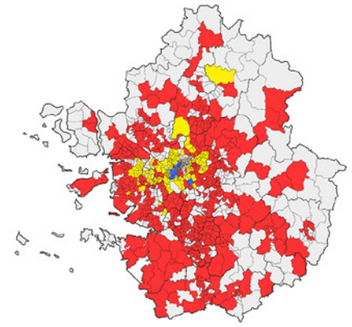
: -0.495 ~ 0.492

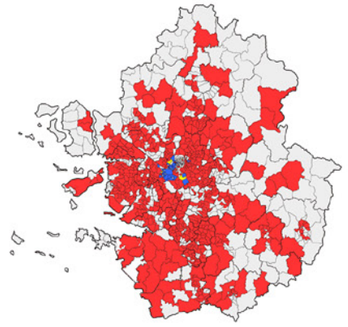
[TC] β: -0.495

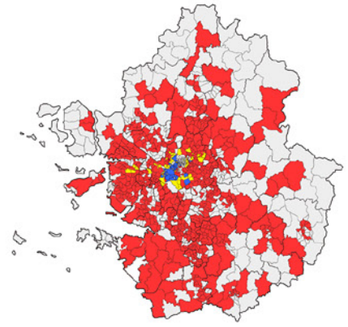
Hedonic Price Model Analysis PRI & RC

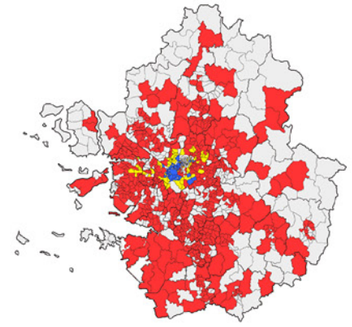

Scenario I (AV 20%)

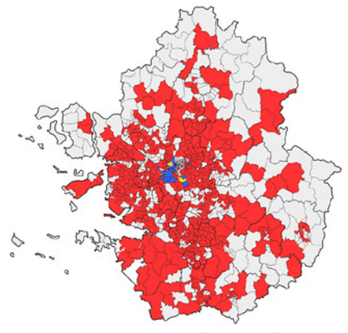

Scenario I (AV 60%)

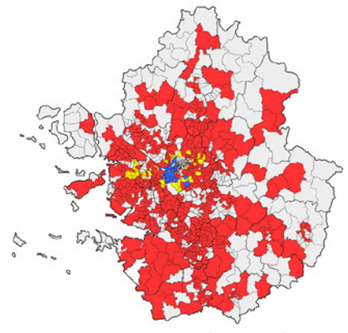

Scenario I (AV 100%)

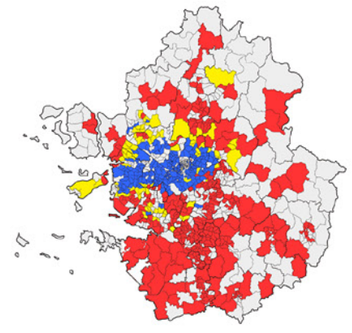

Scenario II (AV 20%)

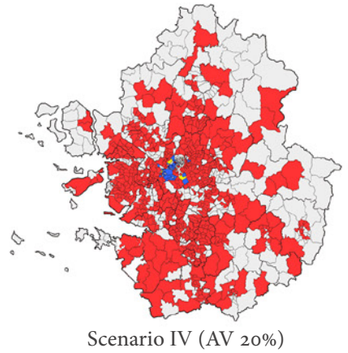

Scenario II (AV 60%)

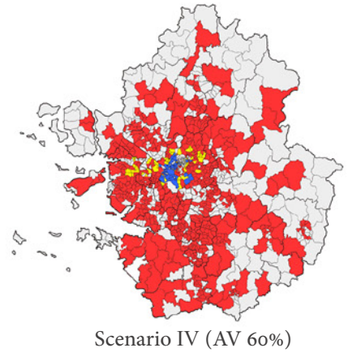

Scenario II (AV 100%)

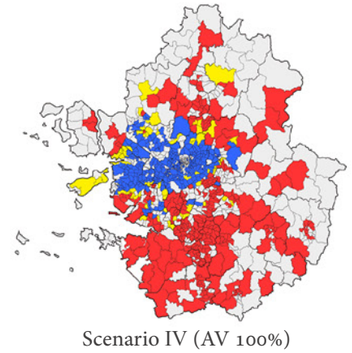

Scenario III (AV 20%)


Scenario III (AV 60%)


Scenario III (AV 100%)


Scenario IV (AV 20%)


Scenario IV (AV 60%)


Scenario IV (AV 100%)

Rise *Drop* *Stay*

Change in RPI(Relative price index) by four different scenarios

VI Transformative Automation

Augmenting Robotics Tool for Transformative 3D Modeling

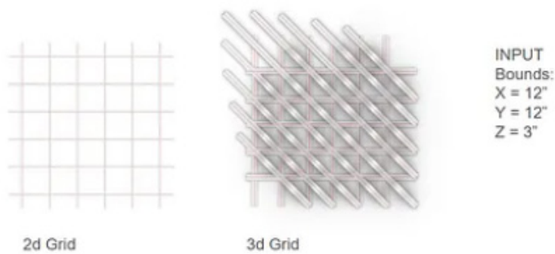
Advisor : Danil Nagy
Type : Academic, Elective class Project
Role : Robotic-Arm(Grasshopper) coding, Arduino coding, Modeling, Picture
Co-Work with Julia Kwon, 2024

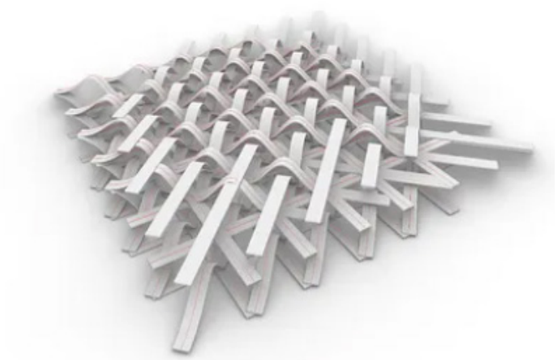
Transformative Automation is a tool developed to advance infill structure design through robotic automation. It transforms a 3D grid, generated by applying diagonal undulation to a 2D grid, into executable scripts created in Grasshopper and Python, which are then adapted for use with robotic plug-ins for physical prototyping. For the creation of physical prototype models, Arduino was employed to bridge the script with the robotic arm. This setup includes supplementary design elements, such as an end-effector equipped with a heating element (solenoid) and a motor-driven series of wheels to release wood veneer tape.

This tool is founded on the principle of utilizing up-cycled, biodegradable, and adhesive-free infill structure and materials to develop a modular building insulation system. Its goal is to minimize environmental impact while promoting sustainable and circular building practices.

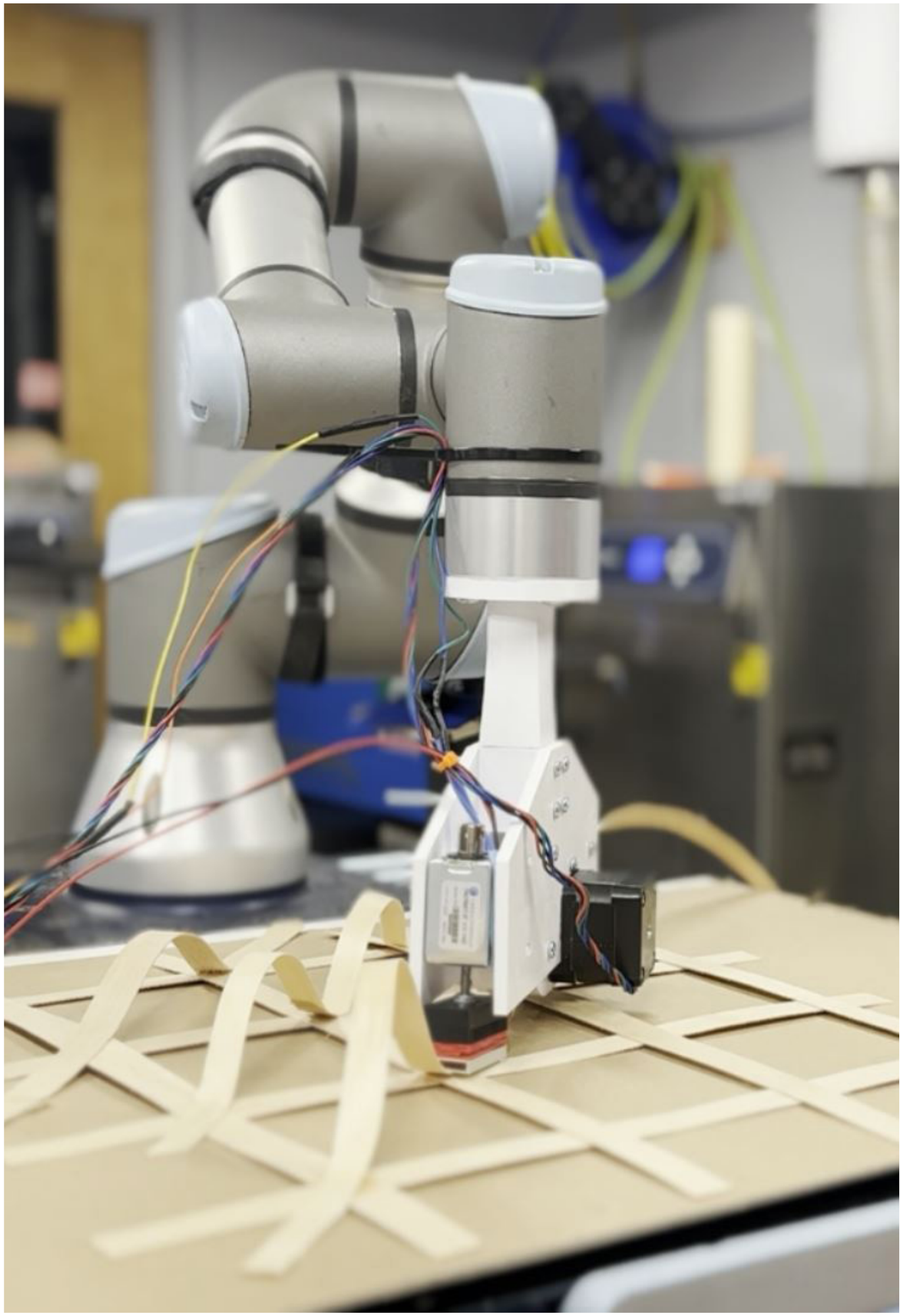
This project is a suite of .gh and .py scripts designed to generate a 3D grid framework from a 2D grid. This tool facilitates automation by integrating robotic plug-in languages, enabling the transformation of the 3D grid into precise point-to-point movements. It dynamically adapts to situational conditions for end-effector actions, including release (with wait time), stamp (with wait time), and directional adjustments, such as moving upward along the Z-axis for trajectory changes.

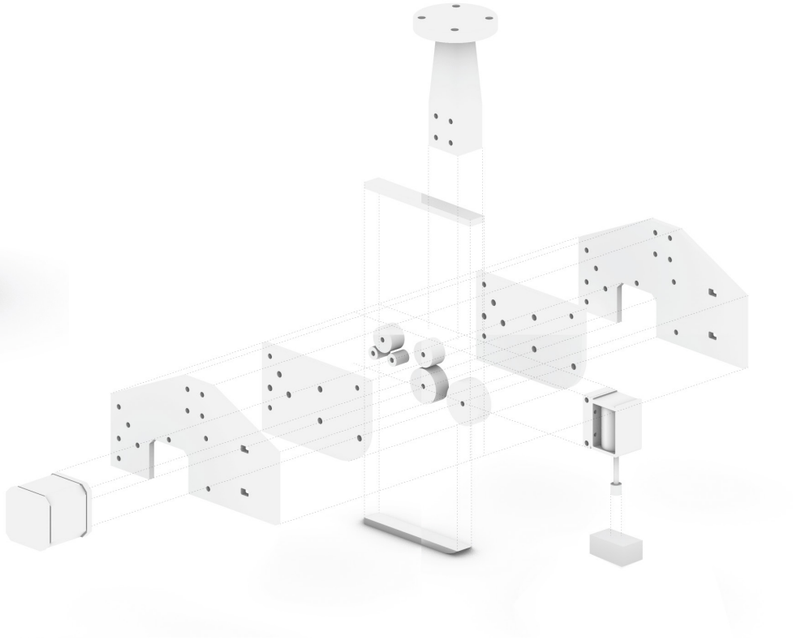
Input — Base Geometry X, Y Grid with Diagonal with Z directional Grids
Flexible and Light Frame Structural System
Automation to Enhance Scalability





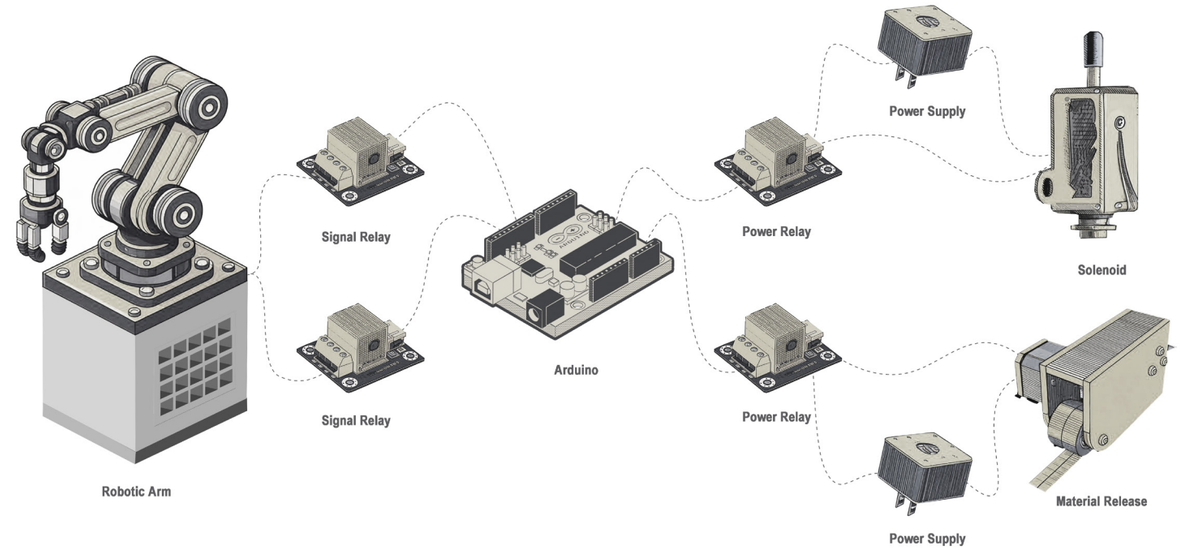
Input bounds x,y,z 12" by 12" by 3" (Left)
End effector and robotic arm (Right)





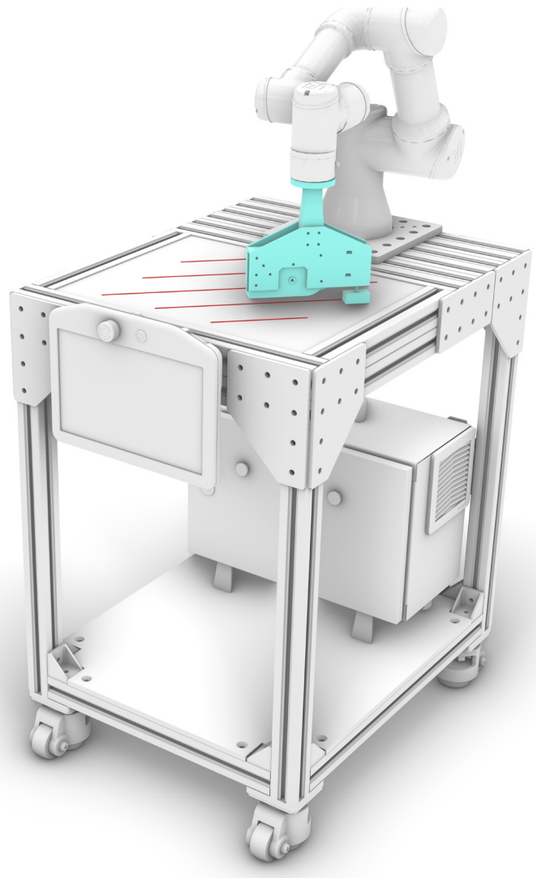
Material feed mechanism
: A series of wheels with a motor controls the wood veneer tape, enabling it to move.

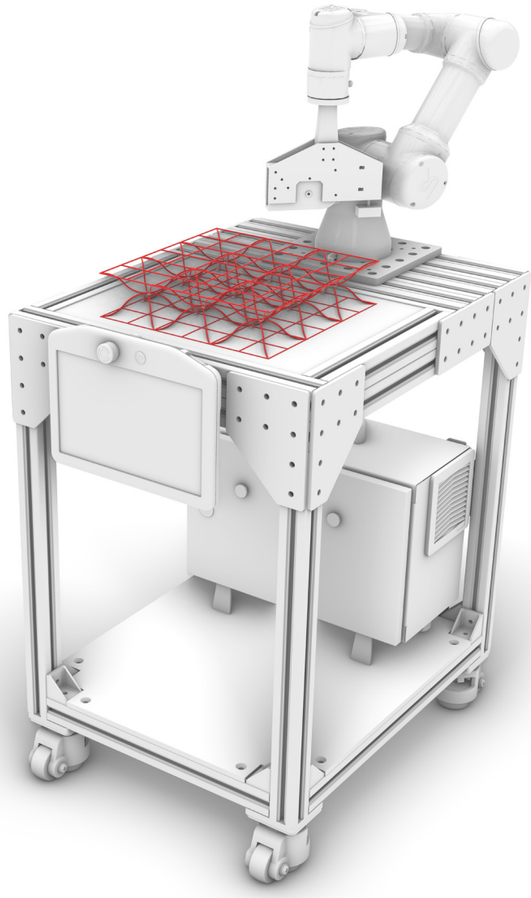
Heating and pressing system
: A solenoid attached to a heating element performs a timed pressing action to heat the wood veneer tape at specified nodes.



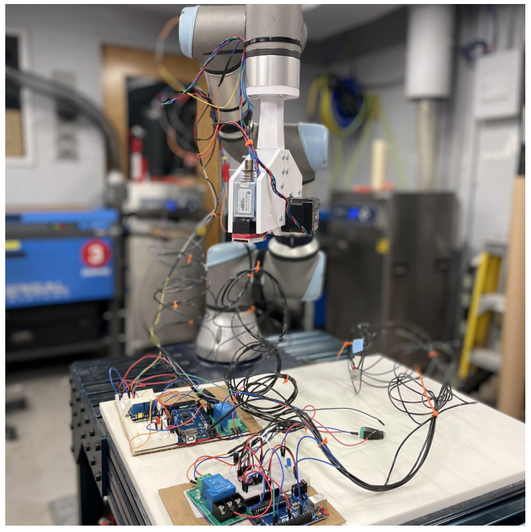
Robot Grasshopper & Python Code

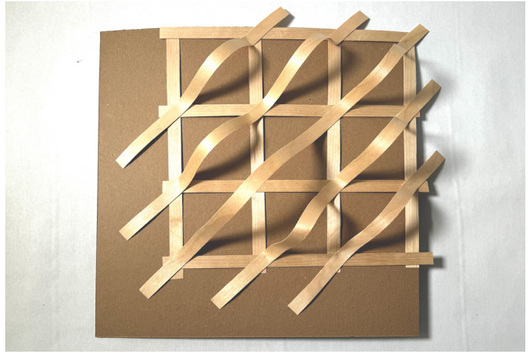
Arduino IDE

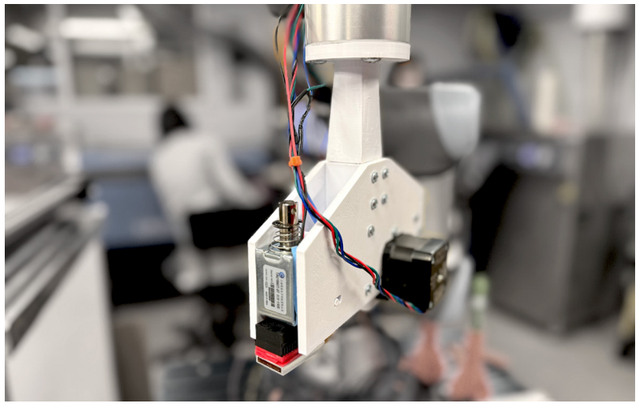


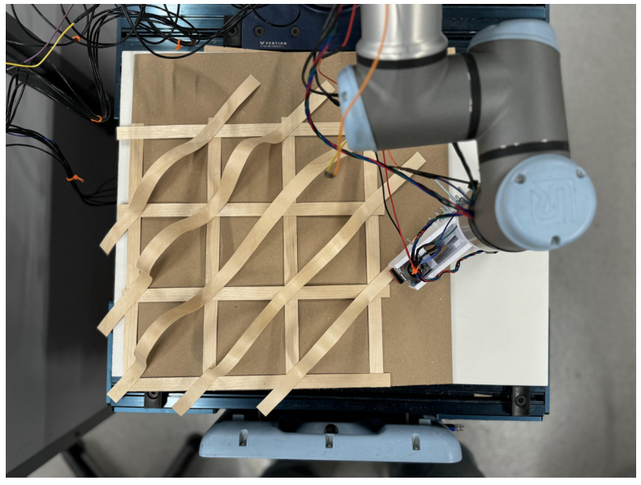


End effector (motor, wood veneer tape, solenoid and the heating element (Top)
Simulation of .gh plug-in .robots process calibrating robotic arm movement (Bottom)









Physical modeling process(input - script into robotic arm / outputs - solenoid + end effector) (Top)
Picture of automation in action (Bottom)

VII SUM

Pavilion to prepare for the fine dust disaster

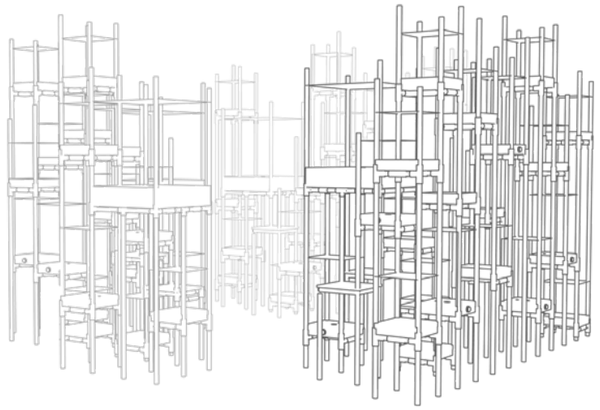
Type : Pavilion
Location : Soongsil univ. Square / Nodeul island
Role : Team leader, Experiment of mist, Modeling & Randering, Module diagram
Co-Work with Soongsil univ. UAUS team, 2021
Exhibition : Nodeul island square, sep. 2021

Top 5 Pavilion, UAUS: disaster preparedness, 2021

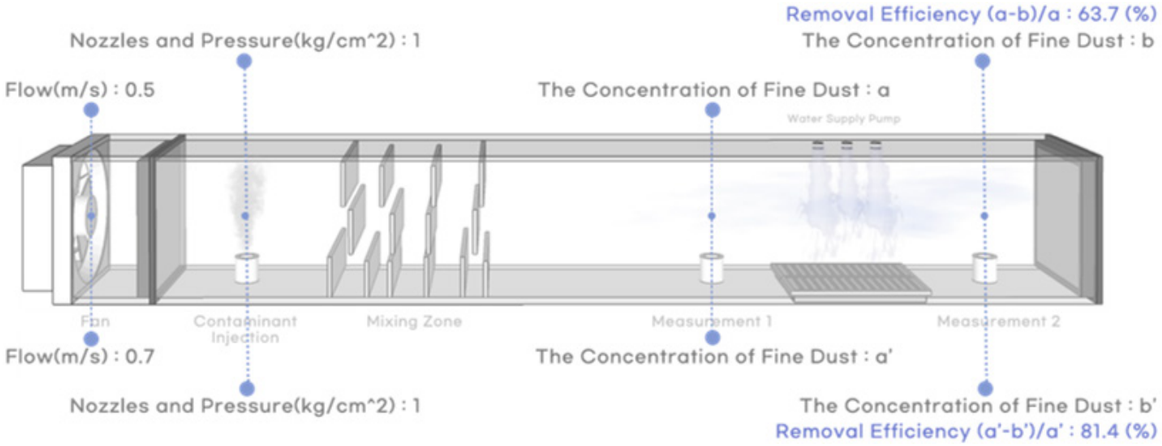
In daily lives, there are disasters that change our daily lives big and small. Among them, fine dust that has permeated our daily lives and has become familiar can be the most fatal disaster. Fine dust is characterized by inability to respond actively except for masks, and these points have made us stand by and watch fine dust even though they cause serious damage to people.

In South Korea, ultra-fine dust warnings have increased 2.4 times year-on-year, and long-term exposure of fine dust can lead to respiratory and various diseases. However, unlike other disasters, fine dust becomes common and makes us stand by because it is difficult for us to respond directly. Therefore, most people have already become accustomed to disasters and do not try to respond actively. By setting these people as the main users of Pavilion, we would like to encourage them to recognize the reduction of fine dust through participation in Pavilion and to recognize that fine dust is no longer an unresponsive disaster.

In this situation, we are considering ways to reduce fine dust by utilizing the adsorption of water through rain reducing fine dust.



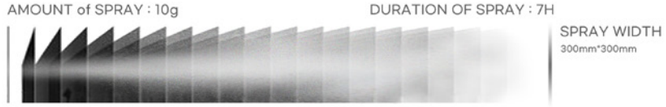
Overall perspective view(Top)
2019 National disaster selection(Bottom)



SOLAR FOUNTAIN

AMOUNT of SPRAY : 10g

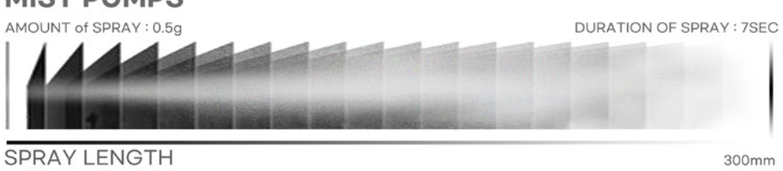
DURATION OF SPRAY : 7H



MIST PUMPS

AMOUNT of SPRAY : 0.5g

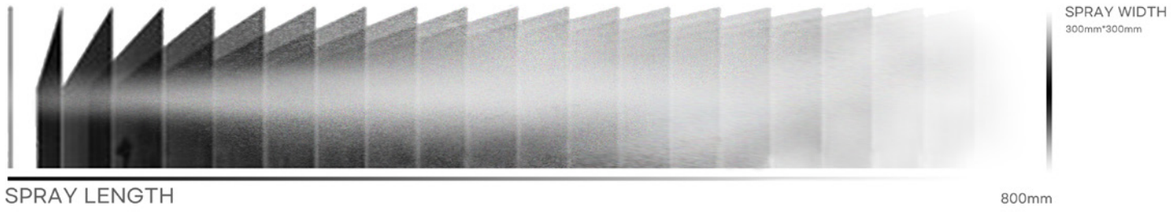
DURATION OF SPRAY : 7SEC



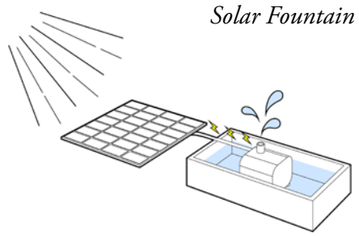
SPRAYER

AMOUNT of SPRAY : 1g

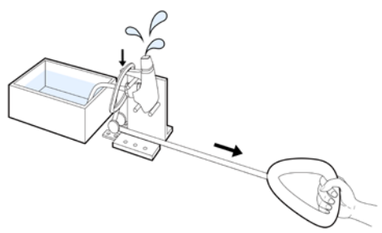
DURATION OF SPRAY : 10SEC



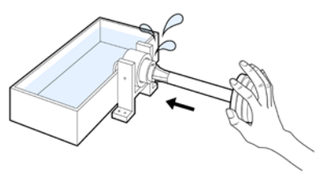
Solar Fountain



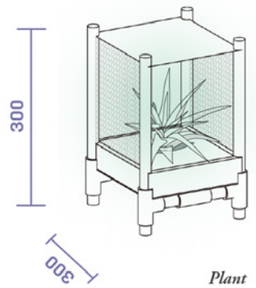
Sprayer



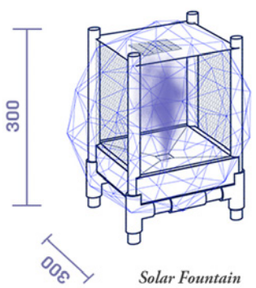
Mist pumps



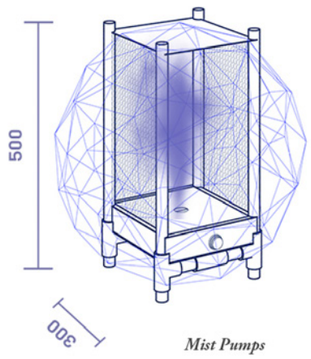
Water range experiment(Top)
Spray & Purification range, according to type(Bottom)



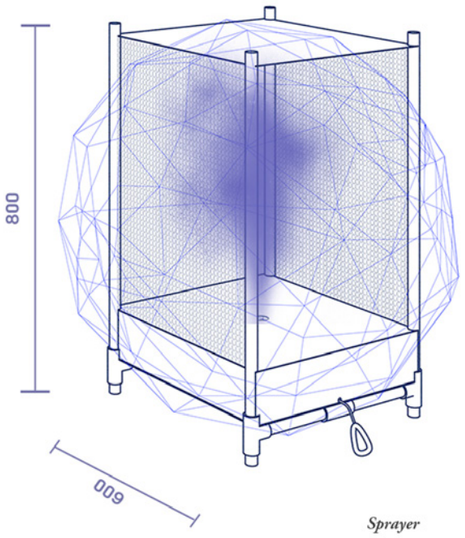
Plant



Solar Fountain

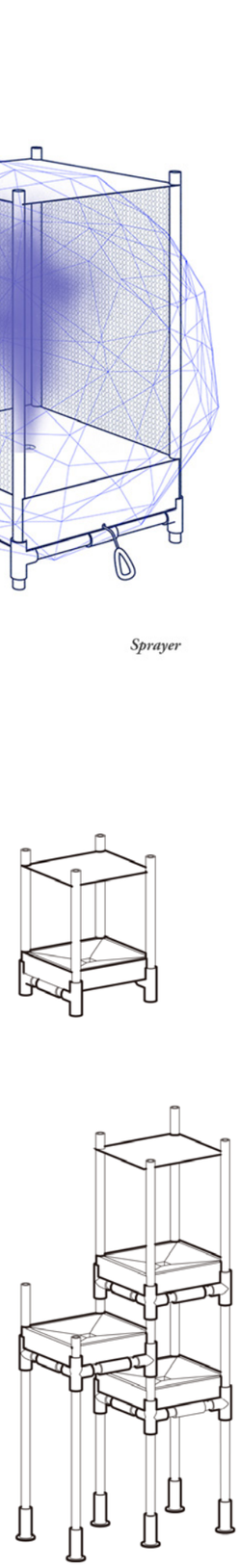


Mist Pumps

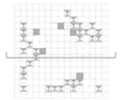


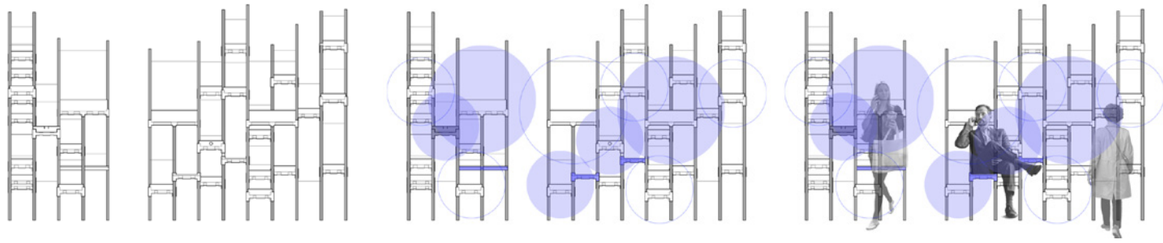
Sprayer

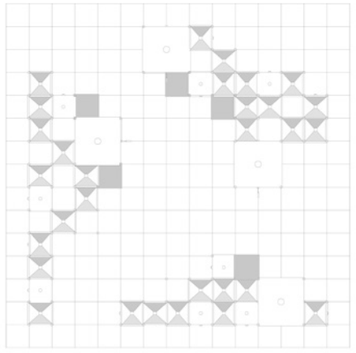
Placing the essential atomizer at the center of all modules for structural stability, we used PVC pipes and joints to simplify module-to-module connections, enabling diverse forms beyond our pavilion design.



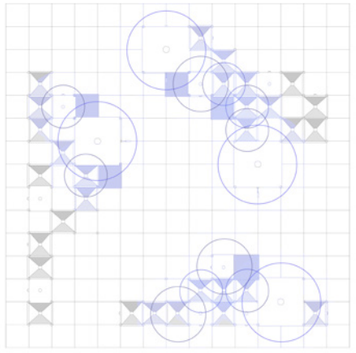
Module by each type(Top)
Construction process by PVC pipes(Bottom)







Level : +1600



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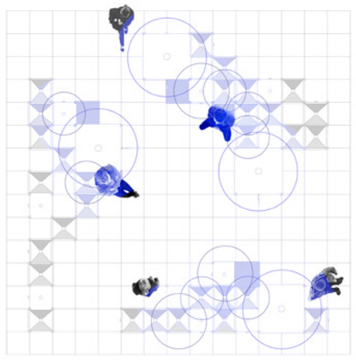

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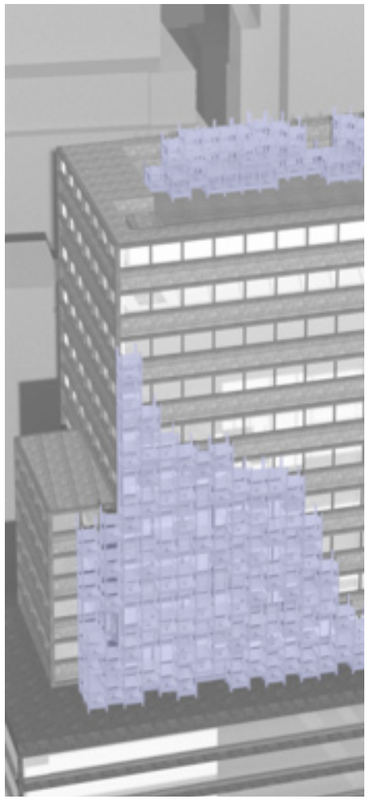
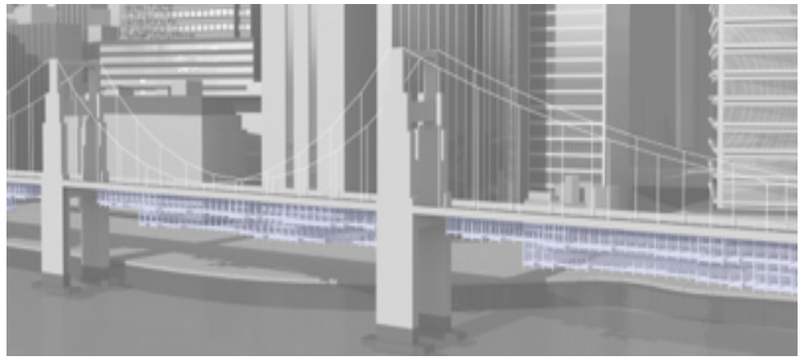
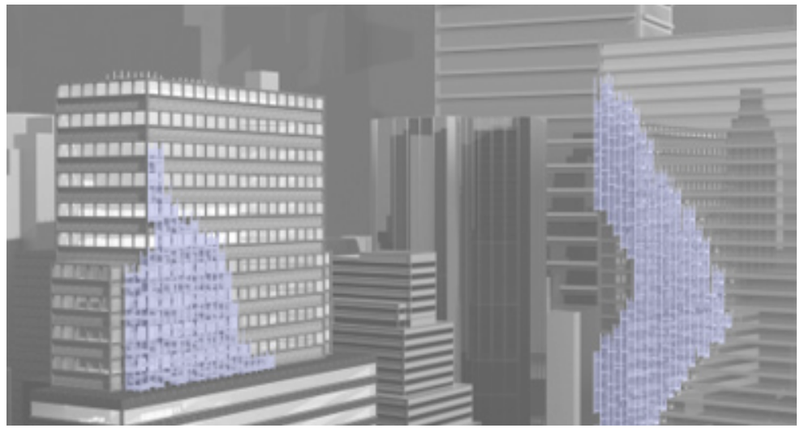






Section & Plan, Purification radius(Top)
Urban utilization scalability(Bottom)

Actual Construction completion scene(Top)
Pavilion Installation in nature(Bottom)

VIII Elemental Sabotage

Exploring new possibilities through the deconstruction of traditional Korean architecture

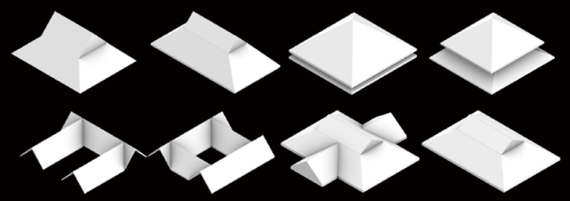
Advisor : Kim Dongyun, Kim Hanjun , Lloyd Lee Sukgyo
Type : Academic, External activity project
Role : Supporter part, Main diagram
Co-Work with Sun Jiaxin, Jeon Heyejin, 2022
Working result from AAVS

The traditional architectural style of Korea possesses a distinctively East Asian aesthetic. Based on these synchronic and conceptual understandings of architecture, aim to explore a design method that utilizes the latest technologies to create a culture-specific design. Various architectural elements used in Korea throughout different eras were first divided according to their functions. Elements in each function category merged and gave birth to new elements that incorporate the Korean understanding of functional morphologies.

Start with discussion about the concept and the elements of Korean Architecture. Analyzing the organization, composition & decomposition, and the logic of different precedents is done. We want to make a testbed to observe numerous applications of different compositional logics to existing examples beyond the original composition of architecture.

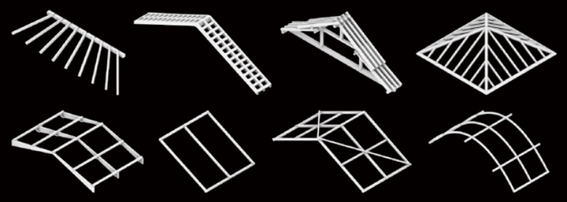
Finally we play with the possibilities of re-composed elements and develop the design from 3 different elemental morphology compositions with own scenarios.

Traditional architectural styles of Korea(Left)
System combination of elements(Right)



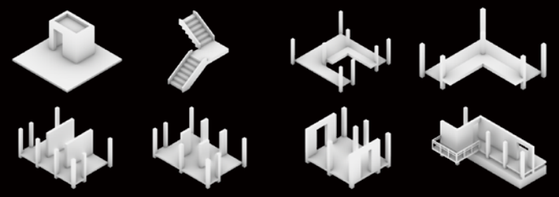
OWN Definition CANOPY

An assembly of overlapping architectural elements that create a sheltered space



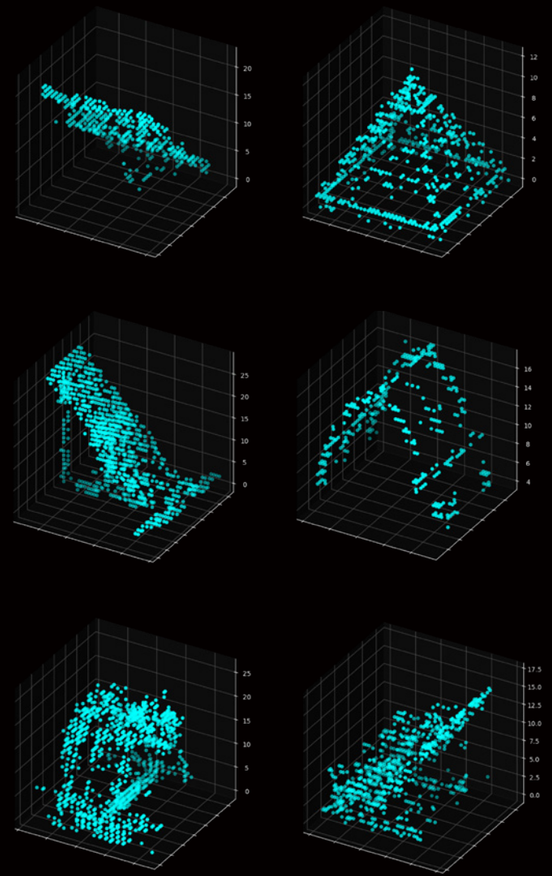
OWN Definition SUPPORT

An assembly of component that resists to gravity in a diagonal manner



OWN Definition FLOORING

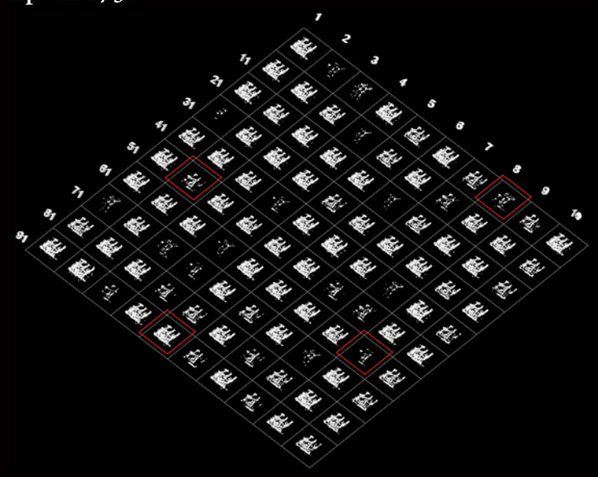
Surface planned horizontally or vertically to connect space

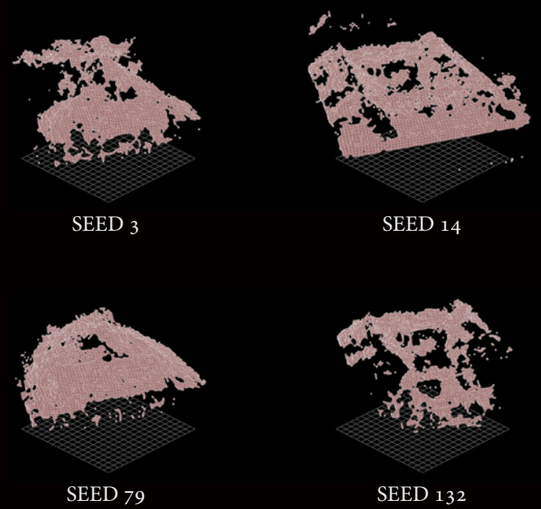


EPOCH 1562 to 1800

By machine learning with the own created data model of Korean function category, creates the epoch grids for selecting the seeds. Seeds are elements outcome that represent the possibility of new Korean functional morphologies

Epoch 1730

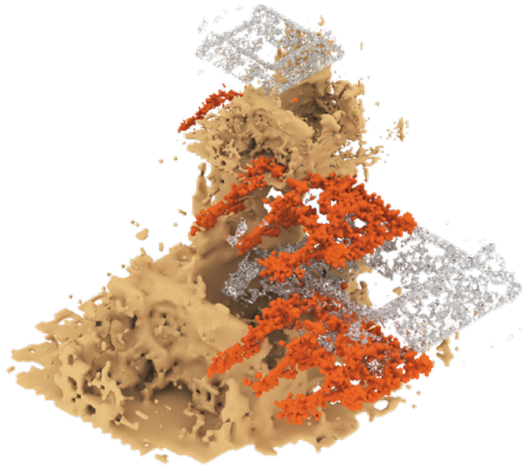




SEED 3 SEED 14 SEED 79 SEED 132

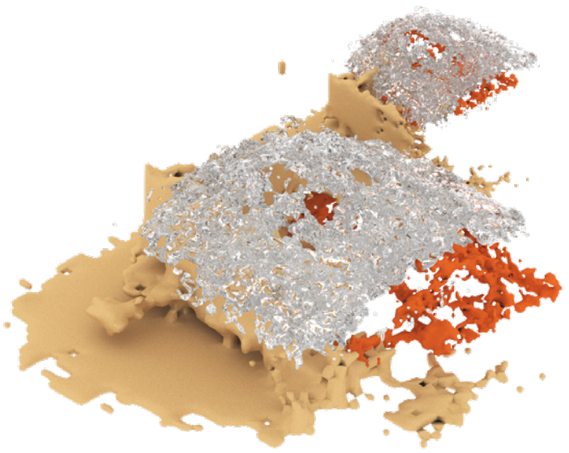
Modeling & Re-defined of elements(Top)
Machine learning Epochs(Bottom)

FLOORING



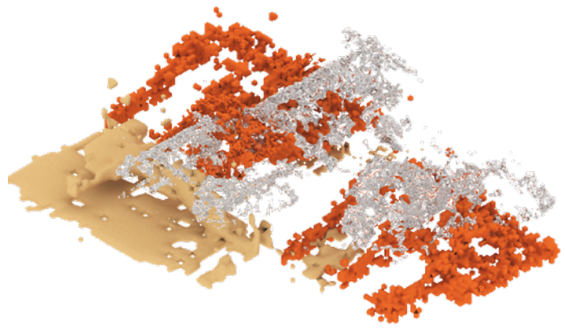
connect vertically & horizontally

CANOPY



combine and create a sheltered space

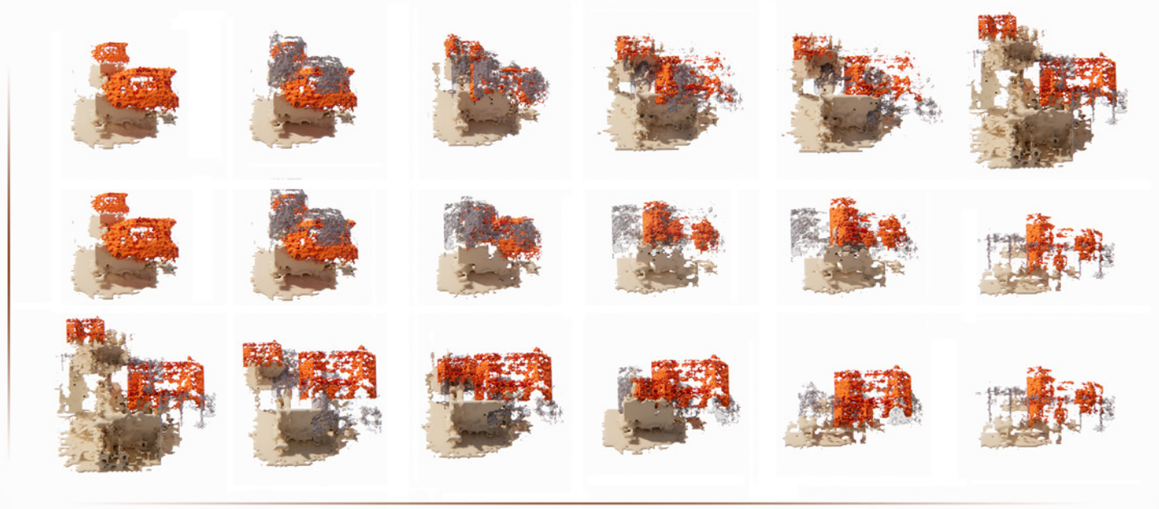
SUPPORT



connect others, resisting the force of gravity

System of varying degrees of openness and elemental overlaps

Within the system different functional elements loosely intertwine with one another to create a fluid sense of enclosure. One element connects the other two coexisting for making whole structural.



Re-composition of Traditional elements(Top)
Arrangement of changes in morphology of each elements(Bottom)

Portfolio

KITAE KIM

Selected Projects

2018 ~ 2024

Bachelor of Architecture

Master of Science in Computational Design Practices