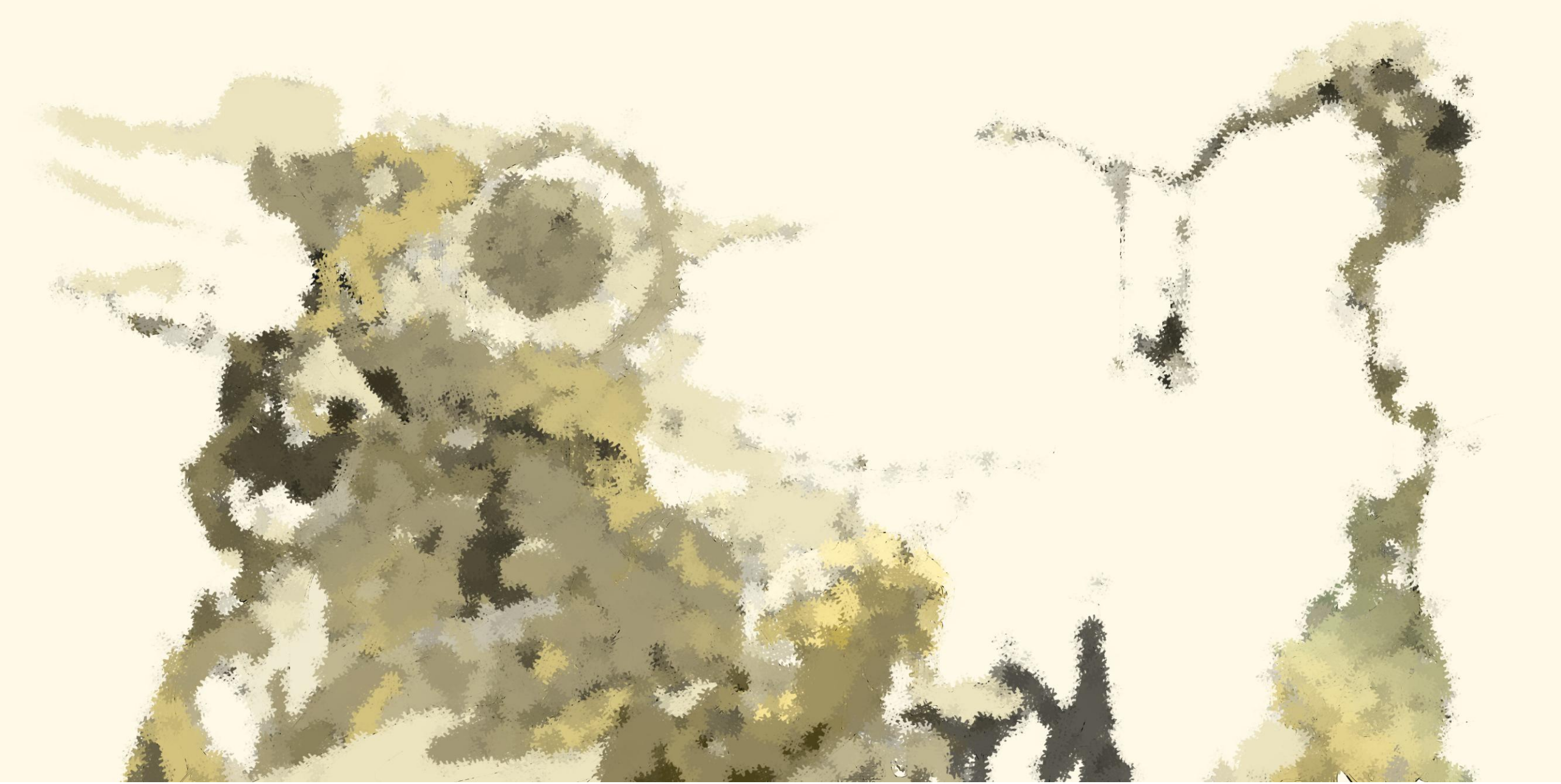


# Construction Echoes from the Wall

Yu Tung Wu (Angle)

# Catalog



# Concept

I enjoy creating games, writing, and paintings, with a strong focus on detail. These details make me feel as if I am building an entirely new universe.

My work is inspired by reality, but it transforms it into something fictional—shaped through imagination and personal interpretation.

I want to turn my dreams into reality by gradually building a small living town, allowing it to evolve over time with subtle interactions and emergent behaviors.

**XR Type** MR

**Project Theme** Applied XR

# Concept

## Research Question

How can a Mixed Reality (MR) experience dynamically adapt to users in unlimited or global locations, creating different interactive experiences based on their physical environment?

## Thechnologies Used

- **MR Spatial Tracking**
  Enables accurate placement of virtual objects within the real-world environment.
- **Meta Scene Understanding**
  Allows the system to detect and interpret real-world surfaces, structures, and spatial relationships.
- **Unity AI Crowd Simulation**
  Generates autonomous agent behavior to simulate dynamic crowd interactions and ecological systems.

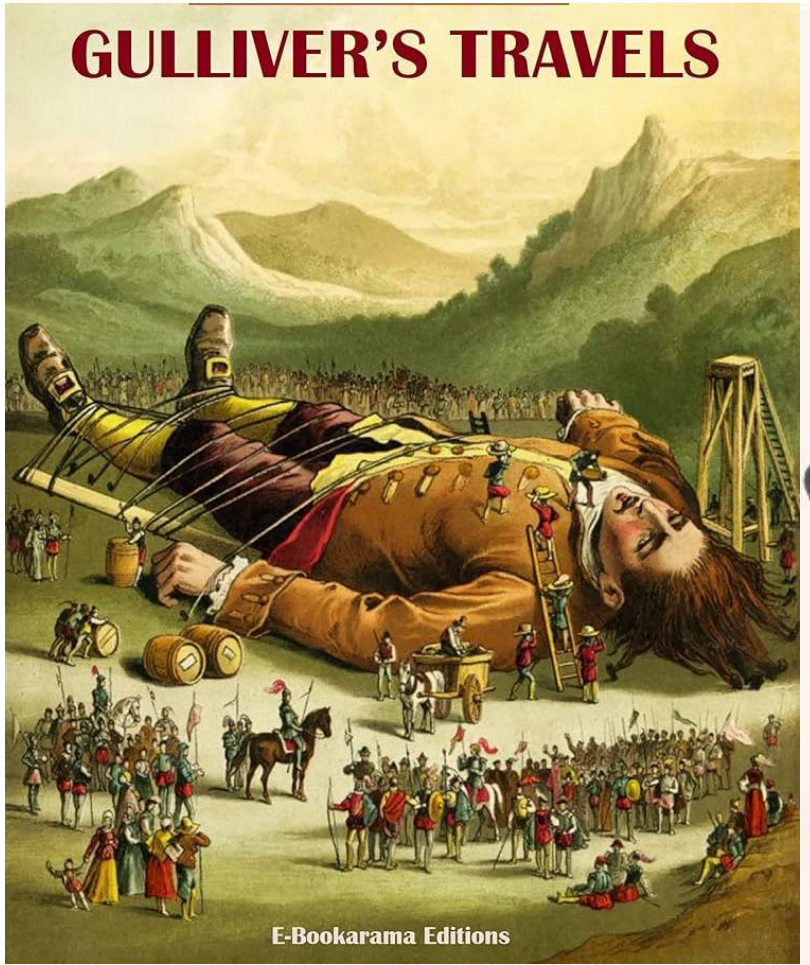
# Why XR

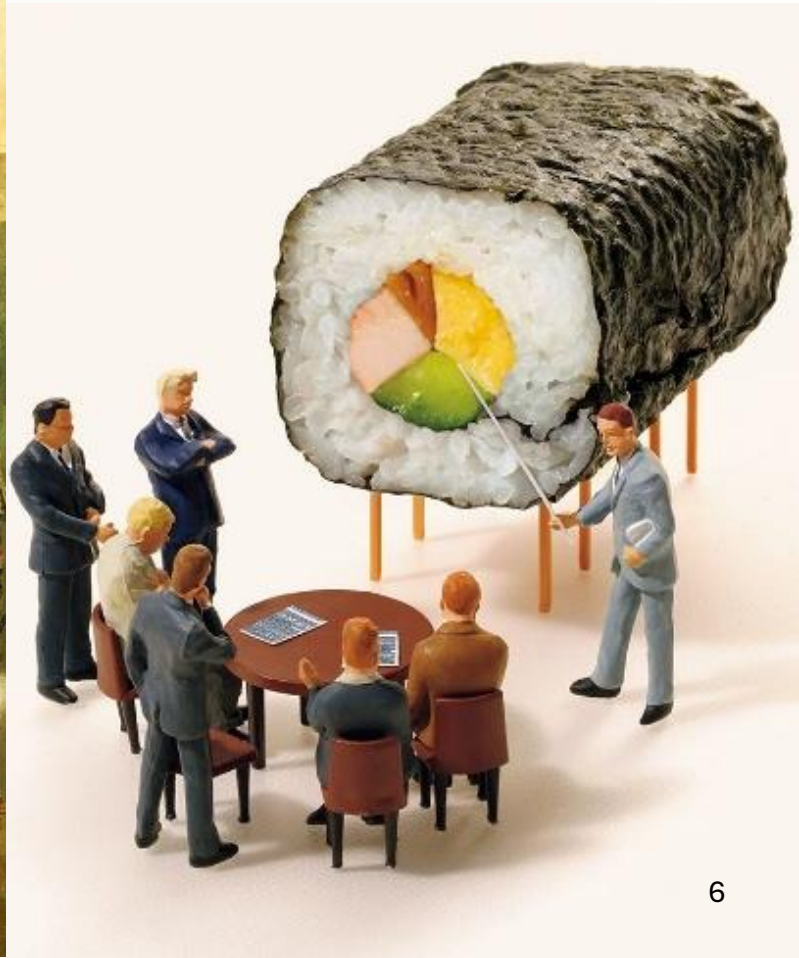
- I am interested in immersive experiences and want to combine virtual and real worlds using mixed reality (MR).
- I explored the scene understanding features of the Quest 3. I tried to replicate a similar function on a mobile device by combining AI-based object detection with depth sensing, but it did not work well.
  Previous work:
  https://www.youtube.com/watch?app=desktop&v=HEELDkYL70w

# Inspiration

**Gulliver's Travels** **(Jonathan Swift, 1726)**
I want to draw inspiration from the concept of Lilliput, a miniature world that exists as another realm. In this world, each small character has its own role and interacts with the real world in its own way to survive and function as a society.

**Tatsuya Tanaka 田中達也 (2011–present)**
These kinds of interactions can generate many imaginative scenarios that go beyond reality while still staying loosely connected to it, similar to the works of Tatsuya Tanaka. By changing the scale of everyday objects, he creates whimsical stories that feel both familiar and surreal.



# Inspiration

**Townsmen** (Handygames, 2012)

It is a 2D mobile game where the player only decides where to place buildings. The attributes of the buildings, as well as their distances from each other, affect the survival of the entire town. The game has a self-evolving nature, where the player mostly takes on the role of an observer, which is the aspect I find inspiring and want to reference.

**Le Petit Chef London Taj – Immersive Dinner**

(Skullmapping, 2015)

This is a restaurant experience that combines projection mapping with real food, creating a theatrical performance where animation interacts with physical dishes. The interaction between the small character and real-world objects is the aspect I want to reference.

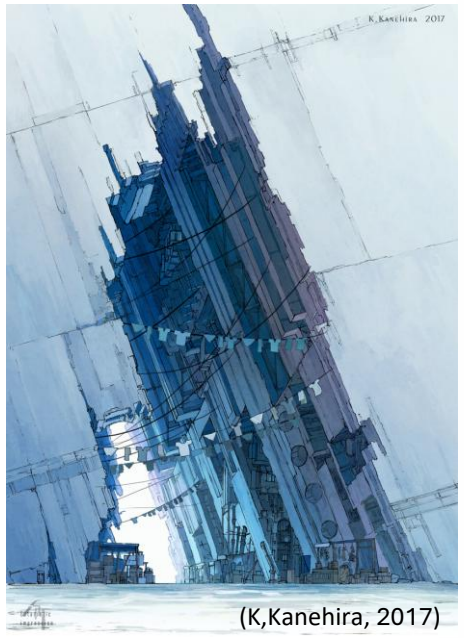

# Reference

**Wall Twon Wonders** (Cyborn B.V, 2023)
https://www.walltownwonders.com/

An MR game where you can build buildings on walls. However, I think it is too limited because it requires placing specific structures on the wall.

What I want is for different types of furniture to take on different forms, and for different arrangements and combinations of furniture to generate new and varied appearances.

Illustration of Gulliver in Lilliput. (n.d.). In *Gulliver's Travels* by Jonathan Swift (1726).




(K,Kanehira, 2017)


(K,Kanehira, 2015)

# Experience

In this game, users interact with buildings and small creatures through direct physical actions such as grabbing objects, blocking their paths, and moving elements like houses and boats within the environment.

Illustration of Gulliver in Lilliput. (n.d.). In *Gulliver's Travels* by Jonathan Swift (1726).

The small creatures are constantly active, each following their own routines and behaviors, creating a sense of a living and busy micro-world.

Players can influence the flow of the environment by subtly interfering with these systems, leading to emergent and unpredictable interactions.

Rather than focusing on fast-paced gameplay, the experience is closer to a **relaxing idle simulation game**, where time and change happen gradually.

The main purpose is to encourage players to slow down, observe, and discover small details hidden within different corners of the space.

# Experience


**BEGIN**

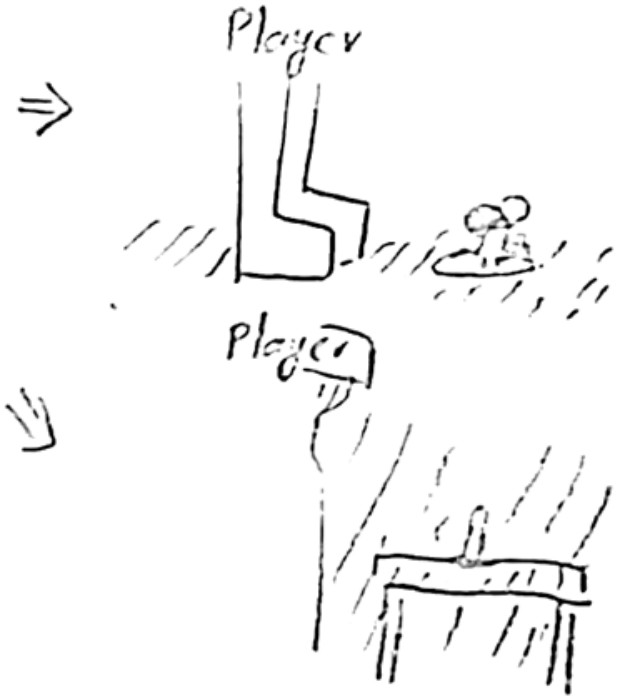
In a dark environment, the shapes of the furniture are based on the real world.

Player should stand to walk around for interaction.

**ENTRE**

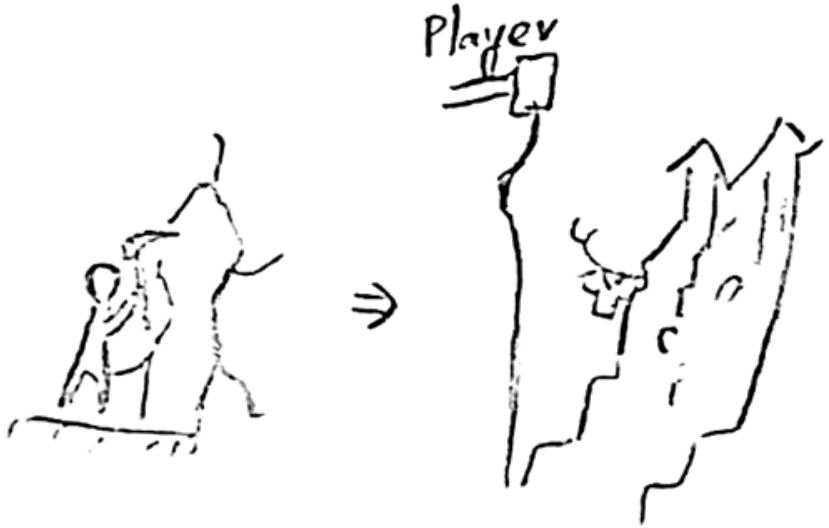
The experience flow will change based on the real world.

For example, if a floor or table is in front of the player, a small character will start by climbing out of a hole that appears on the ground or table.




**PROCESS**

The small character will start moving around, building and digging everywhere, removing the dark surface of the furniture to reveal a hidden virtual kingdom underneath.




**END**

Depending on the layout of each room, the viewer will experience a different cityscape.

# Core Mechanics

**System Concept**

- Different types of environments (rooms / locations) generate distinct urban landscapes on top of them, forming varied cityscapes based on spatial context.
- AI-driven crowd agents (small characters) autonomously explore and develop the environment. Through their behavior, they “construct” hidden layers of the city by interacting with and transforming furniture-like structures within the space.
- This reveals an evolving urban system embedded inside everyday environments.

# Core Mechanics

**Interaction Design: hand tracking**

Players can influence the world through direct manipulation:

- Moving small characters and repositioning buildings or objects
- Blocking the paths of characters to redirect their behavior by hand
- Grab and physically interact with elements in space
- Through these interactions, users become indirect system designers rather than direct controllers.

# Core Mechanics

## Emergent Growth System

Each environment (e.g., different rooms or spatial settings) generates:

- Furniture types generate different narrative patterns (animations + behaviors)
- Evolving “town growth” over time
- The system encourages replayability through environmental variation and procedural emergence.

# Development Plan

### July | Technical Prototyping

Begin technical testing to ensure core systems are functional and stable, including MR spatial understanding, scene understanding, and AI crowd simulation.

### Aug | System Integration

Start integrating all core systems into a unified prototype.
Begin developing early visual assets, including blockouts (greybox) for environments and furniture forms, to establish spatial composition and interaction flow.

# Development Plan

**Sep**

Focus on polishing the experience, including improving interaction diversity, animation variety, and behavioral richness of AI agents. Enhance environmental feedback systems and overall narrative emergence within the space.

END