

25002844 Wu Yu Tung

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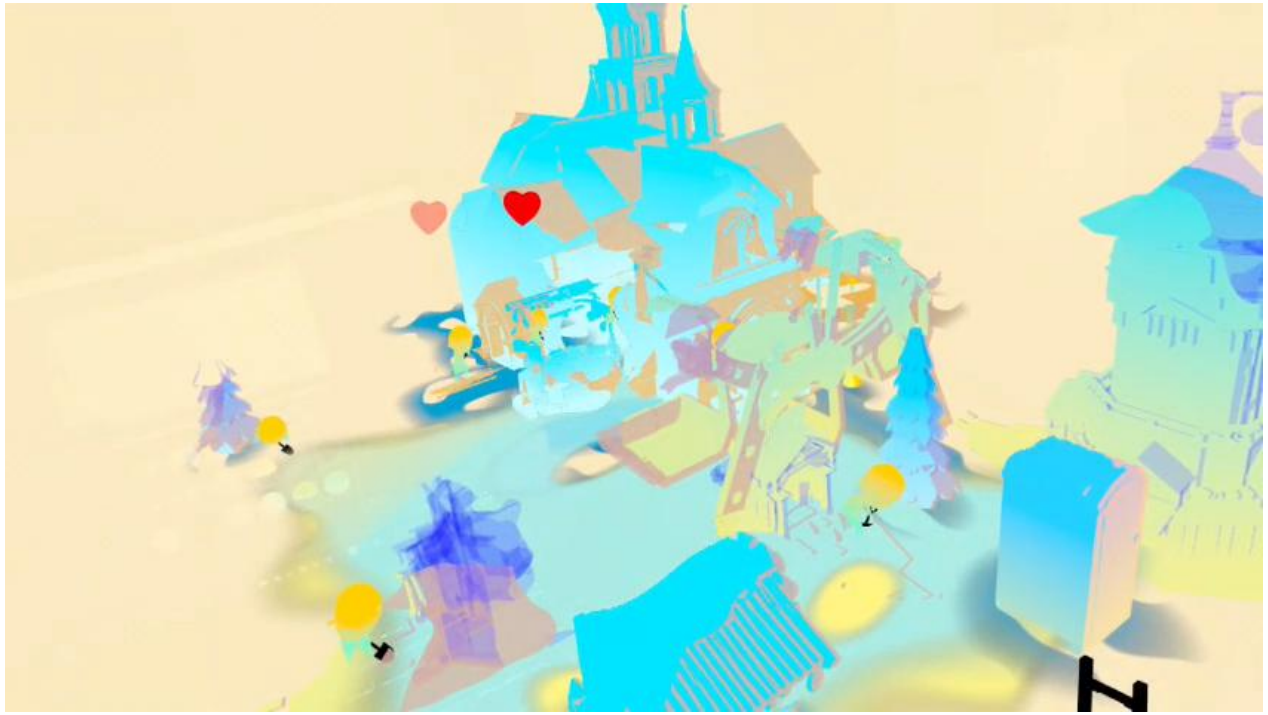
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INTRODUCTION



Concept & Innovation

First-Person MR Experience

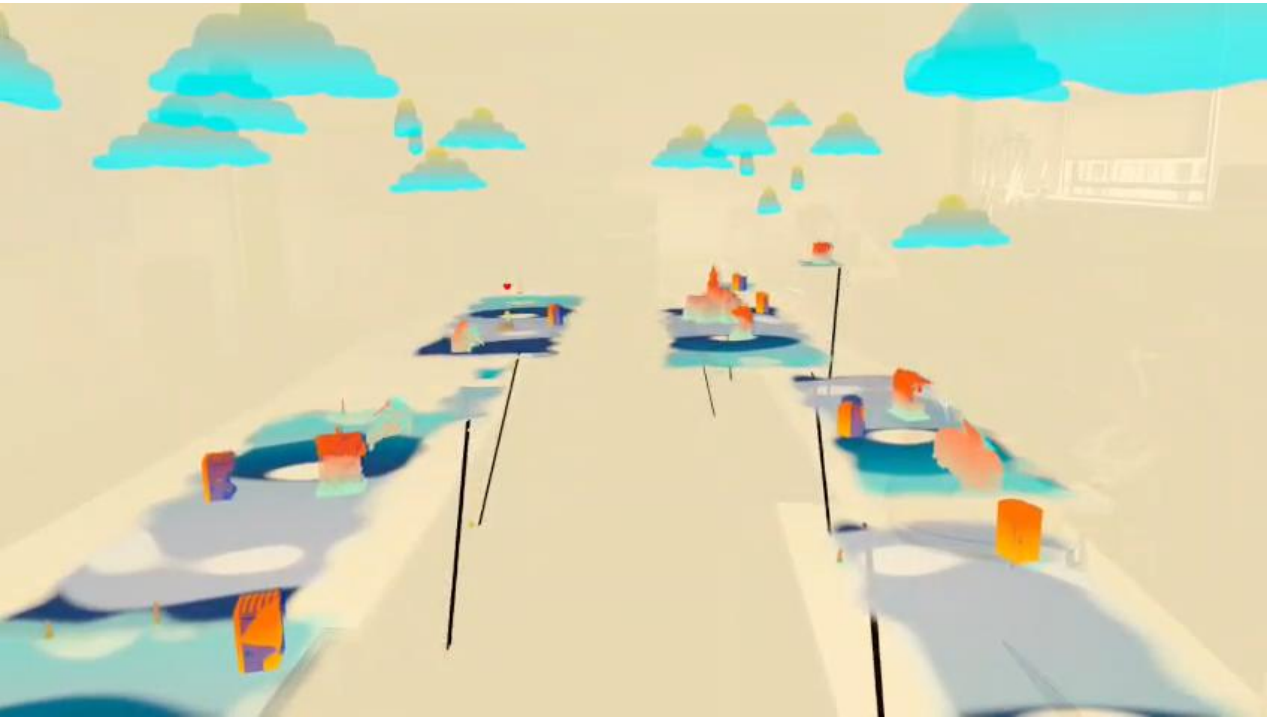
Building Placement Game

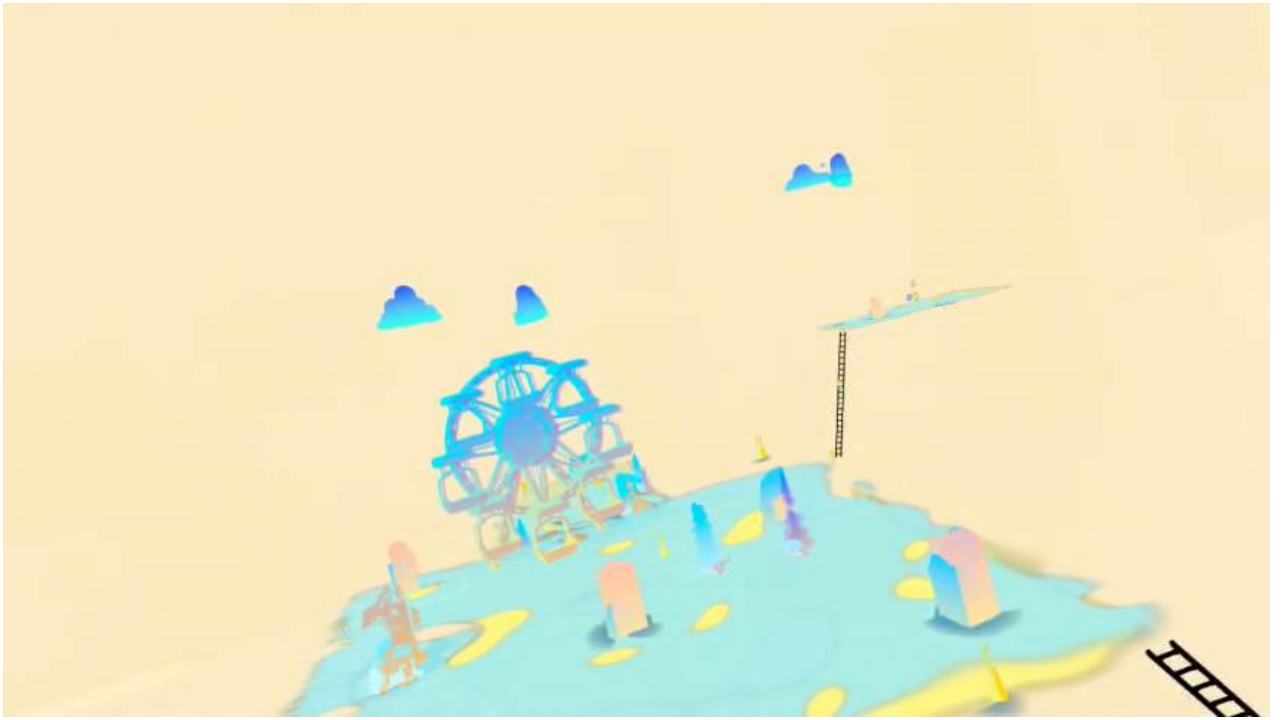
Unique Experience in Every Room

Inspiration

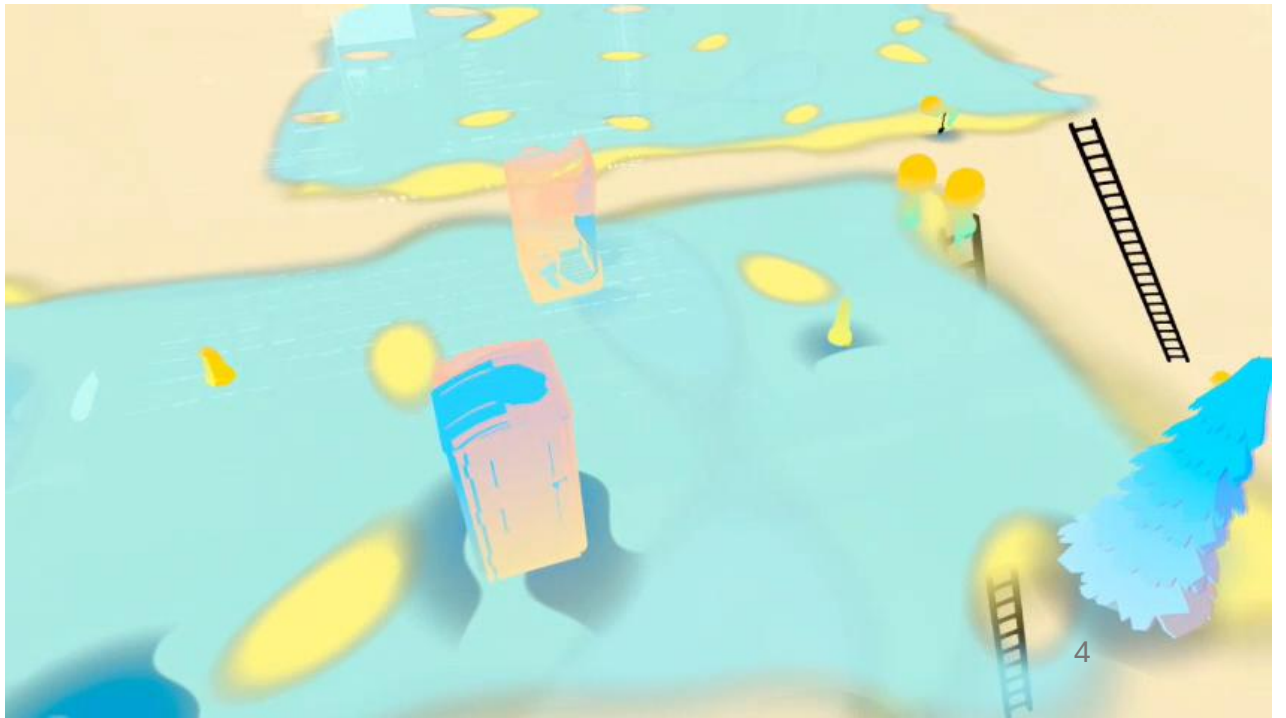
When I buried my head in a pillow, I could hear my own heartbeat. It sounded as if someone on the other side of a wall was constantly hammering, almost breaking through.


!! CONGRATULATIONS !!
YOU HAVE BEEN SELECTED AS ONE
OF OUR EXPERIMENT PARTICIPANTS.
Update
Room Data









FINAL OUTCOME

Using spatial data and procedural generation, the experience adapts to different physical environments, creating a unique virtual world in every room.

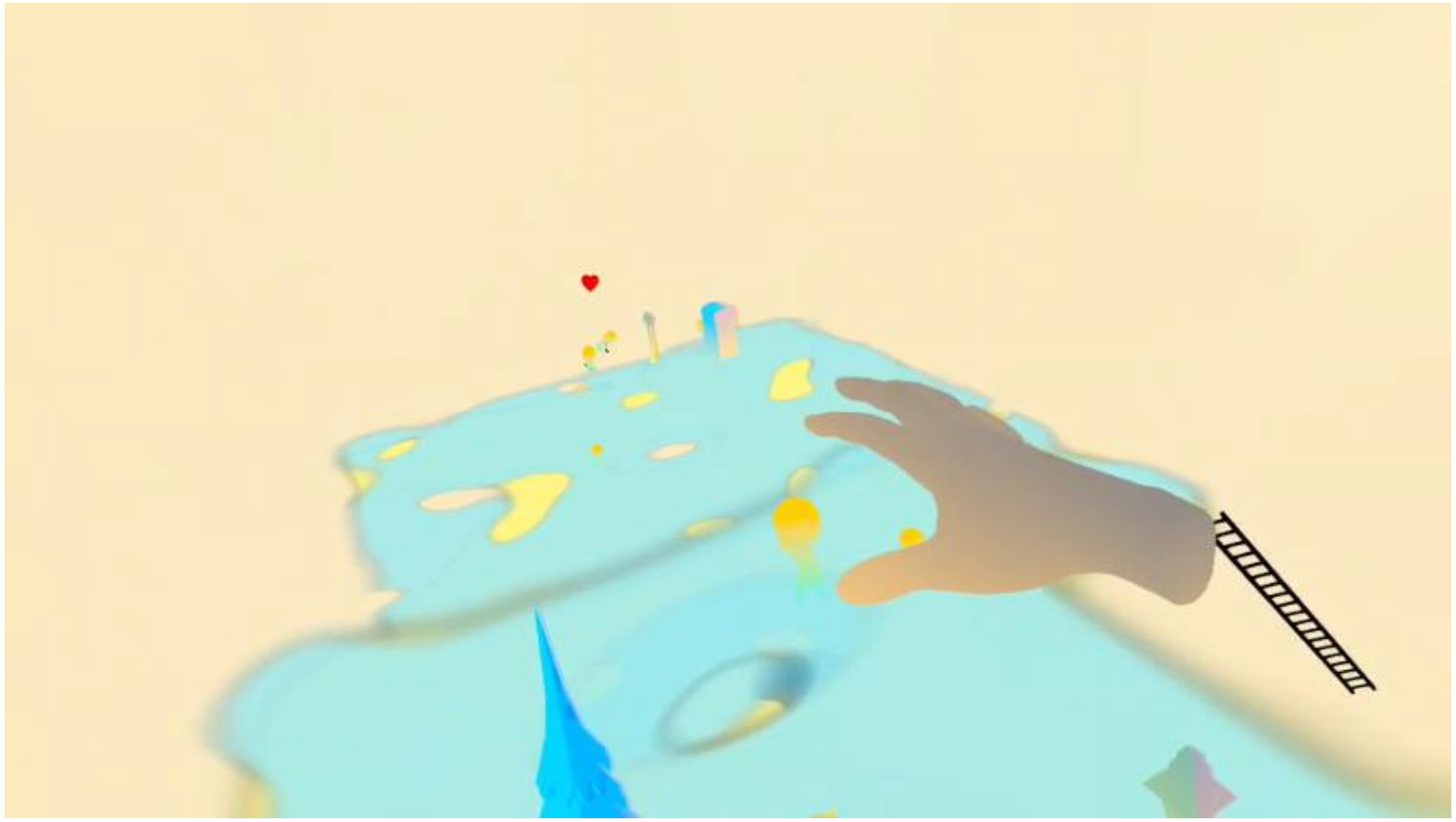


FINAL OUTCOME

Grab Interaction

& Character Reactions

When grabbed, the characters struggle to break free. After getting back on their feet, they become angry.



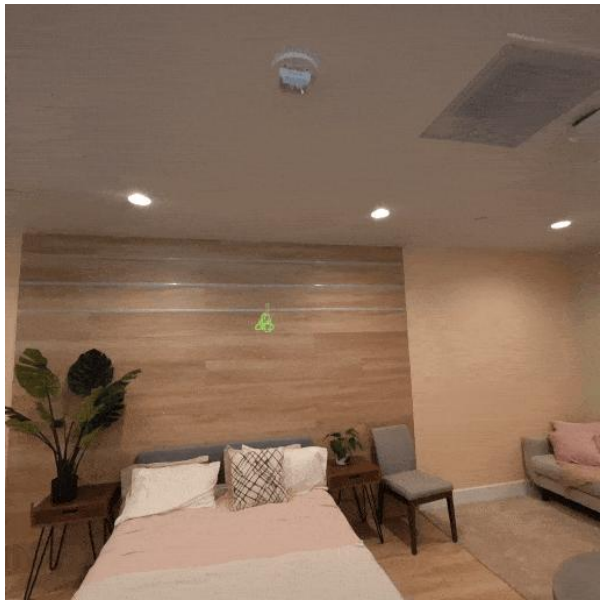
LITERATURE REVIEW

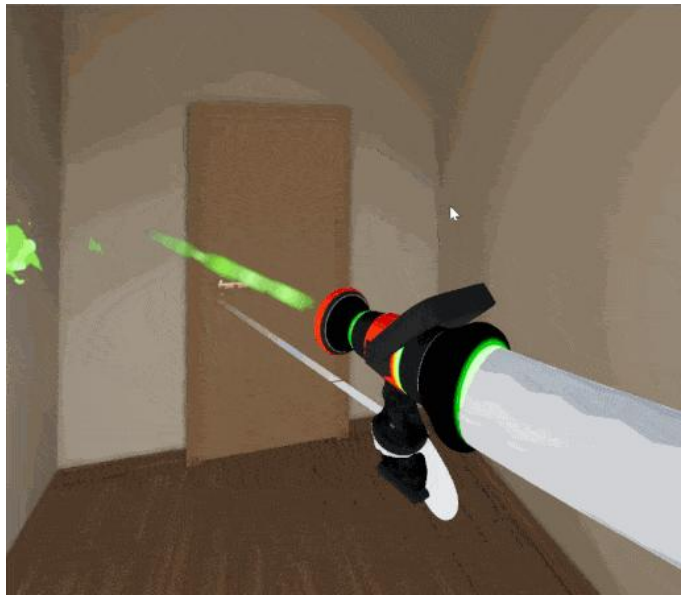


Surrounding Environment and Embodiment in MR

Genay, Lécuyer and Hachet (2021)

LITERATURE REVIEW









Phanto: A New Mixed Reality Showcase for Unreal Engine

Meta (2024)

STATE OF THE ART





First Encounters

Meta (2023)

METHODOLOGY

MDA: A Formal Approach to Game Design and Game Research Hunicke, R., LeBlanc, M. and Zubek, R. (2004)

Mechanics

Room Detection, Furniture Recognition, Procedural Building Generation, NavMesh, Hand Tracking

Dynamics

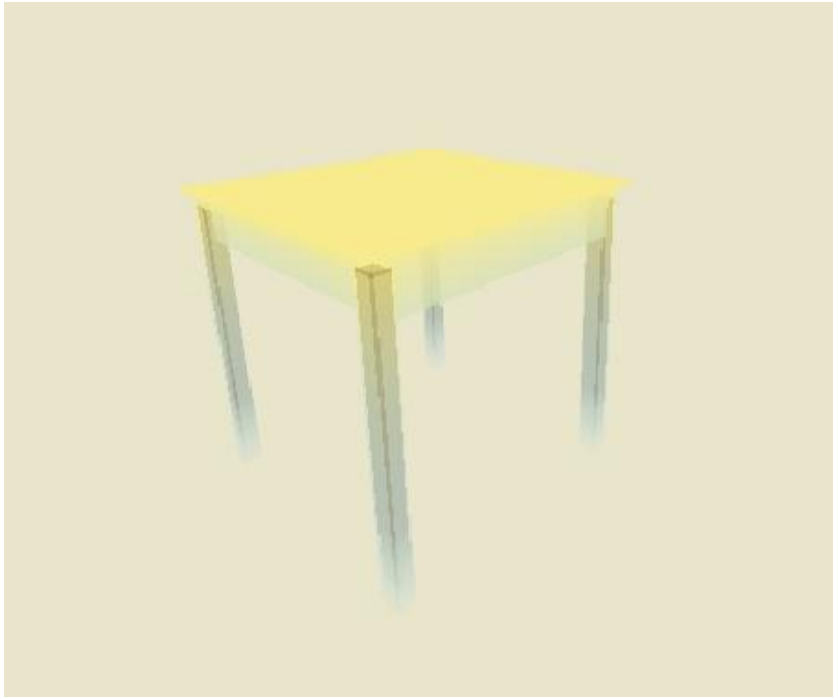
Virtual characters navigate between furniture, construct buildings, and react to users' touch and grab interactions.

Aesthetics

Exploration, Curiosity, Fantasy, and the sense of wonder and surprise of discovering a hidden miniature civilisation within one's own room.

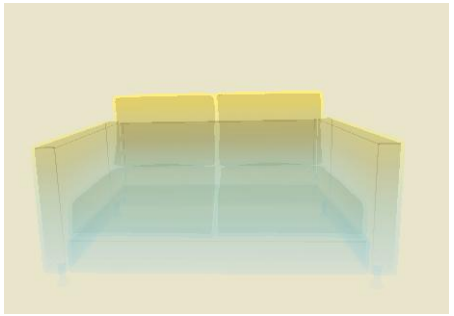
METHODOLOGY

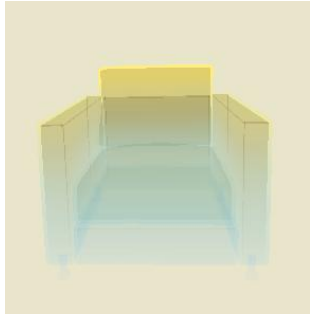
Property-Based Generation
Generate results based on object properties.

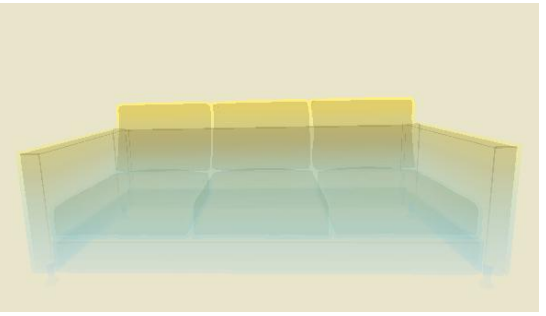




Best-Match Selection
Find the most suitable option among different objects.

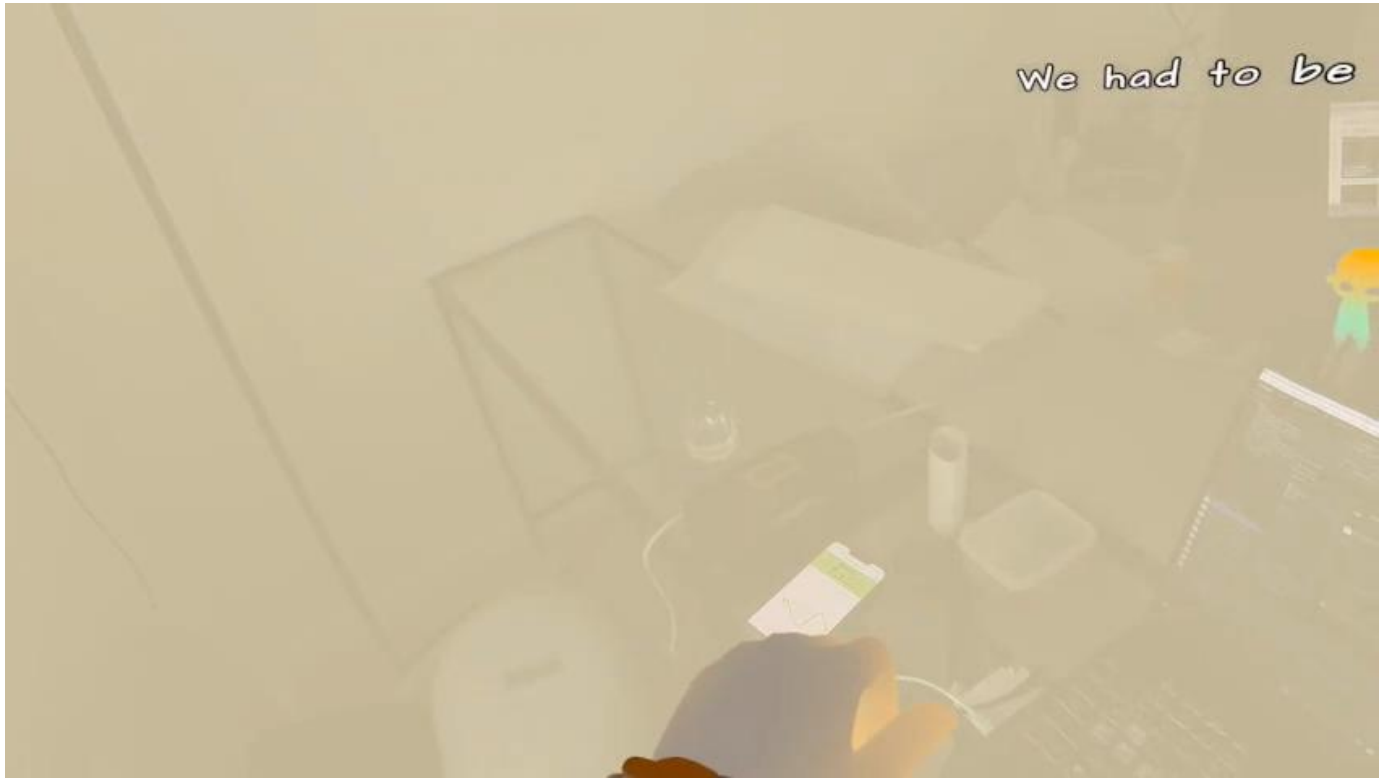






METHODOLOGY

YOLO-Based Object Detection

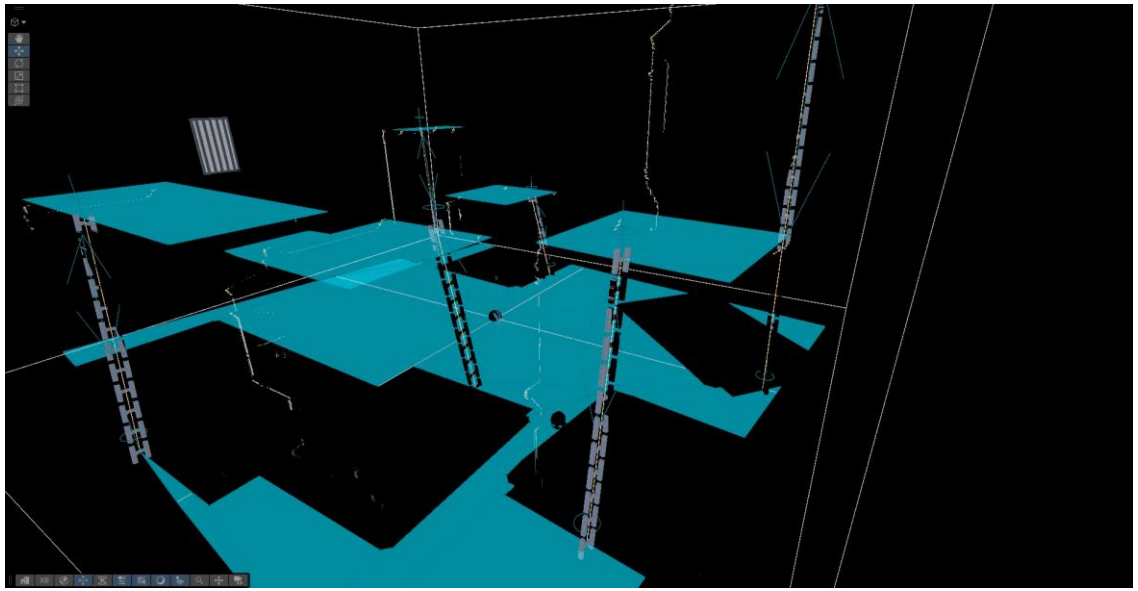




METHODOLOGY

Dynamic NavMesh Generation

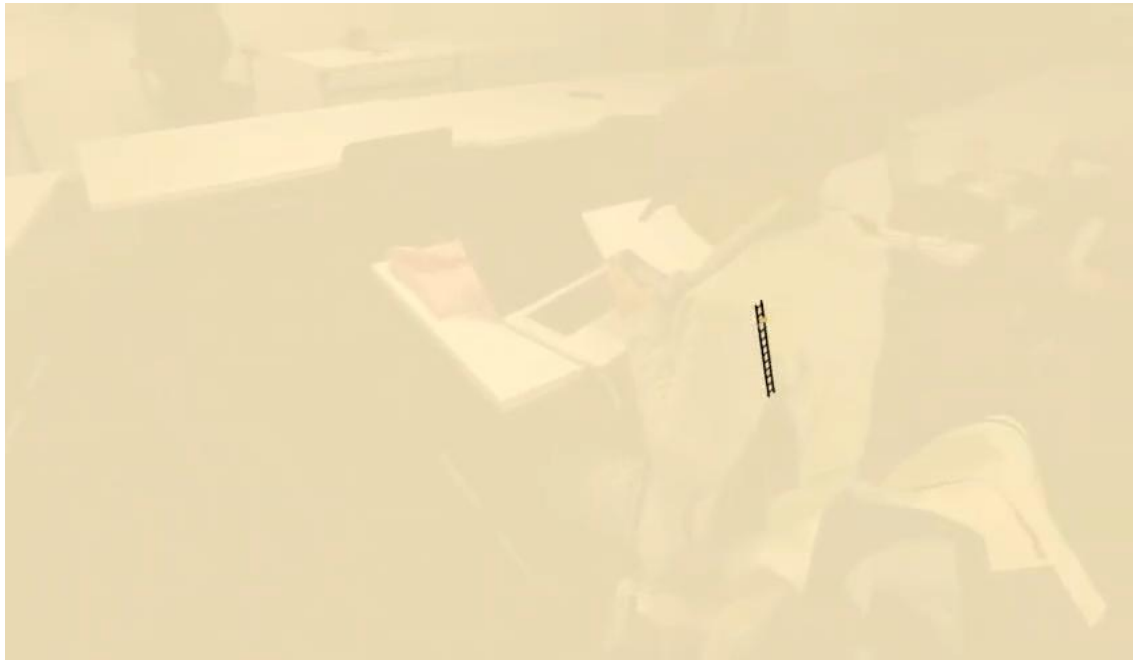
Automatically generates navigable surfaces based on the physical environment.



Automatic Ladder Generation

Calculates height differences and spatial relationships between surfaces.

Automatically identifies suitable locations and generates ladders to connect surfaces at different heights.



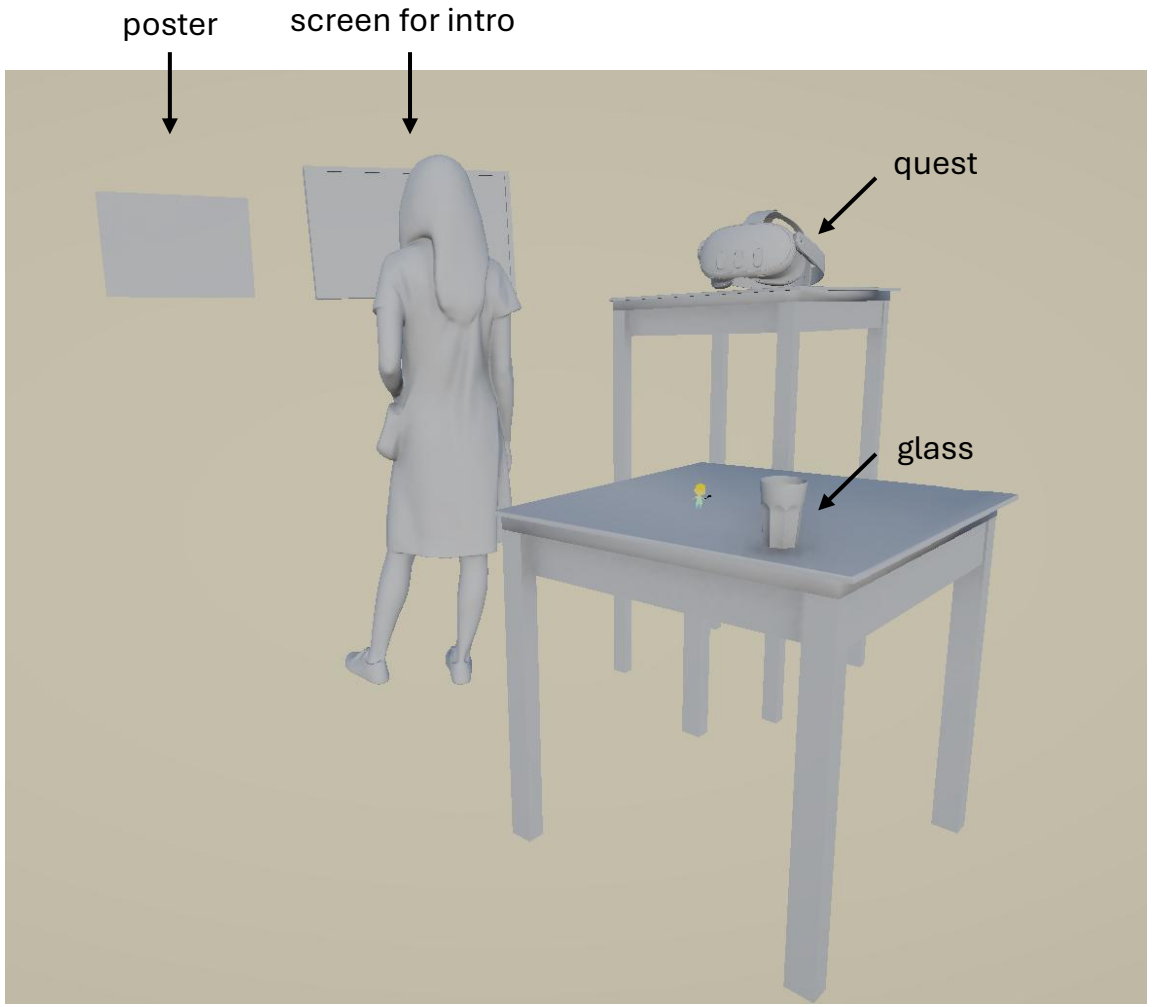
FUTURE IMPROVEMENTS

Intro Animation & Camera Work

Character Dialogue & Sound Effect

More 3D Assets & Animations

Expanded Object Detection



END