ARchiviewer:
AR application to visualize floor plans in 3D

AR Project Results, Team 9
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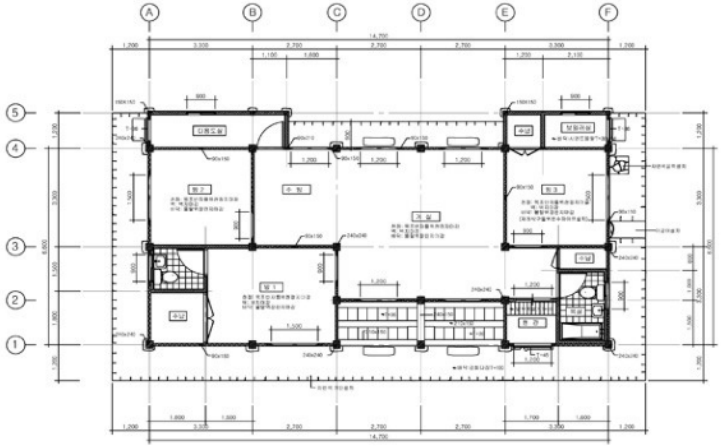
Introduction

- There are needs in architectural projects to visualize floor plans in three dimensions.
- Traditionally, architects have had to either manually construct physical models or rely solely on two-dimensional floor plans to convey interior design concepts.
- We propose an AR application that shows a 3D model based on flat blueprint.

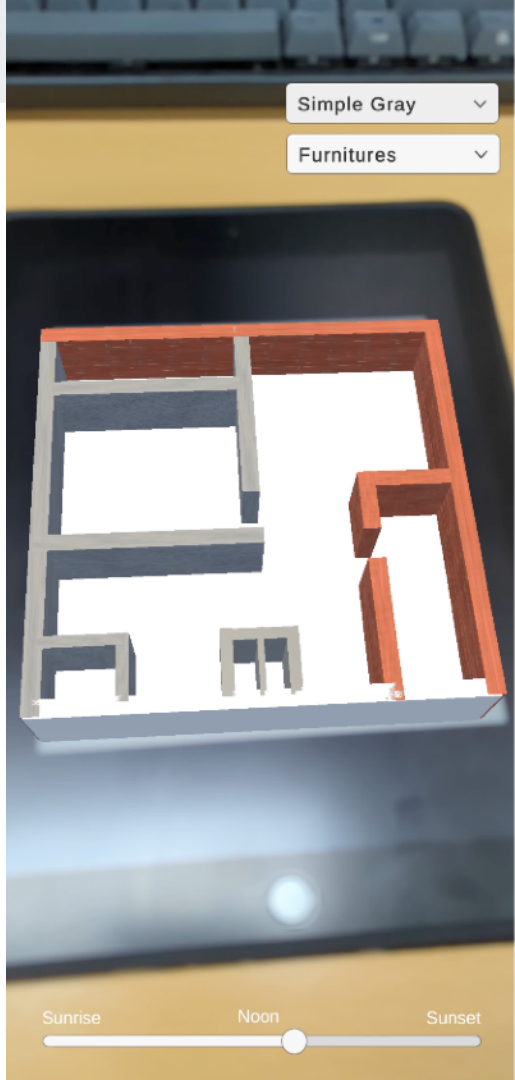


Features: Visualizing 3D model

When the user point the camera at the floor plan, they can see a 3D model of the room structure.

Features: Changing material

Users can select and apply different materials to the 3D model for realistic interior visualization.

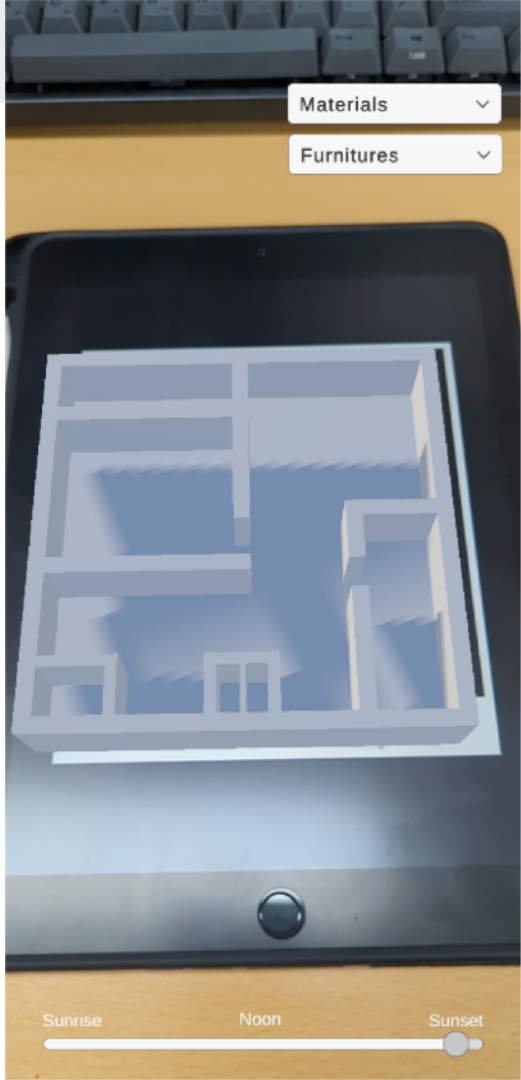


Features: Placing furnitures

Users can customize the interiors by placing furnitures. They have full control over position, size, and orientation for the furnitures.

Features: Adjusting sunlight

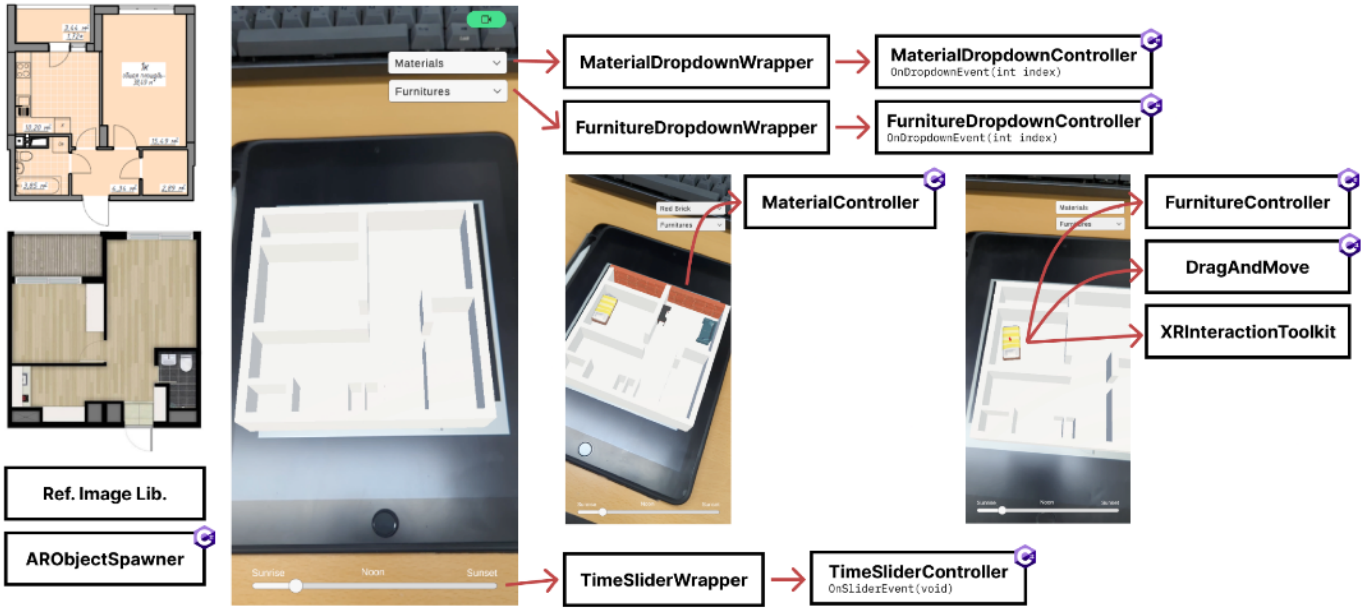
Users can adjust the position of the sun using a slider UI. They can check how shadows dynamically shift inside the room from sunrise to sunset.



Demonstration

https://youtu.be/GzIWpa6VJWY

Architecture



Challenges

- Couldn’t use XR interaction tool kit on dragging the furnitures . It only works well on the AR plane detection, so we wrote our own script to move the furnitures by dragging.
- It was difficult to create realistic shadows. There was a shadow receiver asset in the Unity Asset Store that used URP for AR, but it was paid. We had no choice but to implement shadows using the built-in render pipeline.

Work division

- Bakhromov Bakhtiyorjon: Provided initial idea, 3D modeling
- Jaewoong Kim: Implemented furniture placement
- Peennanen Teemu: Recorded the presentation videos
- Seongbeom Park: Setup project, Implemented material changing and sun lighting

Thank you