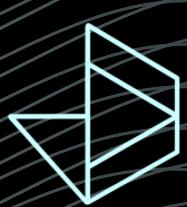


NEW UI EXPERIENCE IN AR GENERATIVE DESIGN

Generative Design for AR

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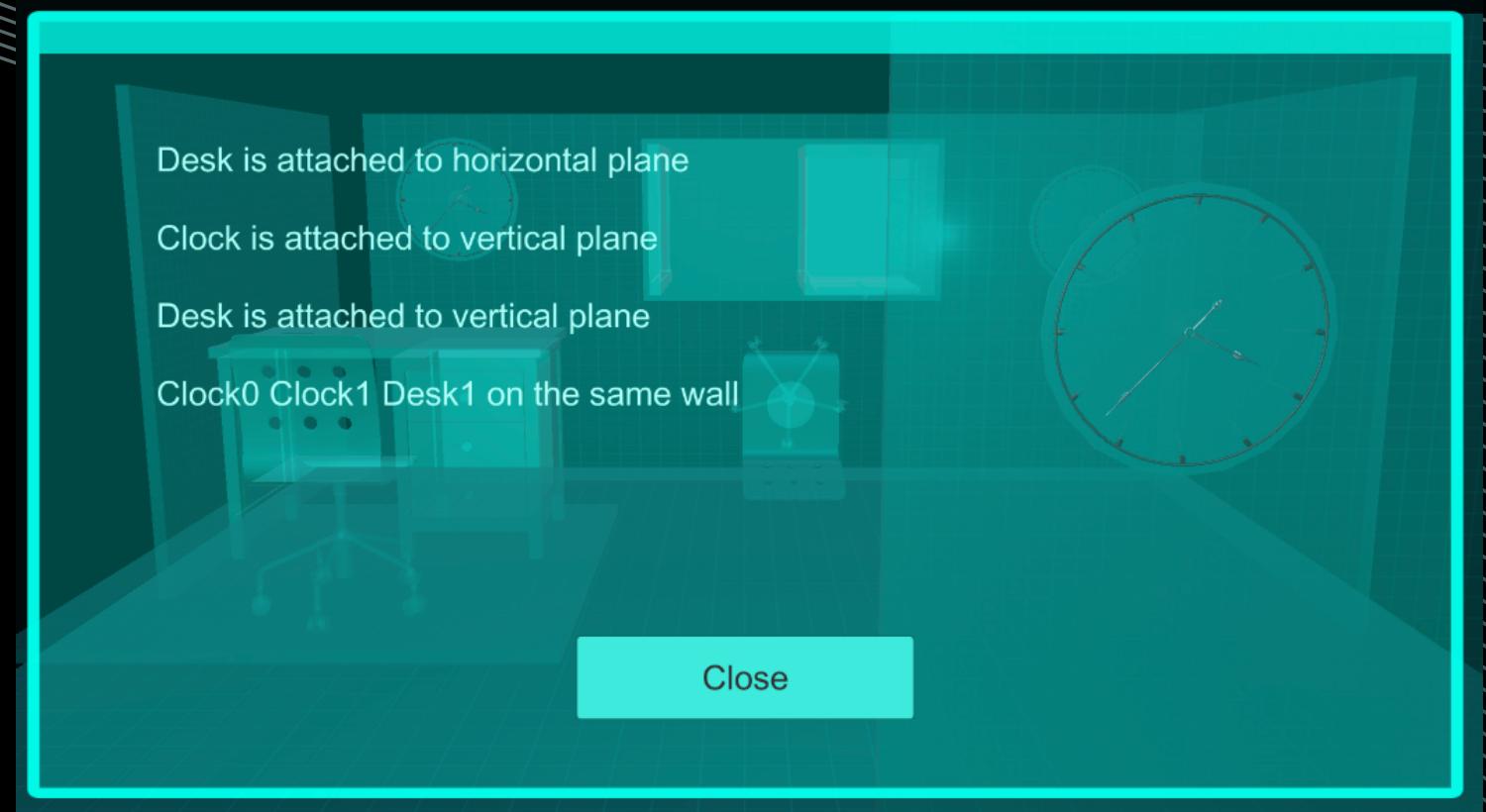
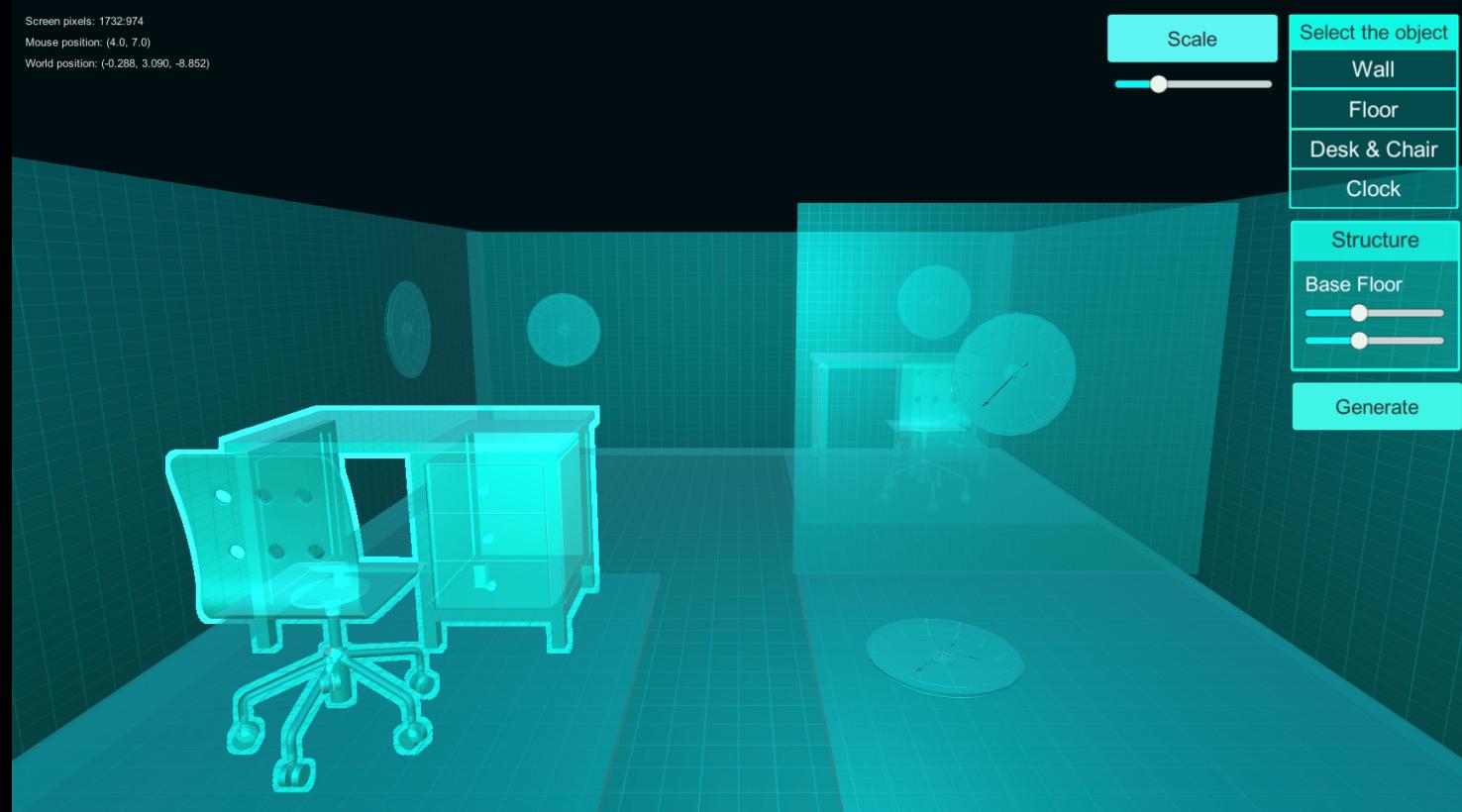
Immersive Computing and Virtual Reality
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JACOBS INSTITUTE FOR
DESIGN INNOVATION
COLLEGE OF ENGINEERING, UC BERKELEY

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What are we building and who is gonna use it?

As an innovative iterative design process that integrates algorithms to optimize the outcome, generative design has been gaining attention over the past couple of years in the designer field, especially when it comes to mechanical design and engineering. With the majority of generative design software in the area of the conventional design environment, the need of implementing generative design processes in the immersive environment, especially augmented reality (AR), is rapidly increasing.

Our project is to design the user interface for generative design software in AR to help designers interact with the software graphically. With this user interface, designers can view the outcome of their design regarding the constraints and requirements in a more visualizing and feed-forwarding manner.

Proposed Solution

Our design of a 3D user interface (UI) for generative design software in the AR environment is based on a costumed 3D space with a virtual horizontal plane as the "ground". Users can select from the list of objects and planes that they want to put into the space and add constraints to them by interacting with the UI. With the analysis of the graphical position of objects and planes in the space, real-time design constraints will be generated automatically and they can be exported into a csv file for future integration with other softwares or backend functions. With our new UI, the designers can avoid the trouble of changing to another scene for adding and deleting constraints as well as viewing the current constraints in a graphical way instead of getting feedback after the final generation of solutions based on the whole constraint list.

Implementation Details

We are using Unity as the development platform with an integration of APIs from an official extended package named Input System. While developing the user interface, we get inspiration from Unity MARS which is a product by Unity for creating advanced workflow for AR developers. The user interface is designed to be used and interacted with in the 3D environment. In the future, it can be integrated into any AR projects based on Unity or even cross platform.

