

Max Valle

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## Mixed-Reality Minigame Lab Report

For this assignment, I wanted to try and make a little mini-golf style game around the VR lab. I *thought* it was going to be relatively simple, and would show off a few different MR interactions.

I ended up with only two true MR interactions: a UI button interaction and two grabable objects, the ball and hammer. There is a third interaction if you count the ball properly colliding with the real-world objects, and the hammer colliding with the ball.

I ended up using a few assets, mostly for the golf-themed pieces of the game. These were all gotten off the Unity asset store. The big third-party asset I used was actually a plugin for handling the spatial anchors. By default, the Meta building blocks can only handle one type of prefab, but I needed at least three (ball spawner, hammer, and goal). So I found this plugin with a really great youtube tutorial on how to set up multiple spatial anchors with different assets in the scene.

When it comes to challenges faced, it would almost be faster to talk about the challenges I didn't face. To start there was the whole MR bug with the black shadows surrounding all of my objects. This was solved by not running Unity wirelessly, or by building to the headset so it could run locally. Then I encountered the URP problems that cause Unity to crash during building (which I explained in class, and will write a fix for). Then I couldn't get the UI interactions to work properly. A little documentation diving helped solve that one. Finally, I couldn't properly spawn all of my objects using the spatial anchors. I asked AI how to solve this, and their answer was basically exactly what the miracle plugin does: instead of having all spatial anchors generically assigned the same prefab, it lets you save specific anchor IDs and map them to specific prefabs during loading. This could have been done myself with a bit more time, but this person's implementation is clean and usable, plus he made a great tutorial. Finally, because of the specific implementation of this plugin, the anchors don't seem to persist in builds, only within the unity editor, so I can't get a proper video with passthrough (which is another odd bug I ran into).

Assets:

Golf Assets: <https://assetstore.unity.com/packages/3d/environments/stylized-mini-golf-294196>

Spatial Anchor Plugin Tutorial: <https://www.youtube.com/watch?v=gxvjO3nHaeI>

Spatial Anchor Plugin GitHub: [https://github.com/ju-xr/GDS\\_XR](https://github.com/ju-xr/GDS_XR)