

Poster Session at Graduate School Information Fair

3D Drawing Experience in Virtual Space

仮想空間内の3D描画体験

Introduction

We developed a 3D drawing VR app for Oculus Quest. The player uses two remote controllers to draw 2D strokes and to instantiate primitive 3D objects, and observes the drawing results in virtual space via HMD. One can draw in VR space while moving because Oculus Quest supports 6 DoF (6 Degrees-of-Freedom: tracking rotation and position). And it has a history system such as undo function, and color switching function. To develop this app, we used Unity, a game engine supporting multi-platforms deployment.



Fig. Deployment from Unity, and 3D drawing in VR

Implementation

(i) 2D Strokes

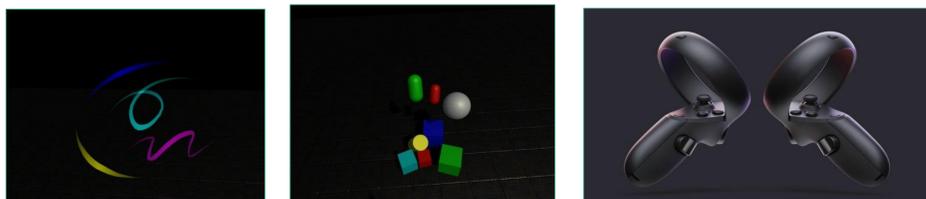
2D strokes were implemented with TrailRenderer component in Unity. The component displays a 2D texture along with vertices and interpolates each stroke's curve.

(ii) Primitive 3D objects

Various primitive 3D objects can be instantiated (placed) in the virtual space. And they can be augmented with Rigidbody component to simulate physics behaviors.

(iii) Event handling

The remote Oculus controllers have many buttons on them. They provides various events to the app. In addition, the controllers have vibration functions to provide more interactivity.



Future work

(i) Advanced scene archiving and UI

Currently, this app can archive some component drawn in the scene. But it uses a .txt file to archive. So, we're going to implement advanced archiving system with YAML format which is used to save scene data in Unity.

(ii) Deployment for other platforms

This app was developed for Oculus Quest and it has some compatibilities with other VR platforms such as HTC Vive. However, it still has issues such as differences of controllers button layout. Therefore, we need to implement for other platforms controllers with C# scripts.

(iii) Other functions for more creativity

1. Particle System editor in VR space
2. Sculpt modeling in VR space
3. Audio effects
4. Animation effects