Augmented Reality Mural

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Overview/Goal

- Create an augmented reality art creation application for the hololens in Unity.
- Use OpenAR Cloud infrastructure at Winlab to create a distributed augmented reality canvas which will allow collaboration between artists in multiple locations.

Methodology

- Painting program was coded with C# in visual studio
- Application coded to allow users to create strokes by generating vertices at designated positions and create a bezier curve/spline
- Strokes are rendered with a line renderer and can have their color and width altered
- The stroke and its positions, color, and width are saved in a dictionary for future retrieval and updates with any new alterations
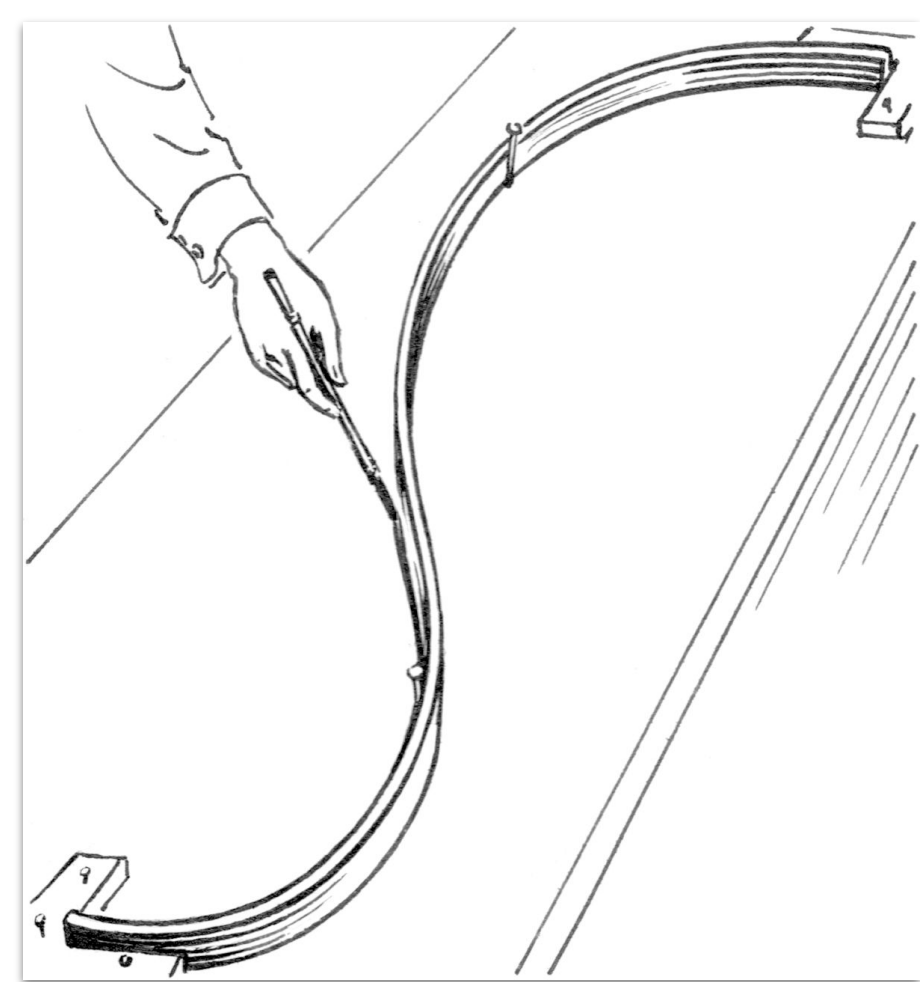
- Unity engine's Mixed Reality Toolkit was used to create a program for the Hololens
- MRTK generates an AR camera, hands for user input, and has a gesture recognition features
- Program was projected onto the hololens from the unity window
- Programmed the pinching hand gesture to start painting
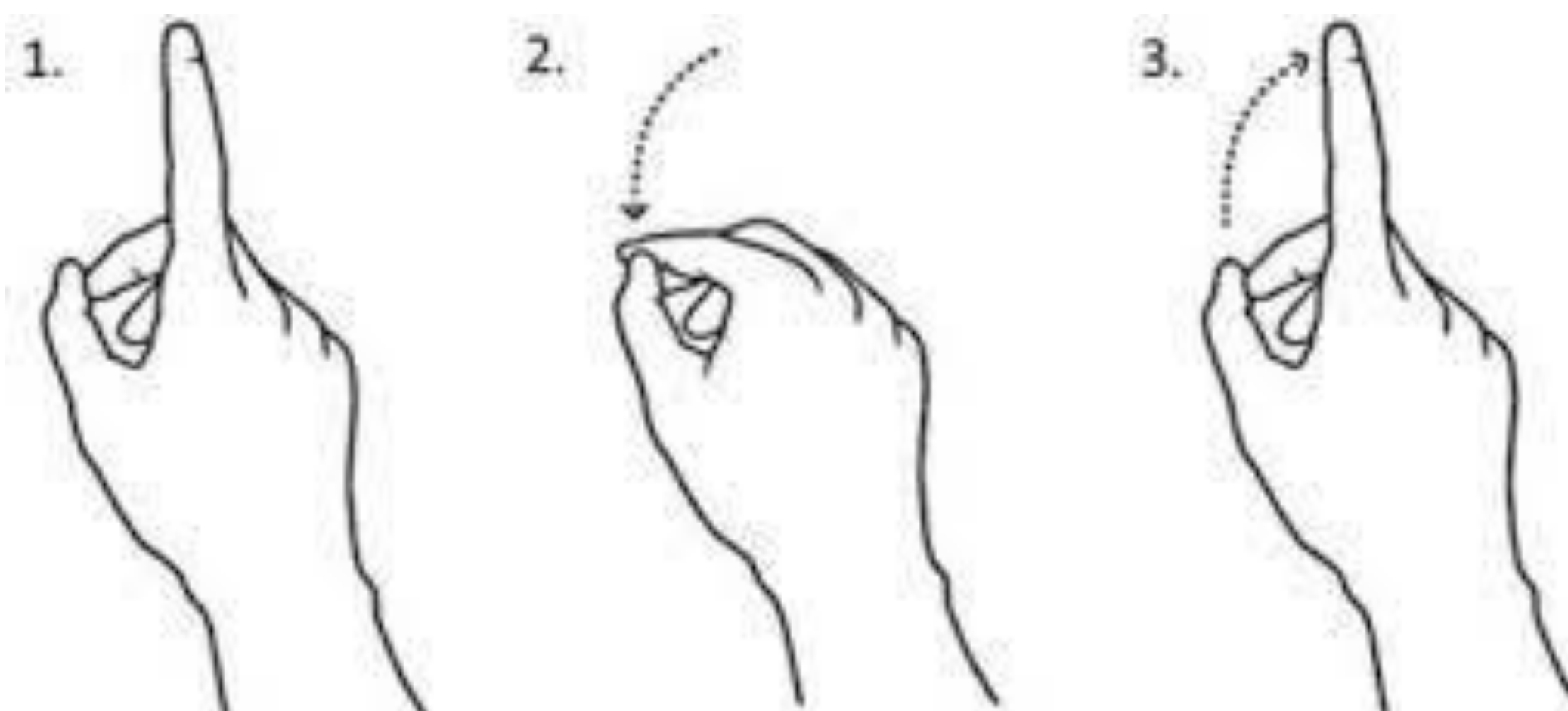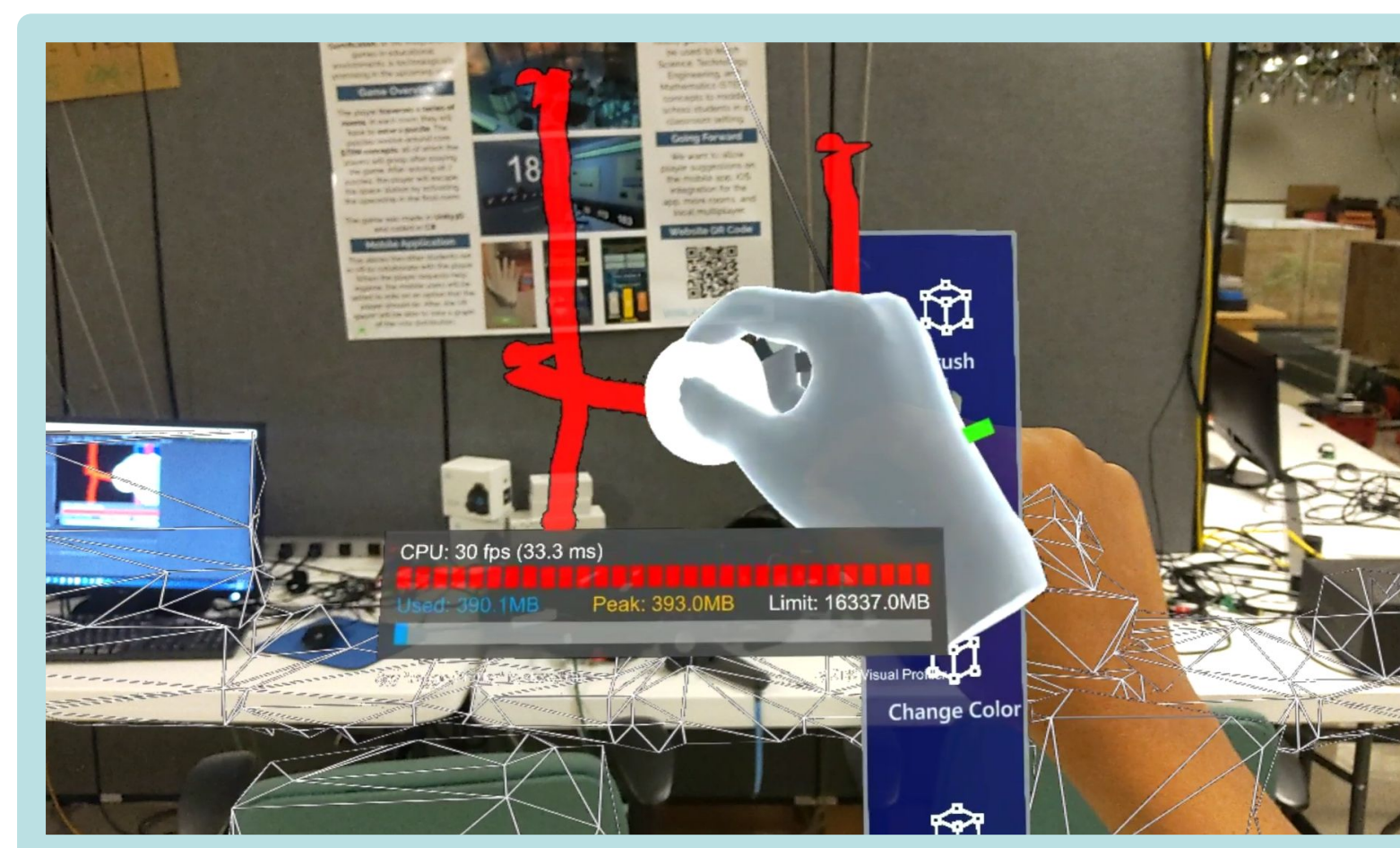
Results

- By holographic projecting from unity to the Hololens, the user can paint by pinching their fingers to draw, and by letting go to stop. They can adjust sliders to change the width and color of their strokes. Multiple users can draw strokes at once

Future work

- Implement the already existing features of stroke selection, color and width changes for use in hololens through sliders and buttons
- More brush customization
- Improved UI (user interface) for improved user experience
- Render out brush strokes as 3D models to download and upload information from the cloud
- Proper erasing functionality
- Ability to move meshes

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