AR Mural

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Overview and Goal

- Augmented Reality: Users interact with computer graphics that are superimposed onto a real world environment
- Hololens: Head mounted display running the Windows mixed reality platform, that can run AR programs
- Create an augmented reality art creation application for the hololens in Unity.
- Use OpenAR Cloud infrastructure to create a distributed augmented reality canvas which will allow collaboration between artists in multiple locations.
Painting code

- Painting program was coded with C# in visual studio and Unity Engine
- Allows users to create strokes by generating vertices at designated positions and create a bezier curve/spline
- Strokes can have their color and width altered
- The stroke’s vertices, color, and width are saved in a dictionary for future retrieval and alterations
Implementing in Hololens

- 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
Networking

- Used MQTT protocol
- M2MQTT - specific MQTT client built for C# and Unity usage
- Allow each stroke Game Object to be sent and received to and from the broker
Results

- The user can paint by pinching their fingers to draw, and by letting go to stop.
- UI (user interface) tracks head movements, so user can use painting features
- Users collaborating will see each other’s strokes
Future Work

Future features for painting:

- Proper erasing functionality
- Adding more features in the Hololens
- Improved UI (user interface) for a smoother user experience
- Ability to move strokes
- Allow collaboration through CloudAR or networking
Any Questions?