

## **Assignment 01** (due: 9/23/2019, guest critic: Anna Ridler)

### Cultural Memory: Augmented Reality (AR)

For the first project in AD41700 we will create a marker-based Augmented Reality experience in which the detection of a flat 2D image (image target) with the camera of a mobile device is used to trigger the display of a virtual 3D object, 2D image or video file on the 2D image. The 2D image target in this application can be: a printed image on a flat surface (e.g. a card), a flat image on an object (e.g. a picture on the front of or inside a book) or an image of static object (e.g. the façade of a building).

For this project I would like you to consider carefully the choice of the 2D image target and the corresponding virtual content that it triggers. Rather than creating a 1:1 relationship between the 2D image content and the augmented 3D form, I would like you to develop a relationship that is complementary. In other words, the camera image together with the augmented form should create a new reading that emerges when both are seen together. Ideally this relationship should inspire new thought and new ways of looking at both, the 2D image content (and/or the object it represents) and the augmented visuals.

Keep things simple, essentially you are bringing a physical 2D image and virtual visual content in conversation with each other.

Since the relationship between the 2D image target and the virtual content is most important I am giving you a few examples that hopefully illustrate ways to think about this relationship in less or more successful ways:

- Example for a 1:1 relationship which you should avoid: when looking at a card with an image of a flower on your mobile device a 3D form of a similar virtual flower appears on top of it. A scenario like this is used broadly in advertising and product presentation (think: Lego Stores), we are not interested in these types of applications in this class.
- Example for a basic complementary relationship: when looking at a card with an image of a flower, a 3D form of a pollinating insect shows up on top of it. This is already much more interesting but it is quite didactic and does not allow for a broad variety of interpretations, imaginative and/or critical thinking (think: basic Science Museum exhibit).
- Example of a more thought-provoking complementary relationship: when looking at a card with an image of a flower we see a 3D form of a wilted flower appear on top of it.

Rather than teach the audience something, like the more didactic previous example would do, this example is an invitation to the audience to imagine and think for themselves about what the relationship between the two different states of the flower may be: for example - is this about the cycle of life leading to inevitable decay (an art historic parallel here would be the Vanitas paintings of 16<sup>th</sup>/17<sup>th</sup> century Dutch masters)? Or could it comment on our changing natural environment, herbicide use in monocultural agriculture practices, a discussion of which plants are desirable/not desirable, etc?

You may also want to consider the following questions:

- You can rotate the 2D image target and the 3D form will rotate as well, or walk around the 2D target surface and the perspective of the 3D form will change accordingly. What may be revealed by looking at the augmented 3D image content from different angles and viewpoints?
- Images, object, places are imbued with cultural memory: What is the cultural/political/social/etc. significance of the 2D image target (or object/place) and how does it relate to the significance of the augmented 3D content (and vice versa)?
- How can some of the ideas from the reading inform your ideas for this project – for example the history of devices creating illusionary/immersive spaces

In addition to your AR project please turn in a printed project description of 300 words max., discussing the idea behind the work and its place in a larger cultural context (the two readings on the class website can be helpful for that).

## Resources for the Augment Reality Project

Examples of artists working with AR

- Manifest AR - <https://manifestarblog.wordpress.com/about/>
- MoMAR - <https://momar.gallery/>
- Tamiko Thiel - <http://www.tamikothiel.com/>
- Lukic, Dejan and Seol Park. "Virtual Art, Anchored in Reality: A Conversation on Location-Based AR." *Media-N - The Journal of the New Media Caucus*. Accessed 8/20/2017  
<http://median.newmediacaucus.org/mestizo-technology-art-design-and-technoscience-in-latin-america/virtual-art-anchored-in-reality-a-conversation-on-location-based-ar/>
- Apple Press Release. "Apple offers new augmented reality art sessions." 7/30/2019.  
<https://www.apple.com/newsroom/2019/07/apple-offers-new-augmented-reality-art-sessions/>

## Technical Resources

Please setup accounts with both, Unity3D and Vuforia by the next class meeting, Mon. 8/26/19

- Create a Unity ID/account: <https://unity.com/> (top right corner, person logo)
- Create a Vuforia developer ID/account: <https://developer.vuforia.com/> (top right corner "Register")

### Unity

- If you would like to get started with Unity, there are excellent tutorials that help you get on overview of the software, I would start here: <https://learn.unity.com/tutorial/create-your-first-unity-project>. Later you may want to learn about scripting and physics as well, this is a good place to get started: <https://learn.unity.com/project/roll-a-ball-tutorial>

### Vuforia

- Here are a couple of helpful tips for the types of images that work best as image targets in Vuforia (provide the most reliable tracking and image recognition):  
<https://library.vuforia.com/articles/Training/Image-Target-Guide>  
<https://library.vuforia.com/articles/Solution/Optimizing-Target-Detection-and-Tracking-Stability>  
For more advanced marker-based strategies in Vuforia (other than 2D image targets), see: <https://library.vuforia.com/content/vuforia-library/en/features/overview.html>

### TinkerCAD

- Also, if you are new to 3D modelling, this may be a good starting point (you'll need to setup an account for TinkerCAD as well):  
<https://www.tinkercad.com/>

Finally, here are some online sources for free 3D content, remember that low polygon counts work in your favor when deploying to mobile platforms:

- <https://www.turbosquid.com/> (click the free 3D models link on their start page)
- <https://www.thingiverse.com/> (primarily a collection of models for 3D printing but you may find something for this project, too)
- <https://nasa3d.arc.nasa.gov/> (3D models from NASA)
- <https://clara.io/library>

## Where to go next?

I have created step-by-step videos demonstrating the workflow from Unity3D/Vuforia development to iOS and Android deployment. They are already a couple years old and I will update them for the most current versions of the software and SDKs in the next few weeks. For now, you can access the 2017 videos at:

Augmented Reality with Unity3D and Vuforia

<https://youtu.be/WdfStRynCLw>

Exporting Unity3D+Vuforia for iOS devices

<https://youtu.be/dwjziS3Jjmk>

Exporting Unity3D+Vuforia for Android devices

<https://youtu.be/AxsY2DuSfnw>