



Introduction to ARCore In Unity

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Agenda

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About The Assembly

- A smart lab & makerspace based out of in5 since 2014
- Over 350 free workshops done
- Focus on Smart Technology & Practical Applications
- Assembly : HACK - Embedded systems, IoT, hardware
- Assembly : CODE - Software - APIs, frameworks, apps
- Assembly: Data Science - Advanced topics in AI/ML
- Audience – Students | Professionals | Entrepreneurs
- Social Media: @makesmartthings
- www.theassembly.ae → Online workshop videos

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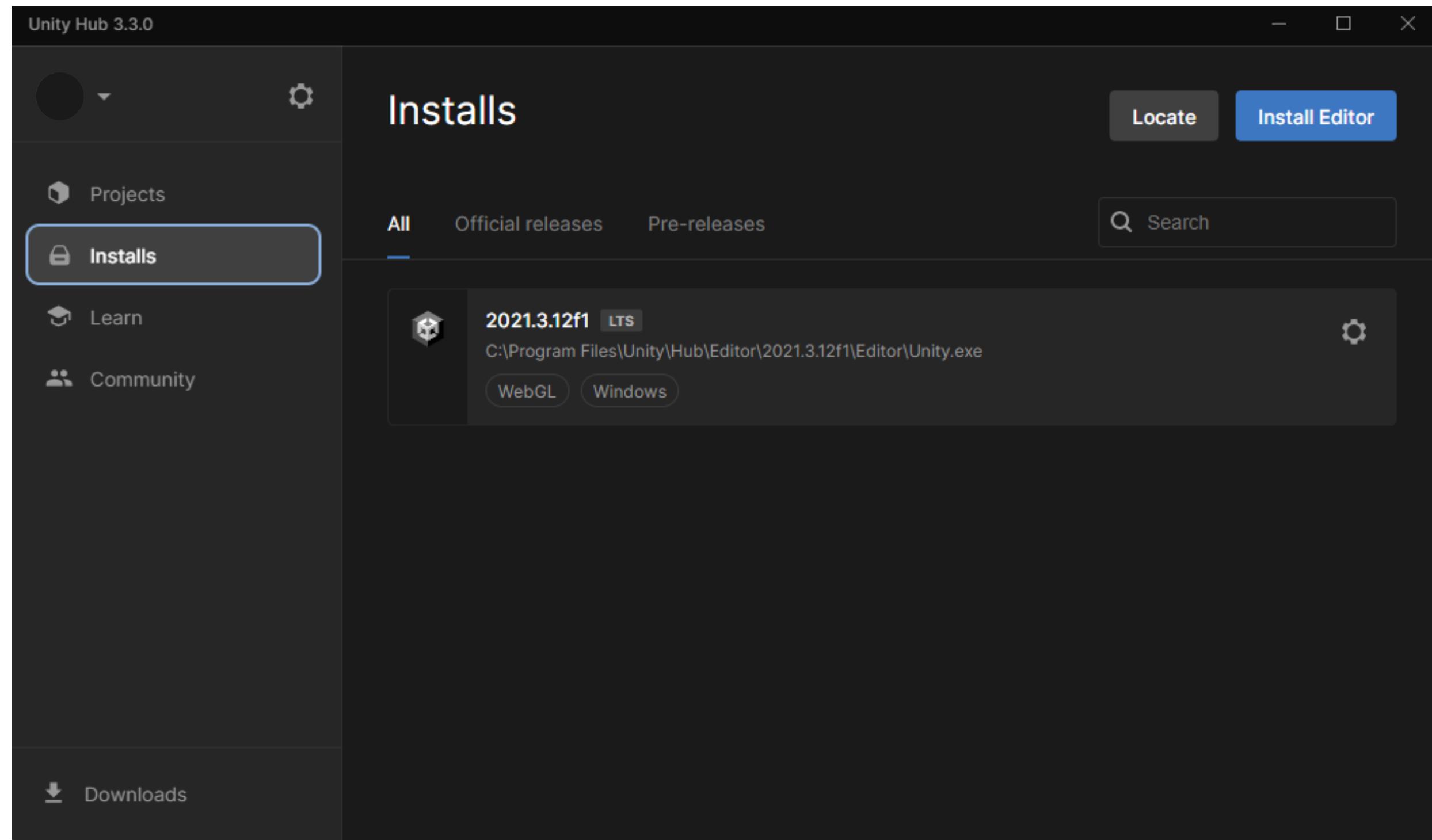
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Quick Note



01 Install Unity Hub at: <https://unity3d.com/get-unity/download>

02 [The-Assembly/UnityWorkshop2](https://github.com/The-Assembly/UnityWorkshop2): Creating a simple 3D game
(github.com)

GitHub Link



Similar softwares

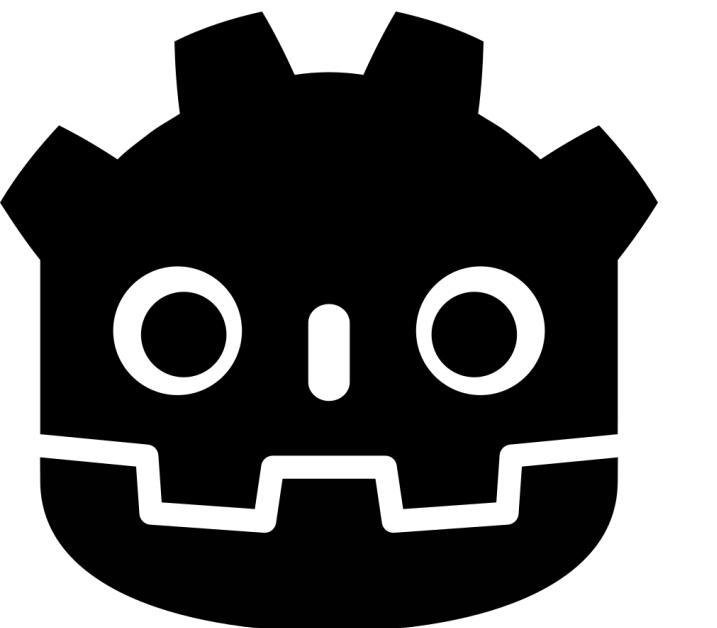


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What is AR?

- 01 Form of XR
 - 02 Phones are common medium
 - 03 Developing in AR



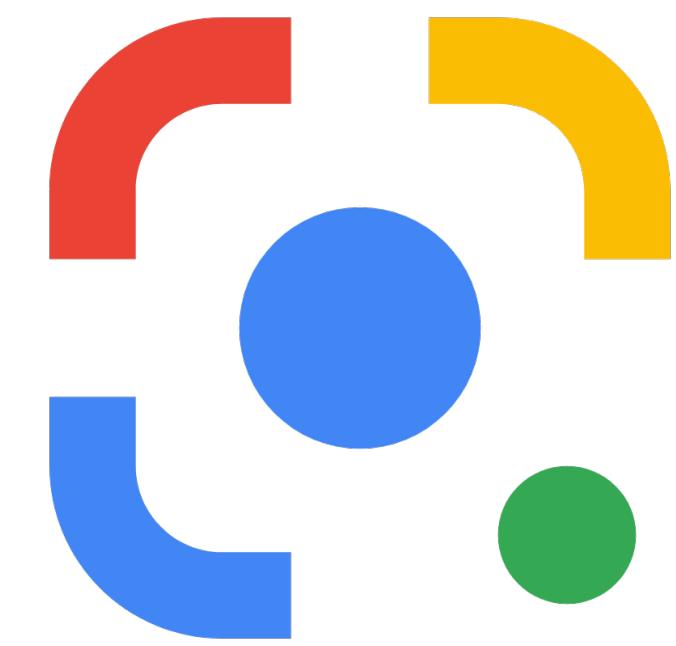
Games Built with Unity



Pokemon: GO



IKEA Place



Google Lens

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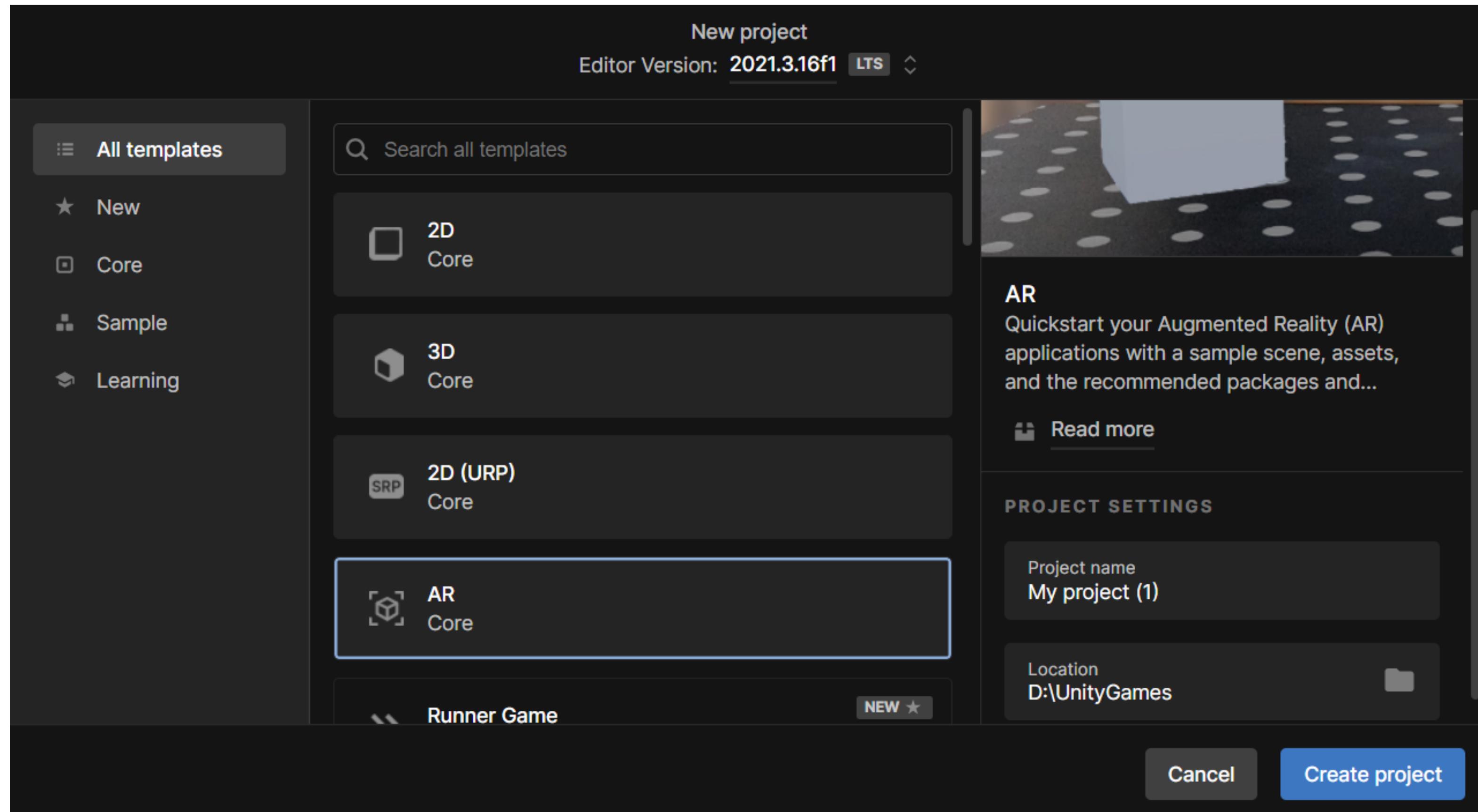
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Unity Hub Overview



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Setting up your project

- 01 Download Android SDK module
- 02 Configuring ARCore
- 03 Configuring Player Settings
- 04 Configuring Packages

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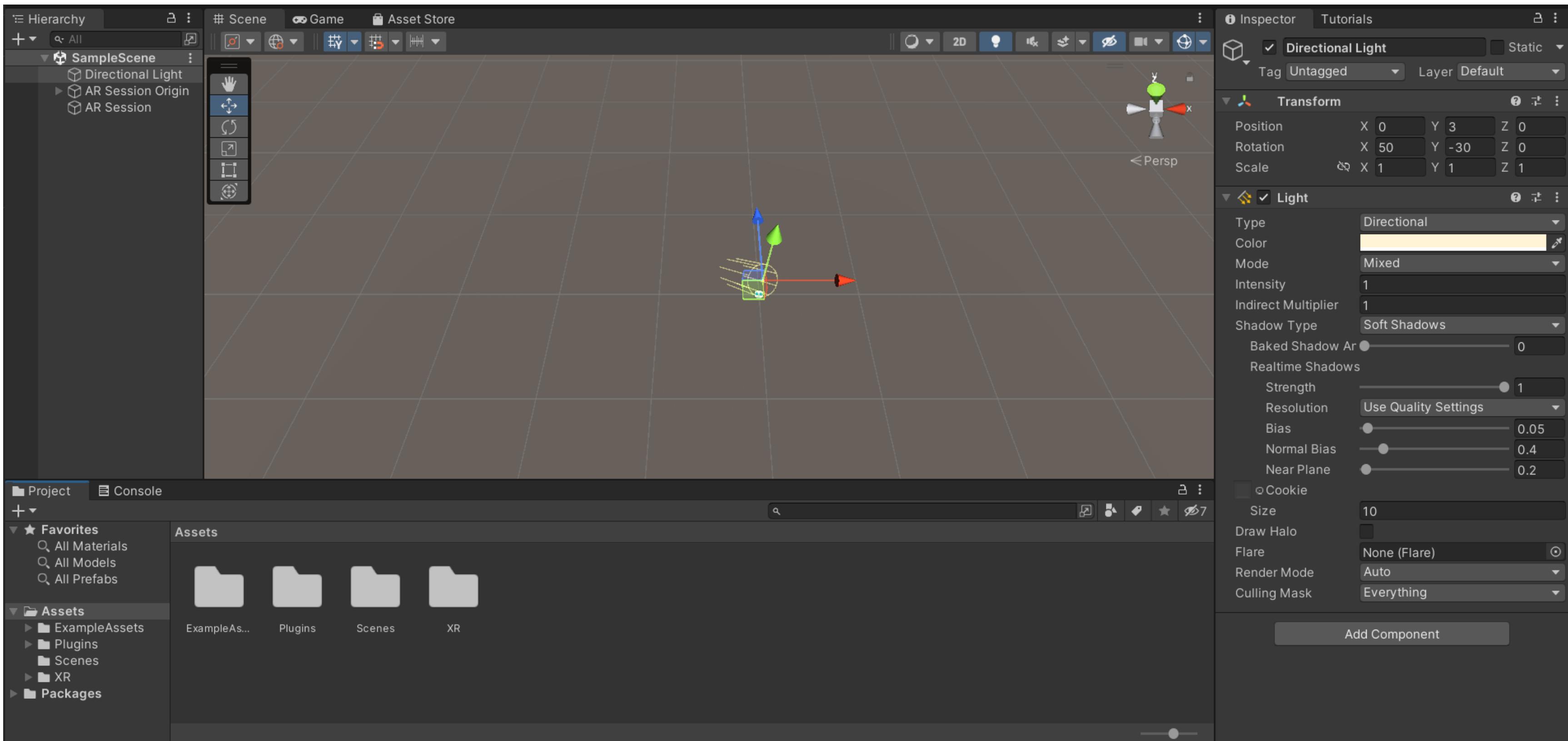
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Initial Objects



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Choosing a good reference image

Best practices

Tips for selecting reference images

- The image's resolution should be **at least 300 x 300 pixels**. Using images with high resolution does *not* improve performance.
- Reference images can be provided in **PNG or JPEG file format**.
- **Color information is not used**. Both color and equivalent grayscale images can be used as reference images or by users at runtime.
- **Avoid images with heavy compression** as this interferes with feature extraction.
- **Avoid images with that contain a large number of geometric features, or very few features** (e.g. barcodes, QR codes, logos and other line art) as this will result in poor detection and tracking performance.
- **Avoid images with repeating patterns** as this also can causes issues with detection and tracking.
- Use the `arcoreimg` tool included in the ARCore SDK to get a quality score between `0` and `100` for each image. **We recommend a quality score of at least 75**. Here are two examples:

<https://developers.google.com/ar/develop/augmented-images>

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Object Declaration and Setup methods

```
// Reference to AR tracked image manager component
private ARTrackedImageManager _trackedImagesManager;

// List of prefabs to instantiate - these should be named the same
// as their corresponding 2D images in the reference image library
public GameObject[] ArPrefabs;

private readonly Dictionary<string, GameObject> _instantiatedPrefabs = new Dictionary<string, GameObject>();

void Awake(){
    _trackedImagesManager = GetComponent<ARTrackedImageManager>();
}
private void OnEnable(){
    _trackedImagesManager.trackedImagesChanged += OnTrackedImagesChanged;
}
private void OnDisable(){
    _trackedImagesManager.trackedImagesChanged -= OnTrackedImagesChanged;
}
```

Images Added

```
foreach(var trackedImage in eventArgs.added){  
    //Get the name of the reference image  
    var imageName = trackedImage.referenceImage.name;  
    foreach (var curPrefab in ArPrefabs) {  
        //Check whether this prefab matches the tracked image name, and that  
        //the prefab hasn't already been created  
        if (string.Compare(curPrefab.name, imageName, StringComparison.OrdinalIgnoreCase) == 0  
            && !_instantiatedPrefabs.ContainsKey(imageName)){  
            // Instantiate the prefab, parenting it to the ARTrackedImage  
            var newPrefab = Instantiate(curPrefab, trackedImage.transform);  
            _instantiatedPrefabs[imageName] = newPrefab;  
        }  
    }  
}
```

Images Changed

```
foreach(var trackedImage in eventArgs.updated){
    _instantiatedPrefabs[trackedImage.referenceImage.name]
        .SetActive(trackedImage.trackingState == TrackingState.Tracking);
}
// _instantiatedPrefabs[trackedImage.referenceImage.name].SetActive(trackedImage.trackingState == TrackingState.Tracking);
```

Images removed

```
foreach (var trackedImage in eventArgs.removed){  
    // Destroy its prefab  
    Destroy(_instantiatedPrefabs[trackedImage.referenceImage.name]);  
    // Also remove the instance from our array  
    _instantiatedPrefabs.Remove(trackedImage.referenceImage.name);  
    // Or, simply set the prefab instance to inactive  
    // _instantiatedPrefabs[trackedImage.referenceImage.name].SetActive(false);  
}  
}
```

Thank You

Any Questions?

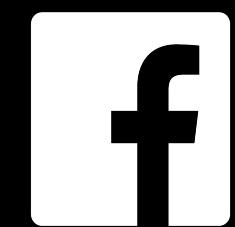


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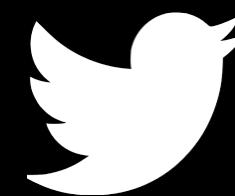
Social Media



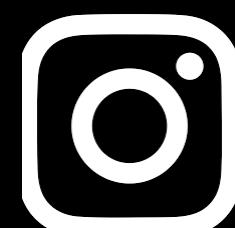
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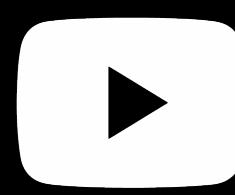
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