Trackables and Managers in AR Foundation

CE/CZ 4001

Virtual and Augmented Reality

AY2021/2022 Semester 2

Reference

- Trackables and Managers in AR Foundation (Part 2)
  - https://www.andreasjakl.com/trackables-and-managers-in-ar-foundation-part-2/

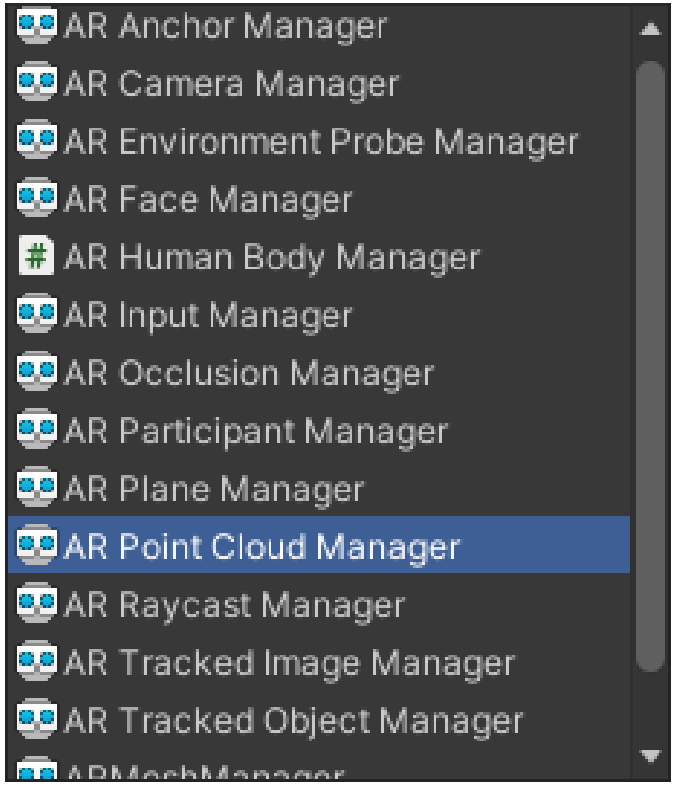
Introduction

- How does AR Foundation ensure that your virtual 3D objects stay in place in the live camera view by moving them accordingly in Unity's world space?
- AR Foundation uses the concept of trackables.
- For each AR feature you'd like to use, you will additionally add a corresponding trackable manager to your AR Session Origin.

Trackables

- A trackable in AR Foundation is anything that can be $detected$ and $tracked$ in the real world.
- This starts with basics like anchors, point clouds and planes.
- More advanced tracking
  - Environmental probes for realistic reflection cube maps
  - Face tracking
  - Information about other participants in a collaborative AR session.

- Each type of trackable has a corresponding manager class as part of the AR Foundation package that we added to our project.
- Always add the required manager component to the AR Session Origin.
- The manager stores the information but doesn’t visualize it.



Point Cloud

- A point cloud contains feature points, which the underlying AR subsystem detects and uses to infer other information like planes or anchors.
- A feature point is a specific point in the point cloud which the device uses to determine its location in the world.
- Feature points are typically notable features in the environment that the device can track between frames, such as a knot in a wooden table.
- The feature points tracked through point clouds in AR Foundation contain the information in 3 parallel arrays
  - 3D position
  - Unique identifier
  - Confidence value (0..1)
- Each array refers to the same point at the corresponding array position.

https://www.andreasjakl.com/wp-content/uploads/2018/08/arcore-anchors.gif

Planes

- A plane is stable to track, directly corresponds to a major physical structure in the real world, and usually provides a bigger physical area than a single feature point as reference.
- In the detection mode, you can select which kinds of planes you want to detect.
- For example, if you only need horizontal planes to place objects on the floor, it increases performance and stability to disable vertical plane detection.

End