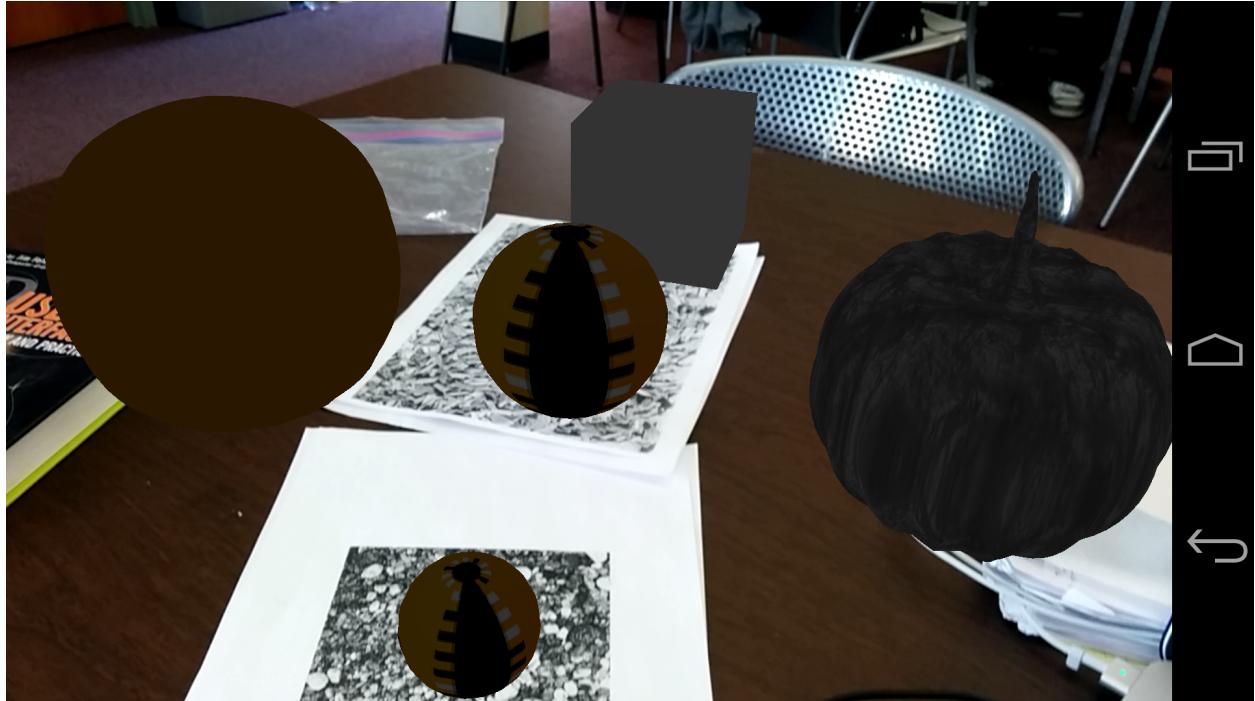


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JAL2238
COMS 4172 – 3D User Interfaces
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Assignment 3: Keeping Track
Written Description



Workspace

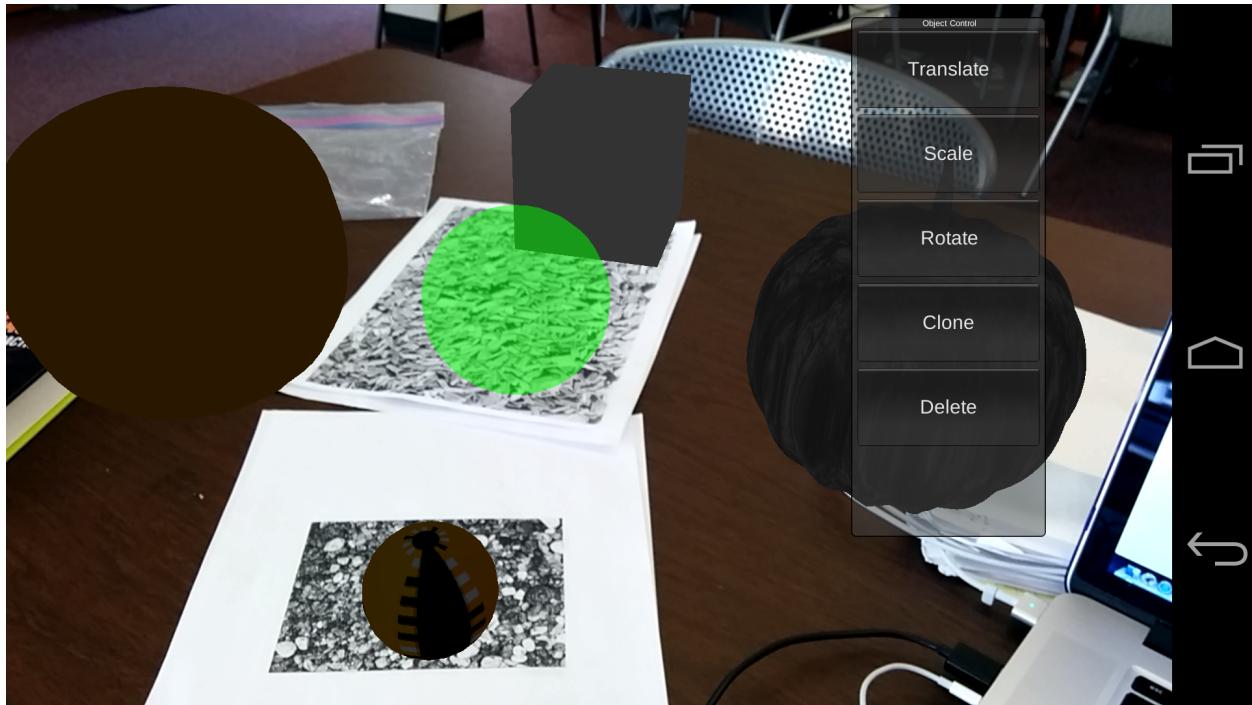
The picture above shows the user's workspace, consisting of the Ground Target and Workspace Target. Objects may be selected on either the Ground Target or Workspace target to be manipulated. Here, the sphere is currently visible on the workspace target.

Instantiation

The user is given four objects to start. To create new objects, the user must clone of the existing parent objects.

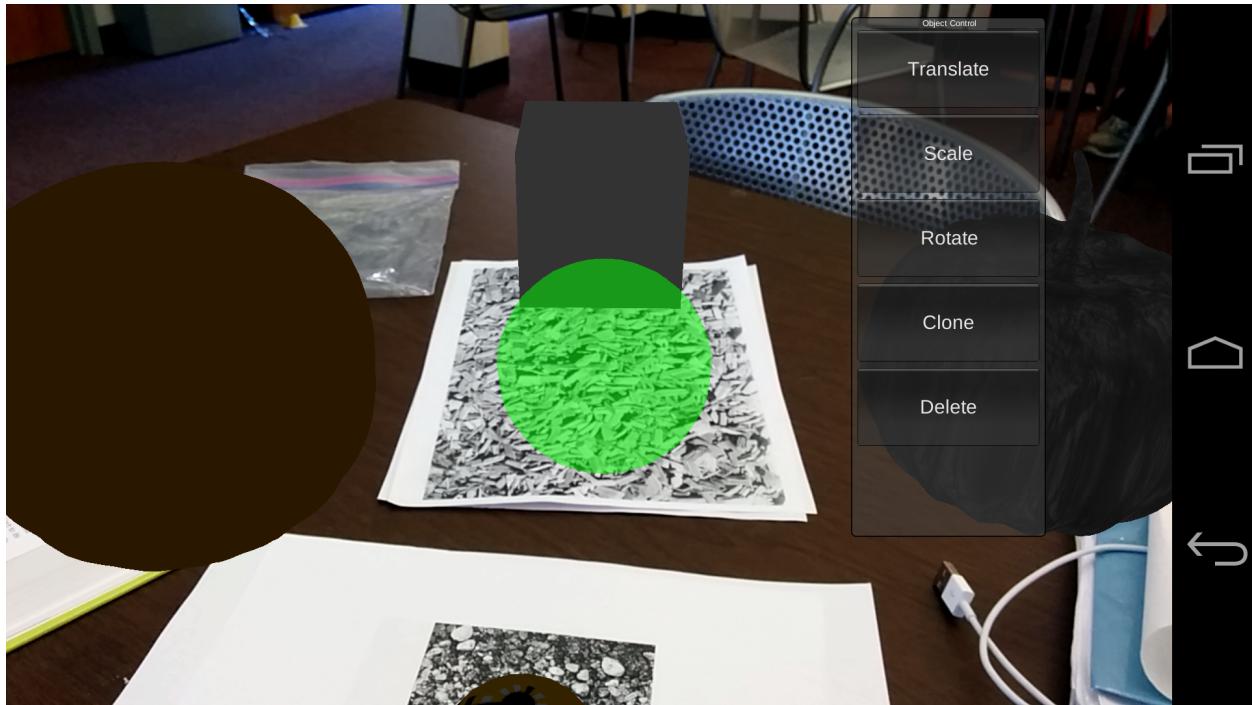
Selection

To select an object, simply tap the object on the device screen. A ray will be cast through the screen, and if it hits an object, the object will change color to denote that it has been selected. In addition, a control GUI will appear on the right side of the device screen, listing the possible controls for manipulating that object. The technique used for object selection is Ray Casting.

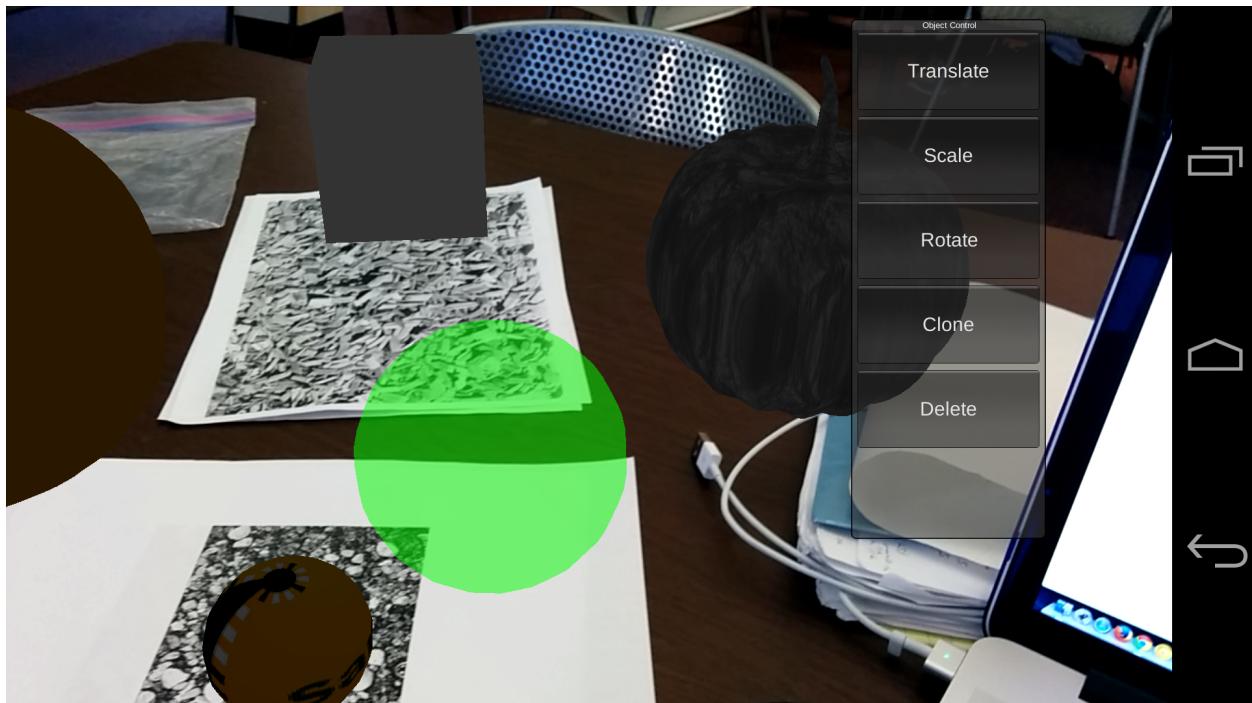


Translation

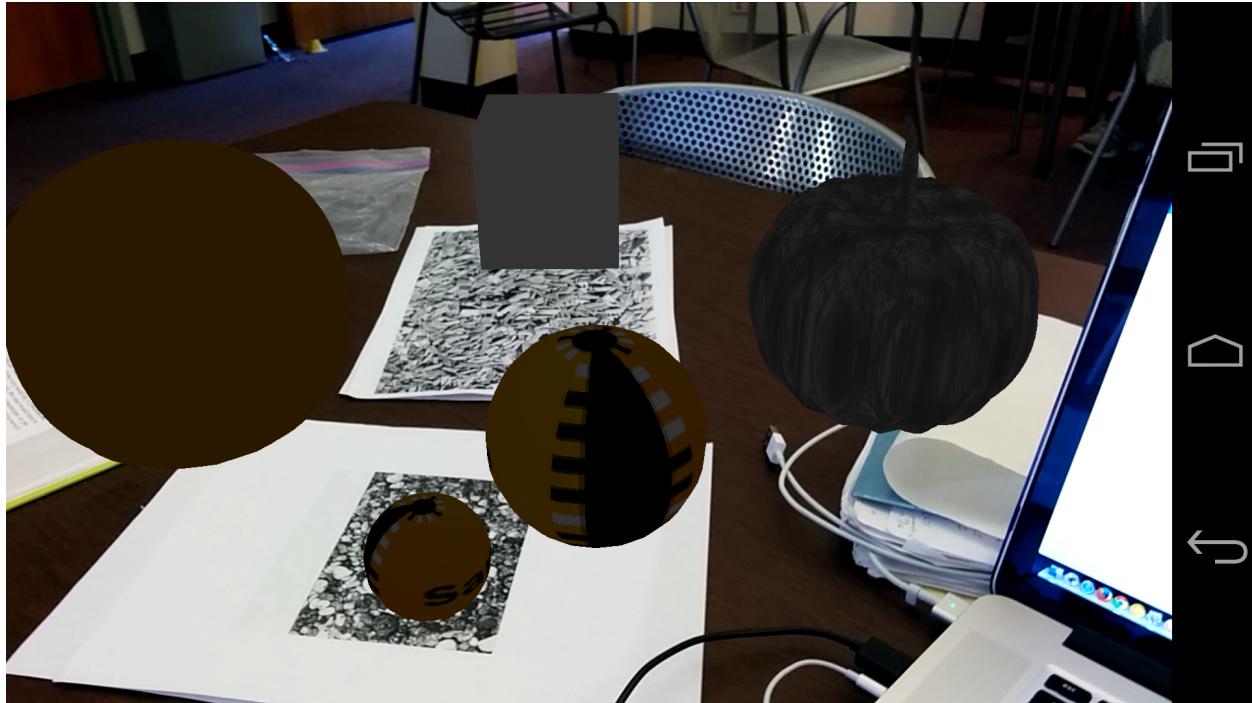
To translate an object, select the object and tap the Translate button. The object will now be in “translation mode” and cannot be deselected. Using your finger, tap and drag on the object to move it around the scene. When you are finished, tap the Translate button again to leave “translation mode” and then deselect the object. The technique used for object translation was inspired by Ray Casting and HOMER.



Selecting an object.



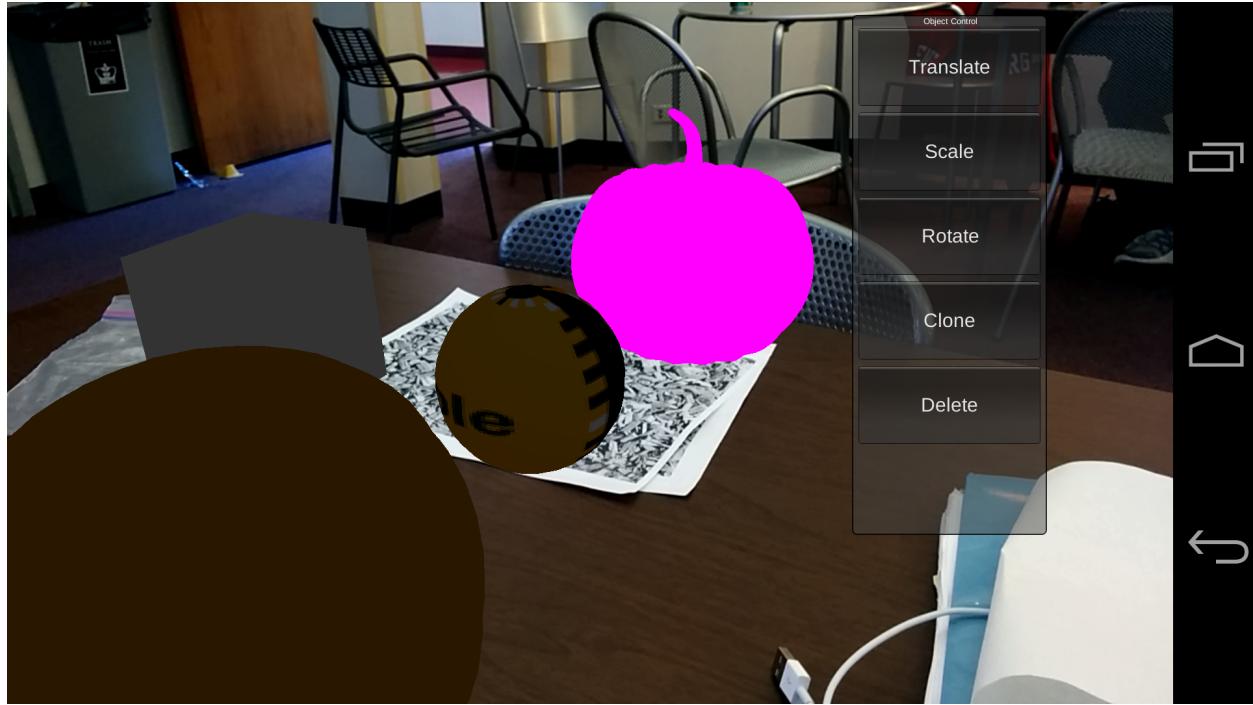
Moving an object with your finger.



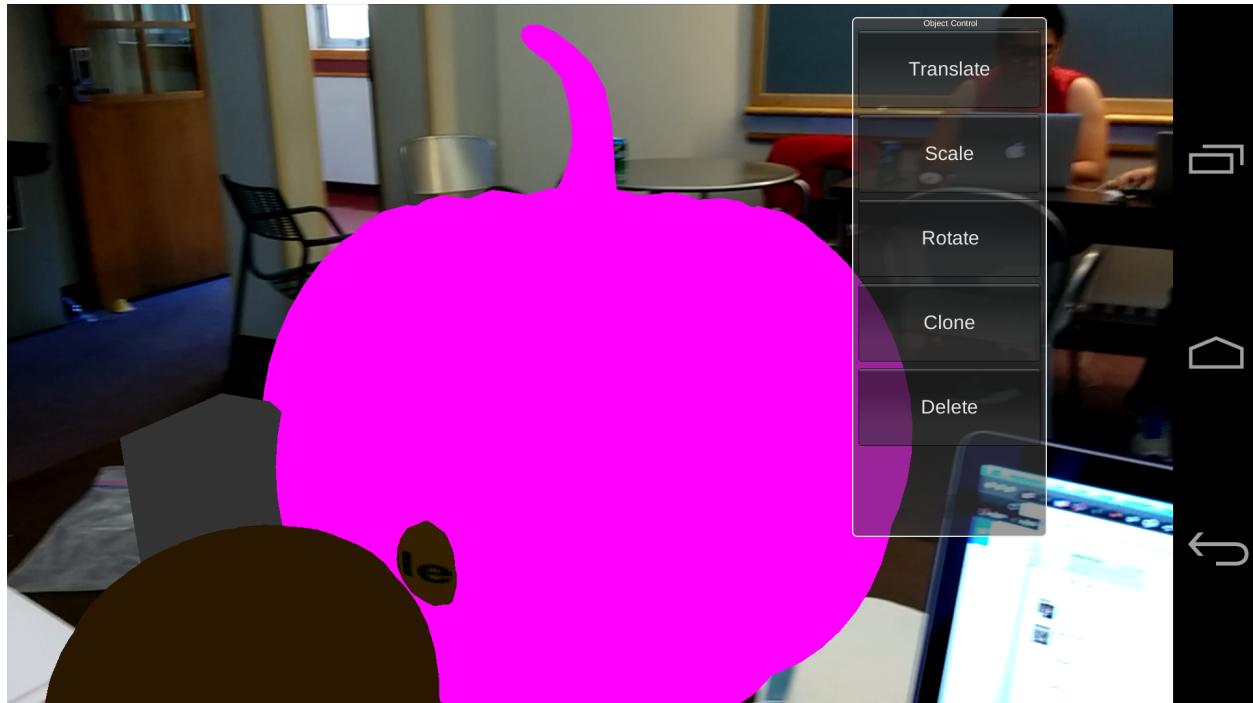
Leaving “translation mode” and deselecting the object. Note how the object has moved from its original location.

Scale

To scale an object, the user selects the desired object and then taps the Scale button to enter “scaling mode.” In “scaling mode,” the size of the selected object is controlled by the device’s distance from the selected object and target. As the user’s distance increases from the object, the object’s size increases to scale. As the user moves closer to the target, the object’s size decreases. When the user is satisfied with the object’s size, they may tap the Scale button again to leave “scale mode” and deselect the object to return to the default target view. The technique used for object translation was inspired by Ray Casting and Scaled-World Grab.



Selecting the object to scale (sorry for the pink, my shader broke during this demo).



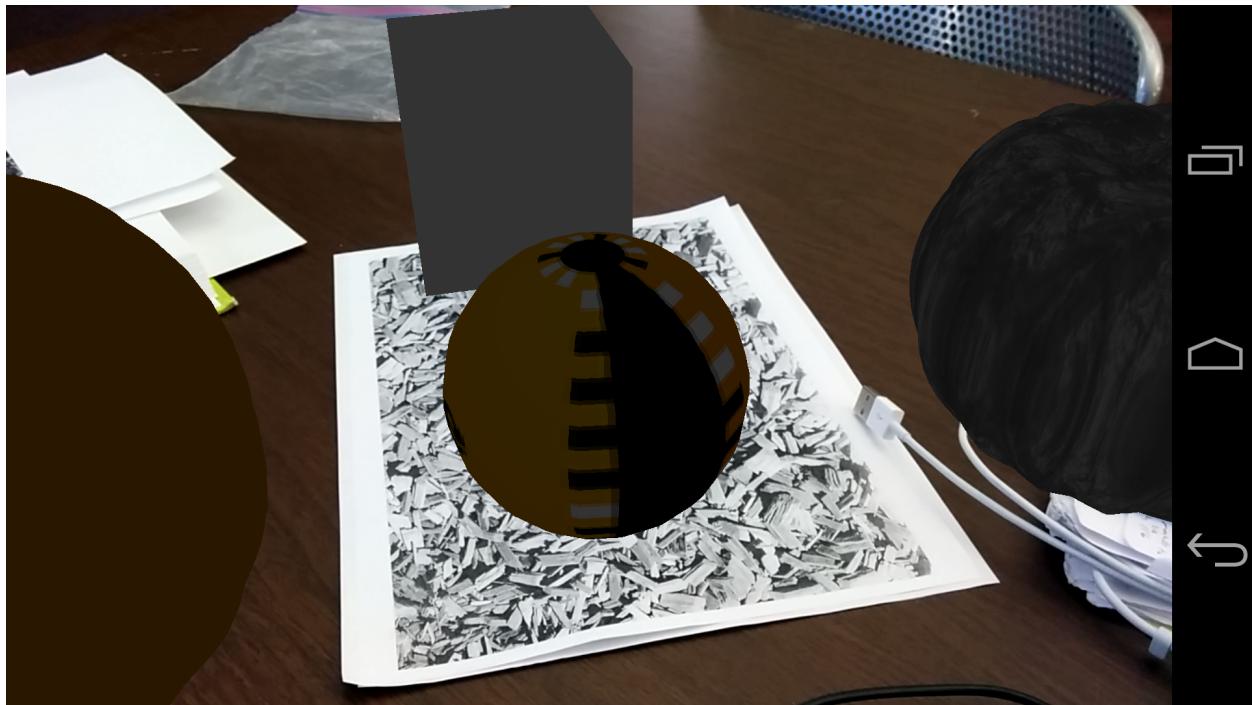
Moving the device away from the target image to increase the size of the object.



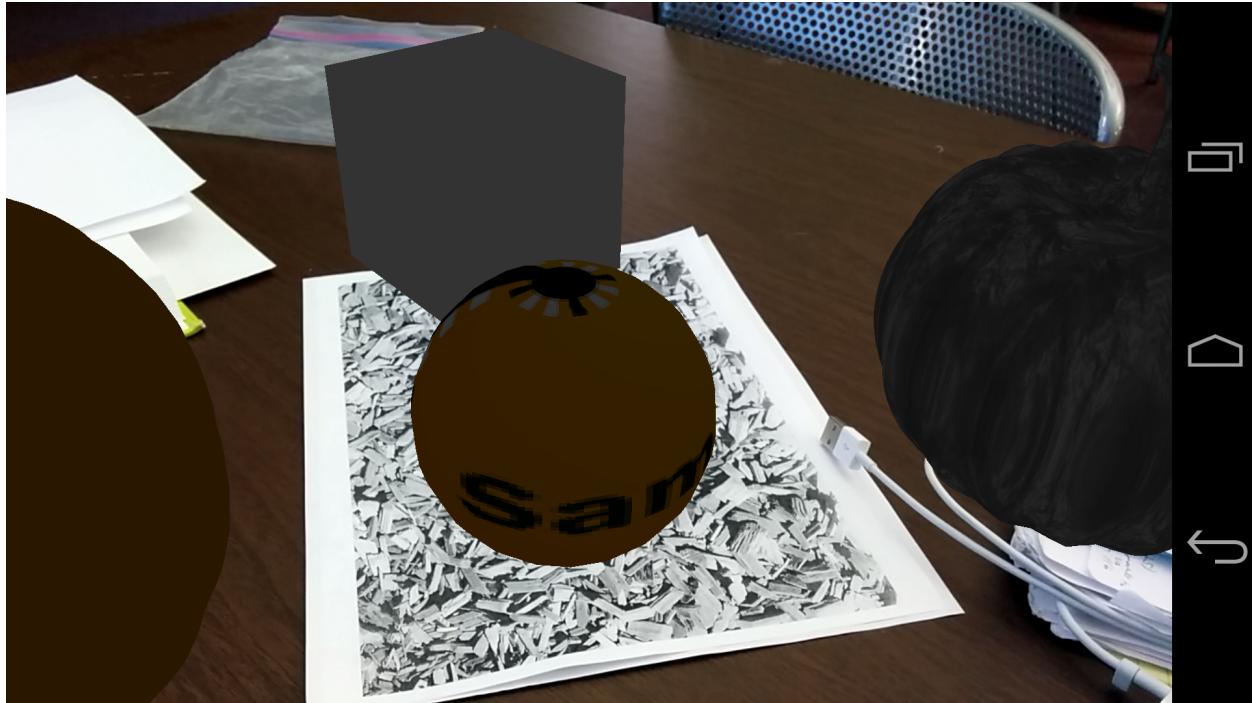
Final resized deselected object. Notice the change in scale from the original object.

Rotate

Rotation is done automatically. When the user taps the Rotate button, the selected object starts rotating clockwise. When the user is satisfied with the object's rotation orientation, they may tap the Rotate button again to stop the rotation.



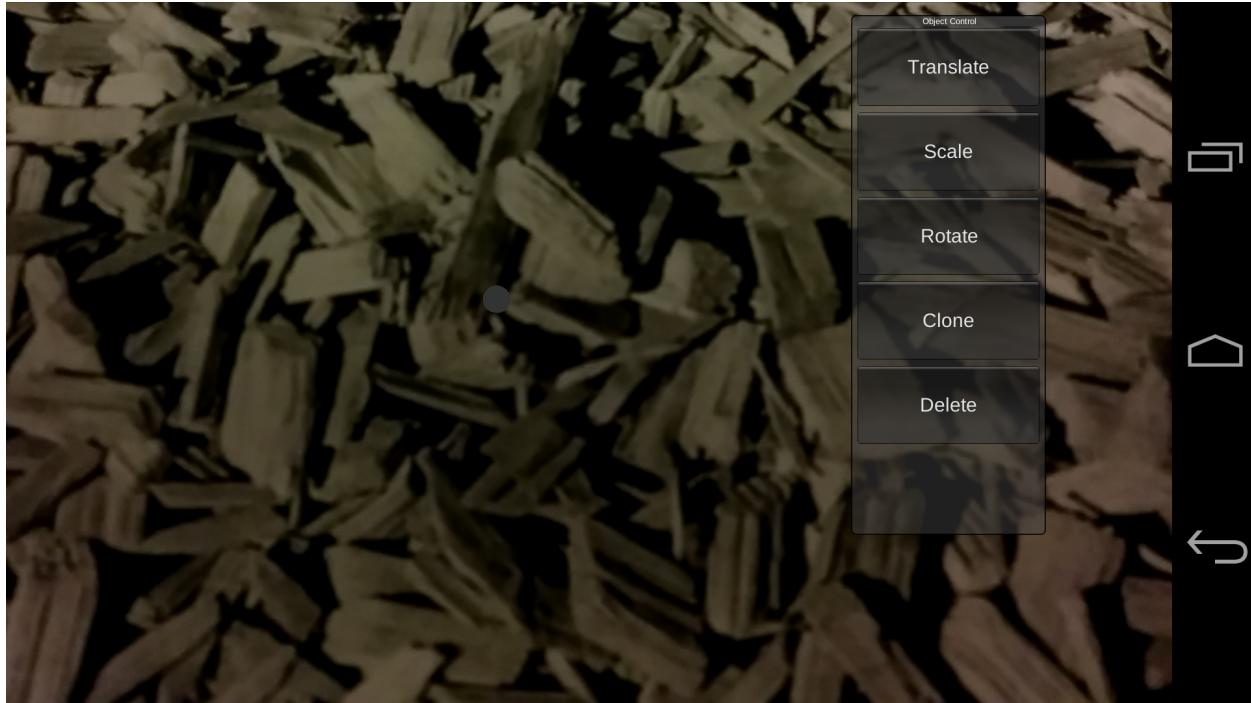
The object at its default orientation.



The object after rotation.

Clone

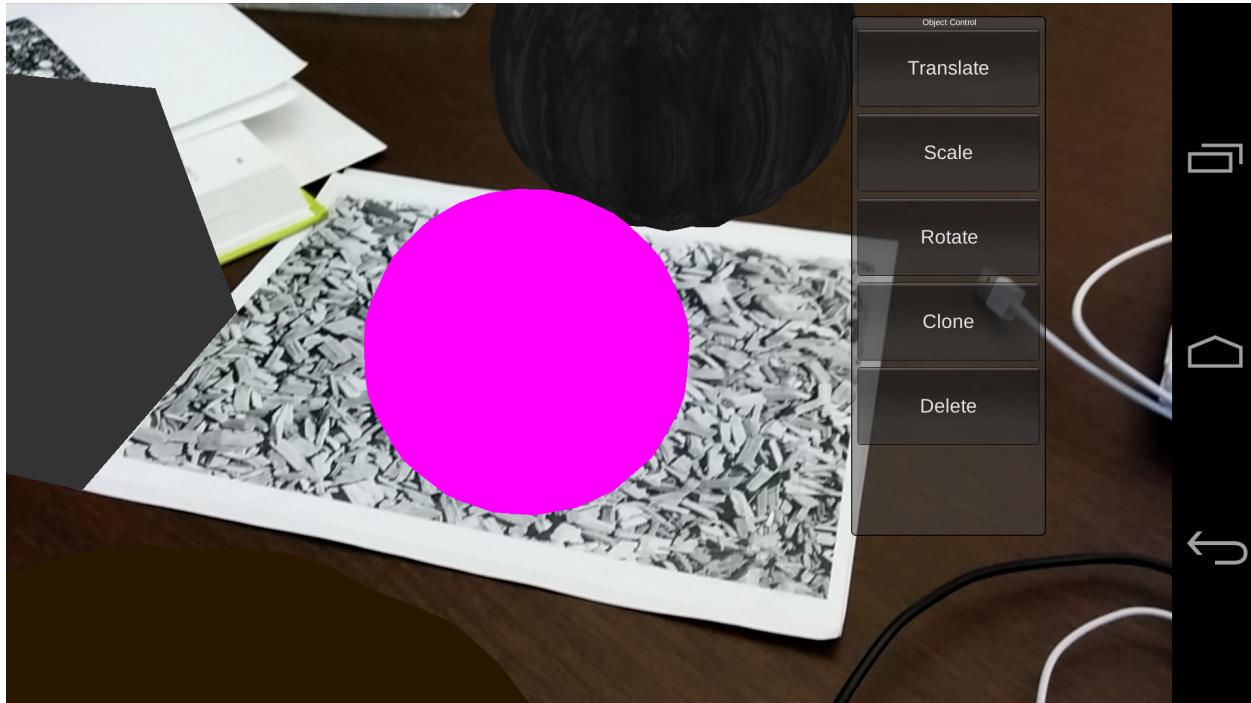
To clone an object, select the desired object and tap the Clone button. The clone will be created as a child of the parent Sphere gameObject and render at the coordinates 0, 0, 0, which is the center of the Ground Target.



It's small, but it's still a clone.

Delete

To delete an object, simply select the object you wish to delete, and press the “Delete” button in the control GUI. This will destroy that instance of the GameObject.



Selecting an object to delete.



The object has been deleted from the Ground Target coordinate system.