AI Cover System
by greyRoad Studio

Thank you for purchasing this Cover System by greyRoad Studio. First and foremost, this system move and animate the AIs using Unity's NavMesh, NavMeshAgents, and the ThirdPersonCharacter Script in the Characters Standard Assets. This system also uses Tags and Layers for the Player and NPCs.

You are required to know the basics of creating and setting tags and layers as well as NavMesh baking to fully utilize this system. Along with the main SeekCoverBehavior Script and the CoverScript, I have also included two follower scripts to help demonstrate how the cover seeking NPCs can flee and seek cover from both the Player and friendly NPCs.

The instructions on how to setup prefabs using Unity's Ethan model is under the Quick Start section. You can also watch the Quick Start Video at:

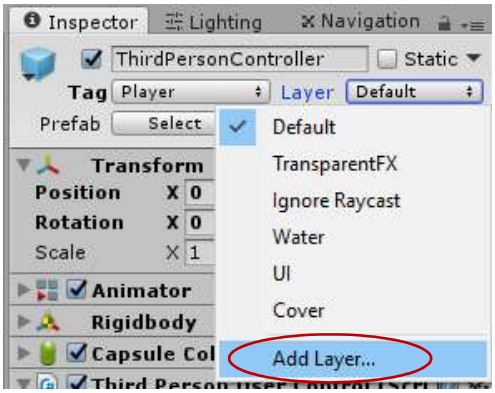
https://www.youtube.com/watch?v=5-A8WWm4G4Q

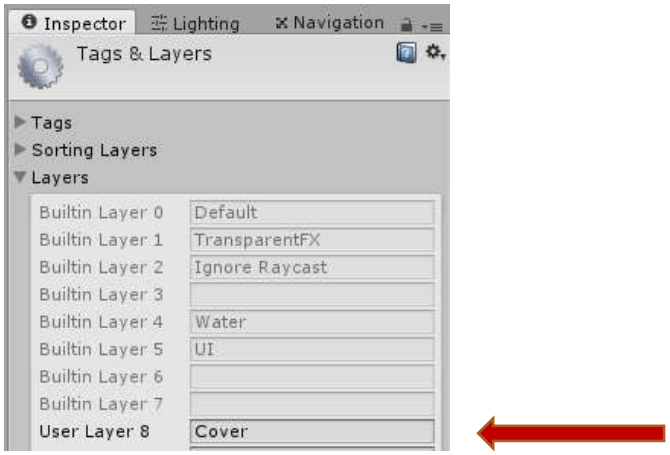
Important

Tags and Layer Requirements

The Player Character must be tagged with the default “Player” tag, otherwise cover seeking NPCs will not detect the Player.

You must add a layer named “Cover” in the Layer Manager, otherwise the SeekCoverBehavior Script will throw errors. “Cover” must be spelt exactly as shown, with same capitalization.

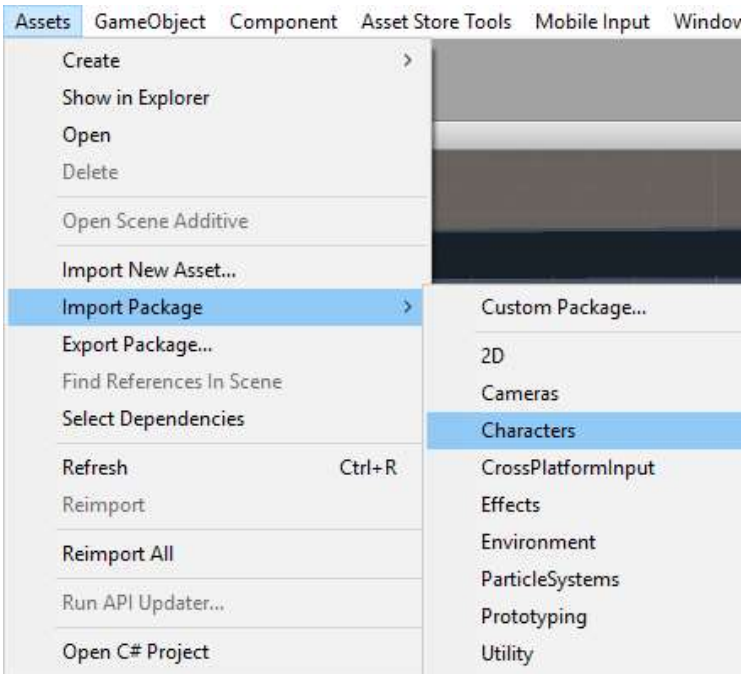




If you want the cover seeking NPCs to flee and seek cover from other characters, you must create a new tag and apply it to those characters.

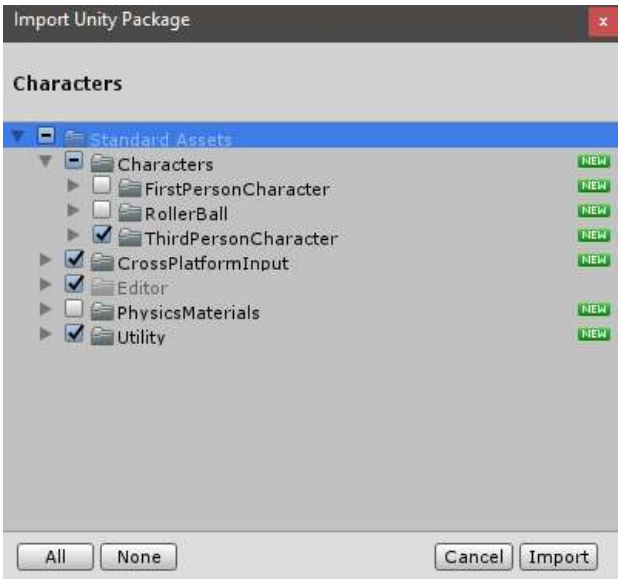
Quick Start

This package requires the Characters package from the Standard Assets. The Cameras package is required if you don't have your own camera rig.
Quick Start video: https://www.youtube.com/watch?v=5-A8WWm4G4Q



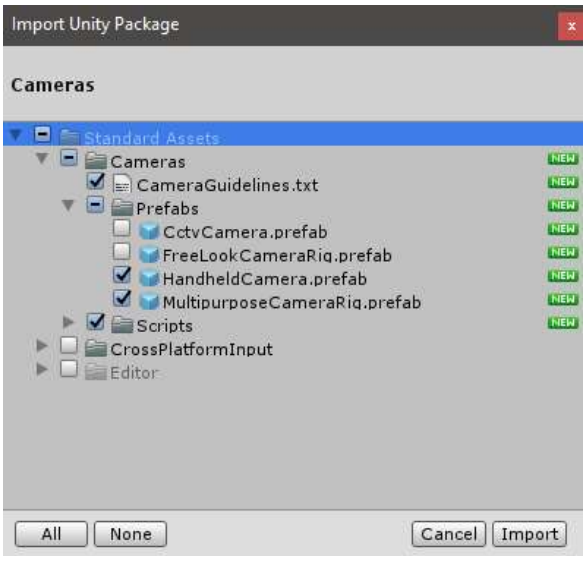
Importing Characters Standard Asset

1. Go to the Assets Menu
2. Select Import Package
3. Select Characters
4. Uncheck FirstPersonCharacter, Rollerball, and PhysicsMaterials (unless you need any of it)
5. Click Import



Importing Cameras Standard Asset

1. Go to the Assets Menu
2. Select Import Package
3. Select Cameras
4. Uncheck CctvCamera, HandheldCamera (unless you need any of it), CrossPlatform and Editor should already be unchecked.
5. Click Import

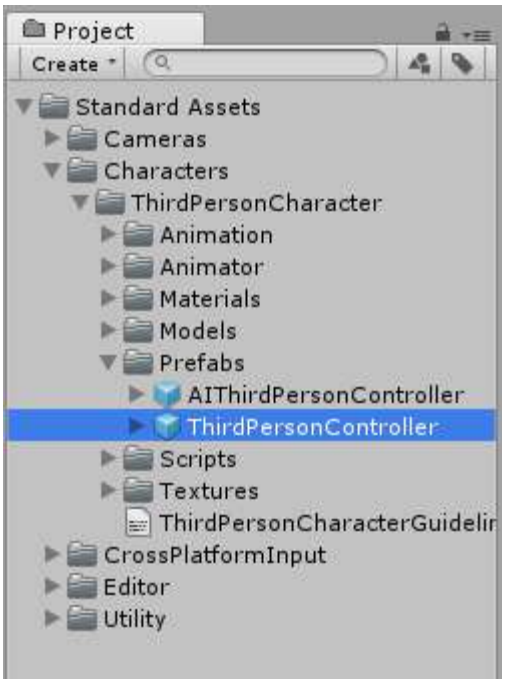


Creating the Environment

1. Add a cube into the Hierarchy and shape it into a ground object
2. Optional: add cubes into the Scene or Hierarchy and shape them into wall objects
3. Make sure both the ground and wall objects are marked as Navigation Static or Static.
4. Drag and drop CoverObject prefabs into the Scene
5. Bake the NavMesh

Creating the Player

1. In the Project Window, under Standard Assets > Characters > Prefabs
2. Drag and drop the ThirdPersonController into the Scene.
3. Tag the ThirdPersonController with the Player Tag
4. In the Project Window, under Standard Assets > Cameras > Prefabs, drag and drop the MultipurposeCameraRig or the FreeLookCameraRig into the Hierarchy

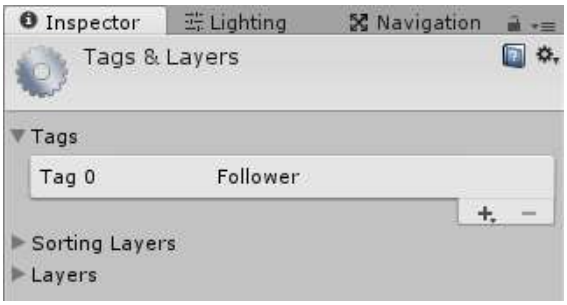


Creating Enemy Prefabs (Cover Seekers)

1. In the Project Window, under Standard Assets > Characters > Prefabs
2. Drag and drop the AIThirdPersonController into the Scene
3. Rename it to "EnemyCoverSeeker" (or whatever name you want)
4. Create a new Material for the enemies and change the Albedo color to red
5. Apply the enemy material
6. Drag and drop the SeekCoverBehavior Script into the EnemyCoverSeeker
7. All the required components should be automatically added to the EnemyCoverSeeker
8. Drag the EnemyCoverSeeker from the Hierarchy to the Project window to create a prefab.

Creating Follower Prefabs:

1. In the Project Window, under Standard Assets > Characters > Prefabs
2. Drag and drop the AIThirdPersonController into the Scene
3. Rename it to "FollowerClickToMove" (or whatever name you want)
4. Create a new Material for the follower and change the Albedo color to blue
5. Apply the follower material
6. **Add a Tag named "Follower" in the Tag Manager and apply it to FollowerClickToMove**
7. Drag and drop the FollowerMovement and FollowerSelect scripts into the FollowerClickToMove
8. Drag the FollowerClickToMove from the Hierarchy to the Project window to create a prefab.



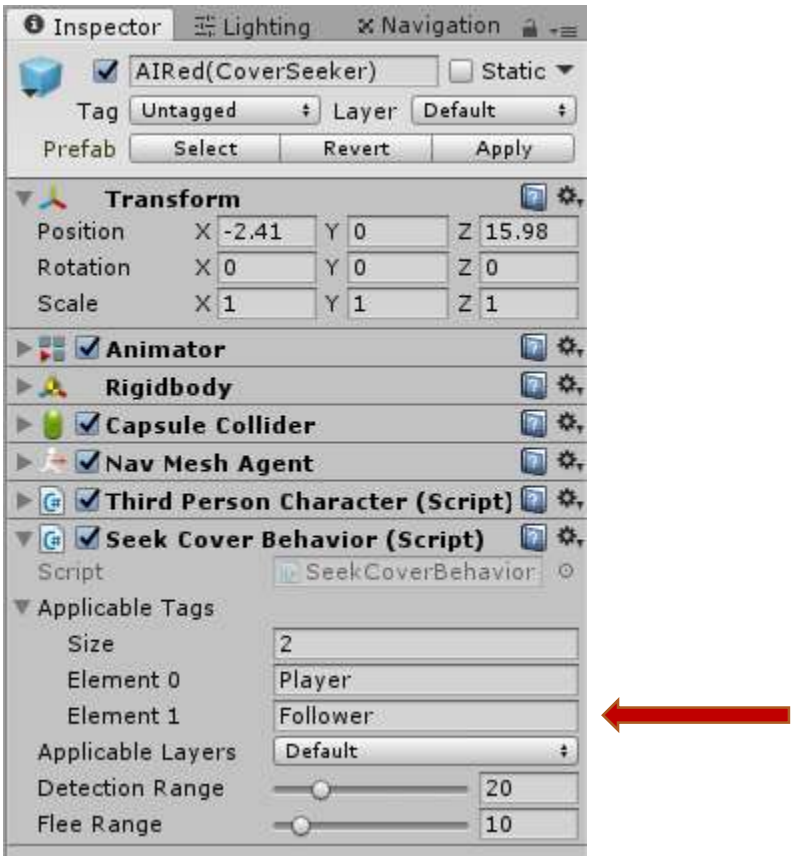
You must create a “Follower” tag and apply to followers for enemies to detect them

Follower Control

The follower NPCs (Blue) must have the “Follower” tag. The cover seeking NPCs (Red) must have the “Follower” string under Applicable Tags in their respective SeekCoverBehavior Component in order to detect the followers.

Follower

Cover Seeker



Controls

WASD to move Third Person Character.

Click on a follower to make him active.

Click on the ground with a follower active to send him to that position.

Press “R” to recall all followers.

Followers and follower scripts are for demonstration purposes only.

Seek Cover Behavior Script

Tooltips

Hover your mouse on an attribute to bring up tooltips.

Applicable Tags

Remember to Tag your Player Character with the "Player" Tag. This AI will flee from GameObjects with Applicable Tags in Applicable Layers. You can create NPC tags in the Tag Manager and type them here if you want this AI to flee from NPCs.

Applicable Layers

Select layers that this AI can detect. This AI will flee from GameObjects in Applicable Layers with Applicable Tags. You must add the Player layer and any NPC layers if you've changed their layers.

Detection Range

How far this AI can see, how close enemies must be before this AI flees and seeks cover. Detection Range must be greater than Flee Range. For best results, keep Detection Range at 5 to 10 meters higher than Flee Range. A Detection Range of 20 to 30 meters is good for a midsize level.

Flee Range

How close enemies must be before this AI flees from behind cover. Flee Range must be less than Detection Range. For best results, keep Flee Range at 5 to 10 meters lower than Detection Range. A Flee Range of 10 to 20 meters is good for a midsize level.

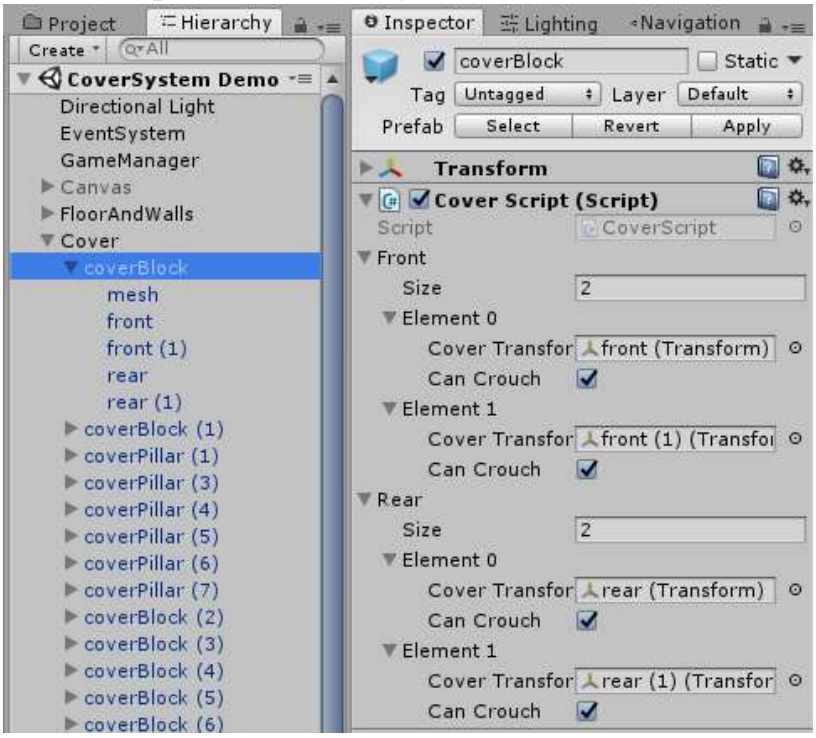
Recommendations

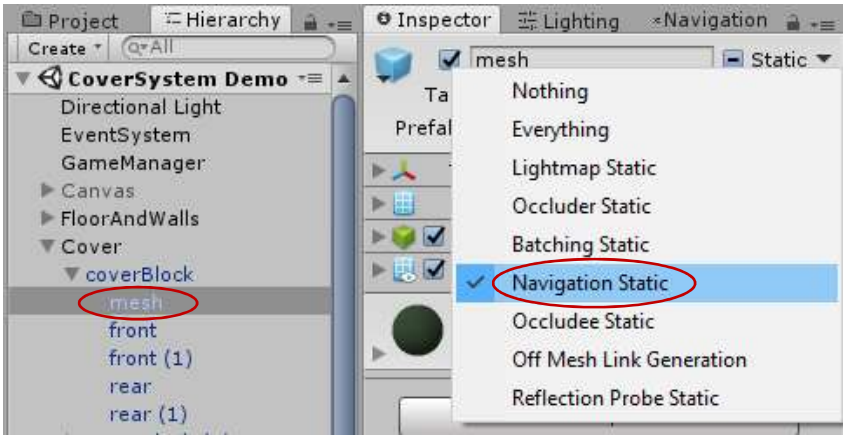
You should not give friendly NPCs the “Player” tag as there should only be one GameObject with that tag.

This system will work with your Player and friendly NPCs in the Default layer, but creating a separate layer for them will improve performance. Remember to change the Applicable Layers for all cover seeking NPCs.

Detection Range and Flee Range should not be excessive. The default ranges should work for most situations, but you should experiment with these ranges to find what fits your level. Detection Range should be 5 to 10 more meters than Flee Range. As with most sliders, the maximum and minimum values will produce weird results.

CoverScript and Cover Objects





Requirements for Cover Objects

- The Cover Object must have the CoverScript component.
- Must include a child mesh marked as Static Navigation.
- The mesh must have a collider.

I recommend that you use the provided prefabs as a template to make your own cover objects.

The actual cover positions are empty GameObject children of the Cover Object.

Add the necessary amount of empty GameObjects to the Cover Object, position them as appropriate, and slot them in the inspector under Front or Rear attributes in the CoverScript Component.

If “Can Crouch” is checked, cover seekers will crouch behind cover.

Setting Up the Scene

1. Build your level.
2. Mark the ground and static objects as Static or Navigation Static.
3. Drag in Cover Objects.
4. Bake NavMesh and HeightMesh.
5. Drag in your Character and AIs.

Watch the following video for more information.

https://www.youtube.com/watch?v=av-k1HVpKF8

Setting Up Custom Cover Seeking NPCs

1. Import your rigged character into Unity.
2. Under the Import Settings, change the Rig type to Humanoid.
3. Drag your character into the scene.
4. In the Animator Component, circle select the ThirdPersonAnimatorController.
5. With your character selected, drag and drop the SeekCoverBehavior Script into the Inspector. All the require components should be automatically added.
6. Modify the scale of your character and the capsule collider as necessary.

Watch the following video for more information.

https://www.youtube.com/watch?v=T7rZ0V_QUmw