USING UNITY AI PACKAGE

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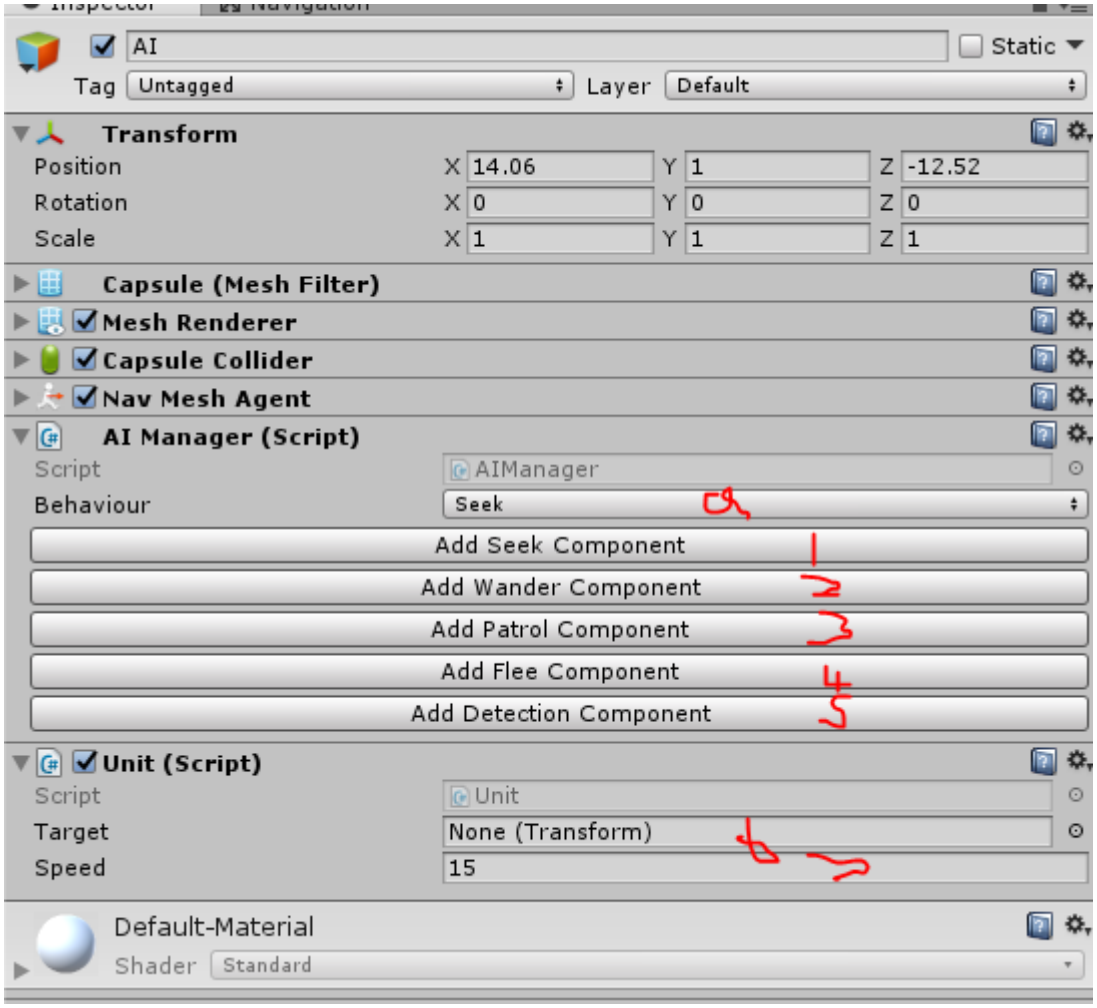
Unity Package

How to Use the Package

When you want an object to have AI functionality within it you will attach an Ai Manager onto it,

You can then add a “Unit” to allow for the use of the A Star algorithm or attach a Nav Mesh agent if you would like to use the Nav Mesh. Once you add a behaviour component you will be presented with options dependent of that behaviour, if there are invalid options or missing components you will be told by prompts also. You also have the ability to have multiple behaviours and the ability to switch between them.



A – The type of behaviour the AI is performing currently.

1- Add a Seek behaviour to the AI.
2- Add a Wander behaviour to the AI.
3- Add a Patrol behaviour to the AI.
4- Add a Flee Component to the AI.
5- Add a Detection Component to the AI.

Unit (For use with A Star)

6-Target that the Unit is going to (Changes on behaviours).

7-Speed of the Unit (Movement Speed)

Setting Up the Package & Initial Scene

1- Import the package within your project
    a. Right click in the main assets folder -> Import package -> Custom Package -> (Select to AIManager Package *. unitypackage) ->Import.
2- Within AiManager->Prefabs is a *. prefab called AI_Pathing Prefab
    a. Drag that into the scene view and it will attach it to the level.
3- Select the prefab within the scene view, The AI Prefab contains the following
    a. AI_Pathing Prefab ->Pathing (Script)
        i. **AIManager ->Grid (Script)** -> PathRequestManager (Script)->Path Finding (Script)
        ii. NodeParent
    b. The Pathing script contains the ability to spawn nodes onto an object within the scene, it allows you to start/stop spawning them, set a height of the ground, link them together and clear all nodes within the level.
    c. The Grid script has the following
        i. Display Grid Gizmos – Turn on or off to show the grid in runtime.
        ii. Unwalkable Mask – The Layer Mask in which you will apply to objects so the AI cannot walk through them and has to avoid them.
            1. Adding a layer can be done through Edit->Project Settings->Tags & Layers and typing in a new name for a new Unwalkable mask.
                a. Then selecting that from the drop down from the Unwalkable mask section
        iii. Grid World Size – The size in which you want the world grid to be in which the AI can navigate around.
        iv. Node Radius – The radius of each node on the grid – The lower the more precise but more expensive, The higher the less precise but less expensive.
    d. NodeParent
        i. NodeParent is where all the nodes added will be added to.

Creating an AI

1- Once we have a game object we want to apply AI functionality to setup is pretty straightforward.
2- Within AIManager there is a script “AiManager” this is the script you would apply to each AI unit you wanted to have AI functionality that have different behaviours.
3- Once added to an object you will see the following within the Inspector view:
    a. Unit
        i. Target – The target that the AI is going to or is being affected by
        ii. Speed – The speed of the AI
    b. Ai Manager
        i. Behaviour – Dropdown list of the behaviour you wish the AI to perform.
        ii. Add <…> Component – There are multiple add component buttons that will add a component of our choosing to the AI, you can then remove that functionality by clicking that button again.
    c. Components (Behaviours) that get added
        i. Seek

1. Use A Star algorithm – Whether to use A Star
2. Target to track to – Where is the AI seeking to
3. Currently Seeking – Is it seeking at the moment
4. Use Custom Places Travel Nodes – Once ticked you will be presented with options; this allows the use of the nodes within the **AI_Pathing Prefab**.
    a. Clear list on Add – Clear the list of nodes on addition of nodes
    b. Nodes Parent object – The Nodes parent which will be the NodeParent within the **AI_Pathing Prefab**
    c. Amount of nodes – Tells the amount of nodes in the list
    d. Update list – Updates the list with the new nodes.
    e. Clear list – Delete all nodes

ii. Wander
1. Use A Star algorithm – Whether to use A Star
2. Nodes – Nodes to travel to
3. Distance to next wander – The distance the AI has to be away from the node to then go to the next target.
4. Tree of Nodes - The Nodes parent which will be the NodeParent within the **AI_Pathing Prefab**
5. Clear Nodes on Add - Clear the nodes when you add new nodes
6. Update list – Updates the list with the new nodes.
7. Clear list – Delete all nodes

iii. Patrol
1. Nodes – Nodes to travel to
2. Tree of Nodes - The Nodes parent which will be the NodeParent within the **AI_Pathing Prefab**
3. Clear Nodes on Add - Clear the nodes when you add new nodes
4. Goto start – Go back to the start when the AI reaches the end
5. Use A Star algorithm – Whether to use A Star
6. Update list – Updates the list with the new nodes.
7. Clear list – Delete all nodes

iv. Flee
1. Object to flee from – The Object to run away from

v. Detection
1. Object to detect – The object to listen/listen for
2. Radius – The radius to look/listen for the object
3. To Chase – Whether to chase the object when it is detected
4. To Detect – Whether to detect the object
5. Behaviour Index – Just the index of the behaviour to perform, it changes from the dropdown box below.
6. Behaviour – Behaviour to perform on detection.

You can add the “Unit” component to the AI if you intend to use the Astar algorithm within your application or you can just add a Navmesh agent if you intend on using Unity’s prebuilt navigation system.

This however will require you to bake a navigation mesh within the level and rebake it if the level is modified