Blaze AI Documentation

For any questions and support, visit the Discord or you can email me directly at: *pathiralgames@gmail.com*

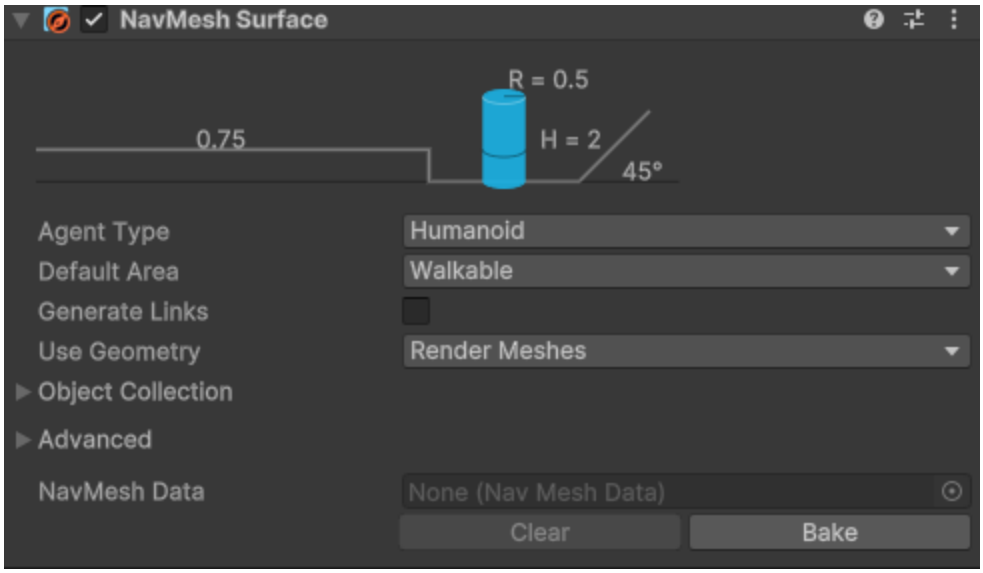
Blaze AI specific Discord server here

Check more assets from Pathiral here

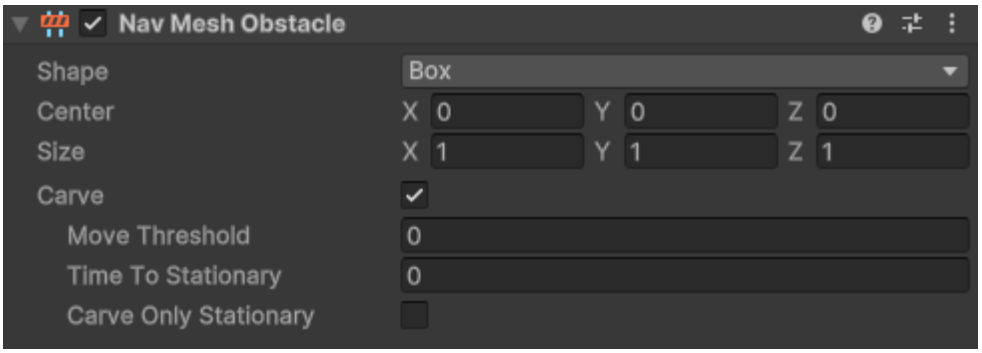
Getting Started

1. Add an empty Plane game object to your scene. This will be the ground the AI walks on.

2. Now make sure the plane is selected and add component > *Navmesh Surface* - **you may have to download the AI package from the Package Manager for these options to appear.** After adding the component, press **Bake**.



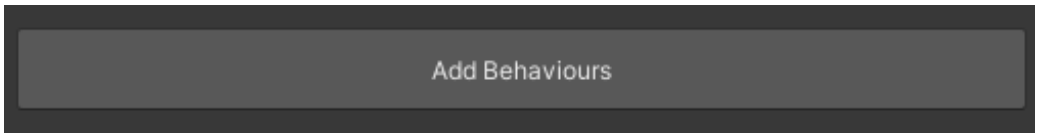
3. **For adding obstacles in your scene**. Click on the object, Add component > *Nav Mesh Obstacle*, then click **Carve**



4. Add Blaze AI component to your character game object.

5. You will find that some required components have been added as well. Such as **Animator** and **NavMeshAgent**.

6. Clicking on the **States** tab, you'll find properties requiring a script for each one. You'll find that in other places in the inspector too. You'll also find **Add Behaviour** button. Click on it and it will automatically add the default behaviour(s) and set them to their respective properties.



7. **Blaze comes with a behavior script for each and every state property with the same name.** So for example the Normal State Behaviour property has the **NormalStateBehaviour** script and so on. *You can make your own custom behaviour script and drag/drop on the required state also.*

8. On the added Normal State behaviour component, setup the properties by adding the animation names for idle and move - we'll get to the animations later in this doc. In the section **Animations** after Getting Started - and the desired speeds, audios, etc…

9. Now go back to the **Blaze AI inspector > General tab > Waypoints**. By default, Randomize is enabled. Randomize means waypoints will not be read but rather the AI will generate a new random point on each cycle. In other words, will be patrolling around the navmesh randomly within a specified radius.

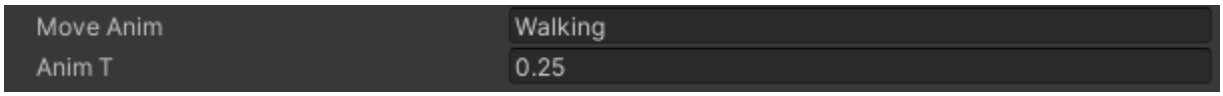
10. Inside the Vision class in General tab. You can set your enemies by adding their layers inside **Hostile And Alert Layers** and their tag name inside **Hostile Tags**. The **Layers To Detect** on the other hand is where you set the obstacles and what you want the vision to detect. If a layer isn't set, it will be seen right through the game object. **The hostile needs to have atleast one collider**. Multiple colliders are ok too. **More on this in Adding Enemies section.**

On pressing play, you'll find that your AI is walking around.

Tooltips exist on most properties. Just hover your mouse over any property and it'll popup more info.

Animations

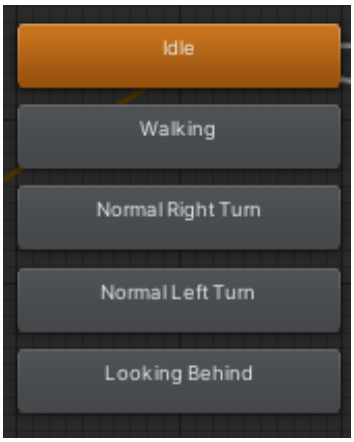
In some parts inside the inspector you'll find that you need to set the **Anim** and **AnimT** of a certain thing. Like these:



Now what is meant by these?

Let's start with the easy one. The ***AnimT*** is the animation transition time. The amount of time from the current animation to the animation in question.

The **Anim** is the animation name. What is known inside of Unity Engine as the *Animation State Name.* Which is this:



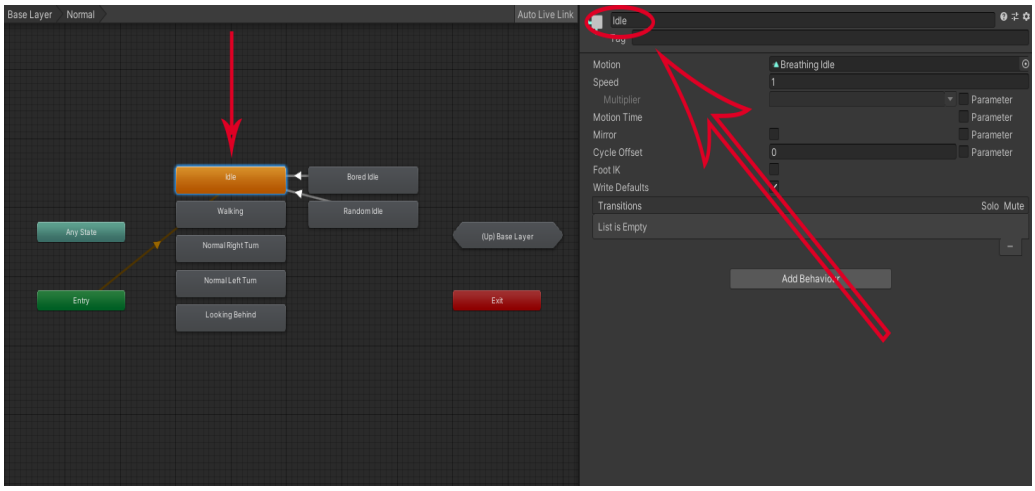
It's the name of your animation inside the Animator. That's it!

Make sure to enable loop in settings for animations that require looping such as (idle, running, walking, etc...)

Must Read: In most parts of Blaze this ***Anim*** field is a popup menu which automatically reads the animations inside your animator. So you simply pick, but TAKE NOTE: 1. the popup only reads first level of nested animations inside sub-states. That said, you can have as many different

sub-states as you like just **don’t nest sub-states inside sub-states.** 2. The popup only reads 200 animations if you want more, enter the ***BlazeAIEditor.cs*** script, search for ***animationStateNamesArr*** and set the array size to whatever you want.

You can change the animation state name inside the Animator like this:

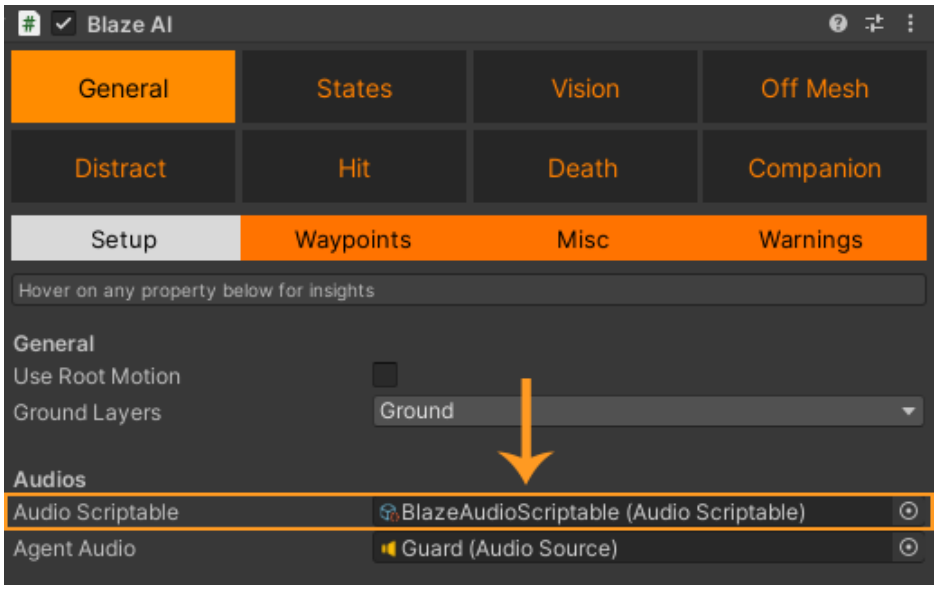


By clicking on the animation and then changing the name from the top right. **But, remember you have changed the animation state name so you’ll have to change it’s name in Blaze AI to match the Animator.**

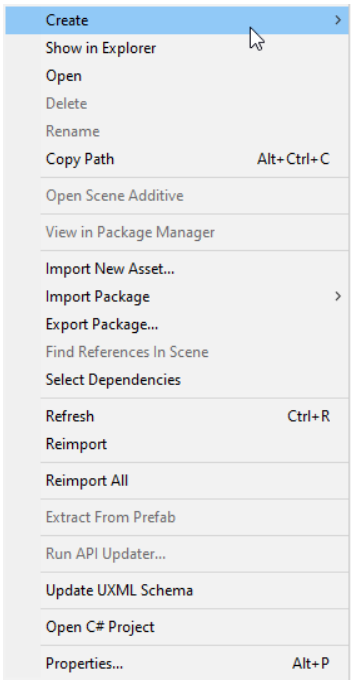
You don’t need to make transitions between your animations. Simply drag/drop your animations into the Animator and organize them as you please and write their names in Blaze. That’s it!

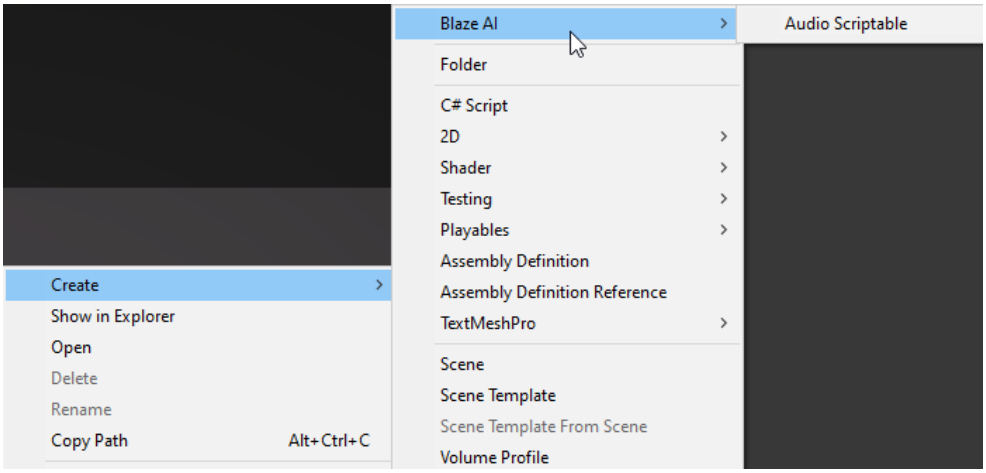
Audios

All audios to be played inside of Blaze and it's behaviours are set inside a scriptable object which is called an **Audio Scriptable**.



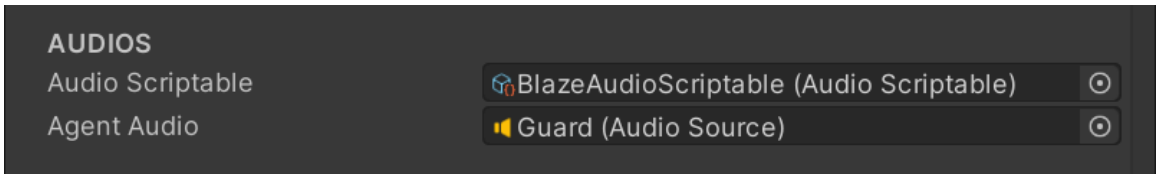
Blaze gives the option to create an Audio Scriptable and set your audio clips to all the necessary states and actions. Create an audio scriptable like this: (right clicking in the project space)





For each state/action, you can add an unlimited number of audios. When an audio call is made the system will choose a random audio in that state, if only one is set then that one will always be played. If empty, no audio will be played.

The central audio of the agent that will play all the audio clips is set automatically in the **Agent Audio** property.



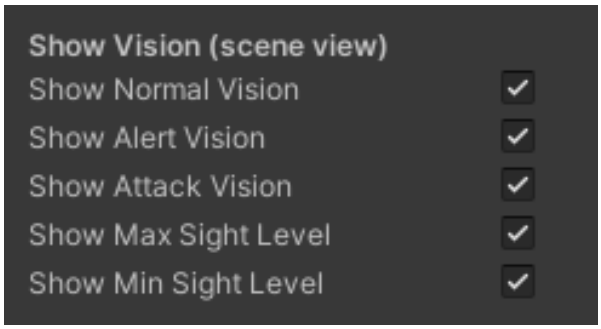
You can also choose to manually set another audio source to your liking that the AI will be using.

To play the patrol audios for Normal and Alert behaviours you should use the [Audio Manager](#).

Vision & Detecting Enemies

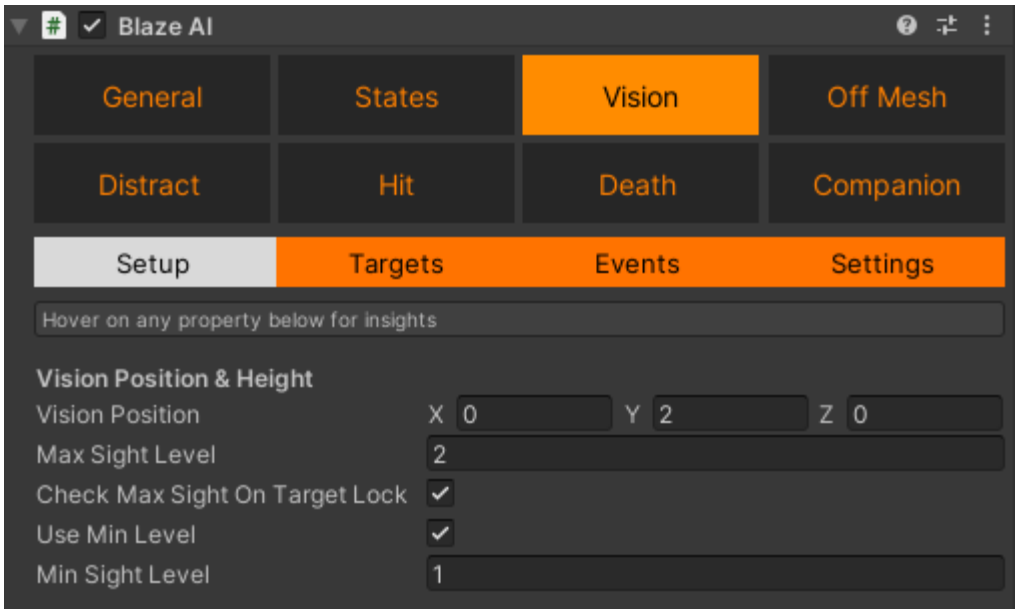
Simply go to the main Blaze AI inspector -> Vision tab and follow the steps.

Select the **Setup** sub-tab and make sure the **Show Vision** section down below is all selected as such:

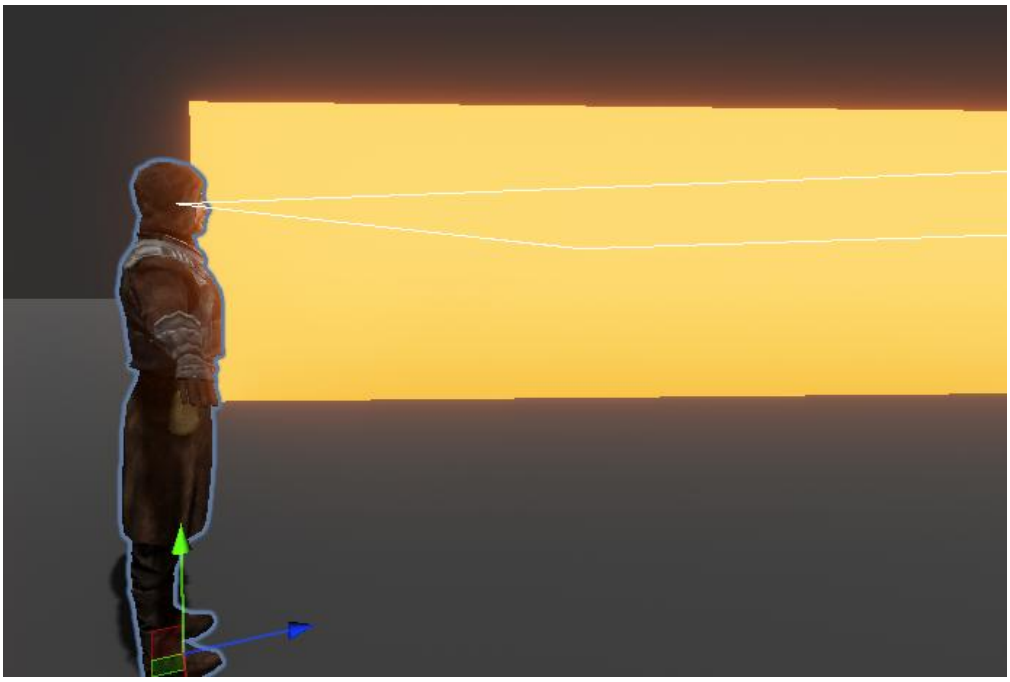


This will draw the vision of all states in the scene view so you can easily visualize and debug it.

Now you can set the ***Vision Position*** property and place the vision on the eyes of the AI. I set the Y axis to 2 as you can see.



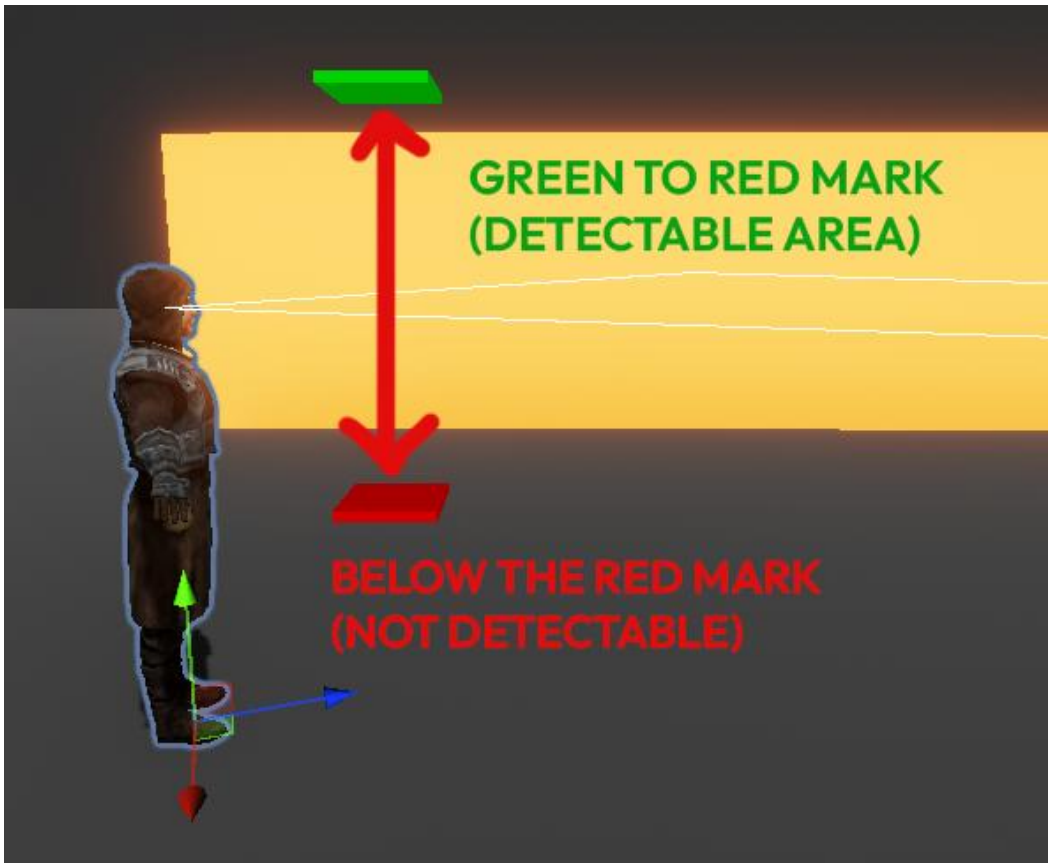
It should look something like this:



Set the vision angle and range of your AI for each state using these properties. **It's always best to have the attack state cone angle at 360 to detect the enemy in all directions in attack state.**

Now time to set the the **maximum** detectable vision level and the **minimum** one as well.

Turn to the **scene view**, you'll find the AI has two marks one in green and one in red. The one in green is the max detectable level and is set using the ***Max Sight Level*** property and anything **above** this green won't be detected. While the red is set using the ***Min Sight Level*** property and anything **below** this red won't be detected as well.

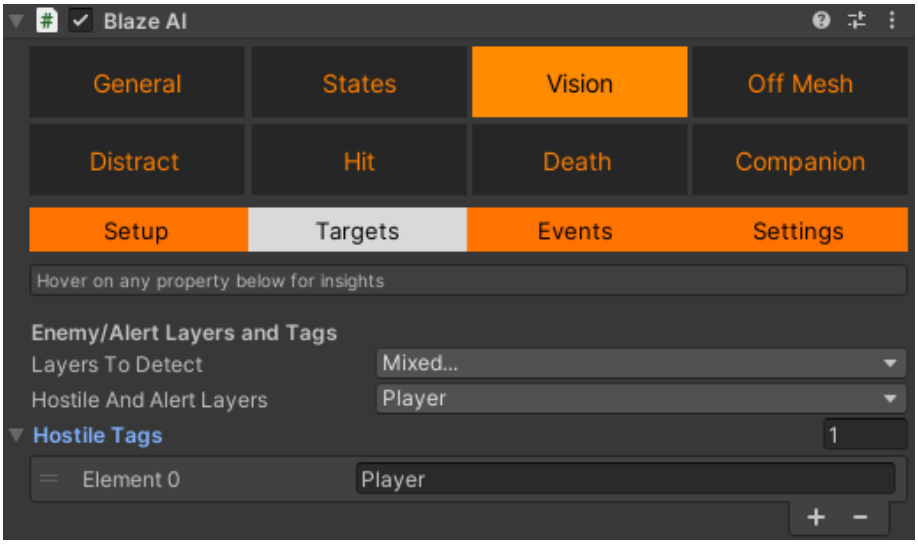


If *Use Min Level* is set to false then **everything below** the max sight will be detected and there will be no minimum detection point.

Now to detect the actual enemies go to the **Targets** sub-tab.

Set the ***Layers To Detect****:* this must contain all the layers you want the AI vision to check for including obstacles, walls, etc… **Any gameobject with a layer that isn't added here will be seen through. There's no need to add the enemy's layer here.**

P.S: for better performance, make sure you set the layers that are used as obstacles, ground, etc... Don't set to Everything or Default.



Set the ***Hostile and Alert Layers****:* this should contain the layer(s) of the enemy collider. So set the enemy's layer here. As seen in the picture.

In **Hostile Tags**, set the tag name of your player or whatever it is you want the AI to identify as hostile.

If you're making a VR game. Then disable ***Multi Ray Vision*** *from the* ***Settings*** *sub-tab as it may cause issues.*

To return the AI's current target do: ***blaze.enemyToAttack;***

ONE LAST IMPORTANT THING TO DETECT ENEMIES

Finally, your player/enemy needs to have at least one collider to be detected. Multi-colliders are ok. Enemy colliders can be set to ***Is Trigger****, it's ok. And that's all you need to detect an enemy.*

Vision Meter

Enabling **Use Vision Meter** in **Settings** tab – when an AI detects a target it'll increment it's vision meter from 0 to 1, it's speed is based on what you set. When the vision meter reaches 1 the target will be fully detected and the AI will engage. Very handy in stealth games.

Hover the mouse over each speed property and it'll explain what the speed is for.

APIs

To read what the AI's current vision meter is, simply read: ***blaze.visionMeter*** – it goes from 0 to 1.

To read what's the potential enemy the vision meter is targeting then read: ***blaze.potentialEnemyToAttack*** – returns *gameobject* or *null*.

Setting Up Melee/Ranged AI

Follow these steps to set up your melee/ranged AI.

- Go to the main Blaze AI inspector > States tab > click on **Add Behaviours** button.

- You will find that scripts have been added to the game object and set in the state behaviours in States tab.

- *If you're not going to use cover shooter mode then go ahead and remove the added Cover Shooter Behaviour and Going To Cover Behaviour scripts from the game object.*

- Make sure **Cover Shooter Mode** is turned off in the States tab.

- Now expand the **Attack State Behaviour** script and make sure you're in the *Movement tab*.

- Set the **Move Speed** & **Turn Speed** properties to whatever you like. The former is for how fast you want the AI to be in Attack State and this includes chases, moving to target location when called & closing in the distance to launch attack on target. The latter applies to the same mentioned it's just how fast the AI turns to path corners.

- The **Idle Anim** is the animation name to play for the AI in it's combat stance, waiting for it's turn to attack. Set that.

- The **Move Anim** is the movement animation name to play when your AI is chasing the player, getting called by another AI to target location OR moving to the player to launch an attack.

- *Now go to Attack tab*.

- **Ranged** property adapts calculations to make the AI behave like a ranged enemy. So *set to **true** if you want the AI to be ranged* or ***false** if the AI is to be melee*.

- **Distance From Enemy** property is the distance between the target and the AI where the AI will wait for it's turn to attack in it's combat stance *(Idle Anim)*. Also if the distance between the AI & target becomes more than that set in this property the AI will chase it's target to close the distance.

- **Attack Distance** is the distance you want between the AI & it's target during the actual attack. So for example if your AI is melee you want this to be quite small like 0.5 - 1. Because the AI needs to get nearer to target. When triggered to attack, the AI will move to close the distance and then launch the attack when the distance is met.

- **Layers Check On Attacking** is to be used more with ranged. This is for AIs to avoid hitting each other. So set this to the layer of the other AIs if you want to avoid friendly fire.

- **Attacks** is a list (which can be changed dynamically) where you set each attack animation name, the duration of each attack and whether you want an audio to accompany each attack. *One attack will be chosen in random on each attack cycle.*

- **Attack Events** is where you can set events to get triggered when launching the attack. Alongside the attack animation.

- **Attack In Intervals**: let's first understand why this is here. By default the AI adds a script called **BlazeAIEnemyManager** to any hostile it sees. This script manages the attacks of each AI to make them attack one by one. By default, the call time of this script is 5 seconds. So every 5 seconds a random AI is called to attack the target. This can be changed via inspector, it's a public property. You can add this script in editor time to your player and change the value. But, what if you want all AIs to attack with no regard of such limitation? This is where this property comes in. Enabling this will open up another property were you can set two values of min and max. A random number between them will generate on each cycle as a wait time and when finished the AI will attack no matter what. Even if there is another AI about to attack. This is also known sometimes as burst attacks. For a constant time set the two values to the same number. This is good for enemies like zombies where they all attack together no matter what and have a small wait time between each attack. Good for ranged AIs too**.**

Last thing to mention is the damage system is up to you. You need to make your own health for the AIs (check Health section in this docs & health script in Hit & Death demo) and the actual damage system (check Hit docs in this docs). In order for the AI to detect the actual targets check the Detecting Enemies section in this docs.

Setting Up Cover Shooter AI

Follow these steps to set up your cover shooter AI.

- Go to the main Blaze AI inspector > States tab > click on **Add Behaviours** button.

- You will find that scripts have been added to the game object and set in the state behaviours in States tab.

- *If you're not going to use the Attack State Behaviour which is used for melee & ranged then go ahead and remove the added Attack State Behaviour script from the game object.*

- Make sure **Cover Shooter Mode** is turned **on** in the States tab.

- Now expand the **Cover Shooter Behaviour** script and select the **Movement tab**.

- Set the **Move Speed** & **Turn Speed** properties to whatever you like. The former is for how fast you want the AI to be in Attack State and this includes chases, moving to target location and from/to cover. The latter (turn speed) applies to the same mentioned it's just how fast the AI turns to path corners.

- The **Idle Anim** is the animation name to play for the AI when it's waiting for it's shoot cycle.

- The **Move Anim** is the movement animation name to play when your AI is chasing the player, getting called by another AI to target location, moving to/from cover.

- **Now select the Attack tab.**

- **Distance From Enemy** is the max distance that the AI should keep at all costs. If the distance increases than what's set in this property the AI will chase it's target to close this distance then find cover in that proximity. The AI eliminates covers that are farther than this set value.

- **Attack Distance** is the actual distance the AI should move to during it's shoot cycle. Ask yourself, how near do you want the AI from it's target when it's shooting at it. As a cover shooter, it's always best to keep this the same value as ***Distance From Enemy***. But you can definitely set it to anything else.

- **Layers Check On Attacking** is for avoiding friendly fire. Before launching the shoot cycle the AI will fire a ray and check if any of the layers set in this property have been hit. If so, the AI will refrain from attacking until there is a clear path then it'll attack. You can set this property to the layers of other AI agents. So before an AI attacks it'll check if any of it's friends are in the way and stops if so. When the path is clear, it'll resume the shooting.

- **Shooting Anim** is the actual shooting animation name you want to play during shooting.

- **Shoot Every** is the interval of time in seconds for the AI to trigger the shoot cycle. Ask yourself: every how many seconds do you want this AI to shoot? This generates a random number between min and max values on each cycle. When the value is generated and the timer is done the AI will move to the player and shoot. For a constant time, set the two values to the same number.

- **Single Shot Duration** set the amount of time in seconds for the single shot. The shoot cycle consists of several shots.

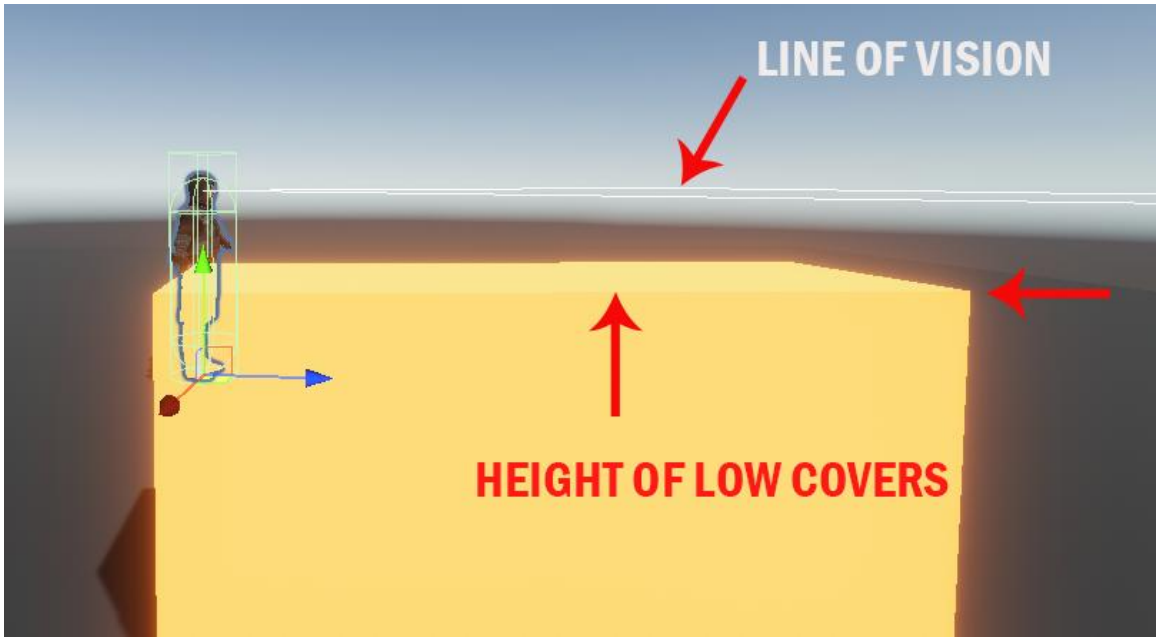
- **Delay Between Each Shot** the amount of time as delay before the next shot is triggered.

- **Total Shoot Time** the overall shoot cycle time. For how long do you want the AI to keep shooting at the enemy. Takes a number between min and max values and generates a random one in between. For a constant time, set the two values to the same number.

- **Attack Event** is where you set events that get triggered on each shot. This is where you should stick your bullets function that plays particle systems, damages enemies, fire a ray cast, etc…

Everything else is self-explanatory and has tooltips (hover by mouse) that give more info.

One tip in order to make the AI shoot above low covers is setting the ***Vision Position*** in **Vision** tab to be above the low covers height as seen in the picture.



This way after the AI takes cover and is time to attack it'll get up and shoot from low covers instantly without having to run around the cover to get a better view of it's target. **You'll learn how to setup covers in the next section just keep this in mind.**

> *Last thing to mention is the damage system is up to you. You need to make your own health for the AIs (check Health section in this docs) and the actual damage system (check Hit docs in this docs). In order for the AI to detect the actual targets check the Detecting Enemies section in this docs.*

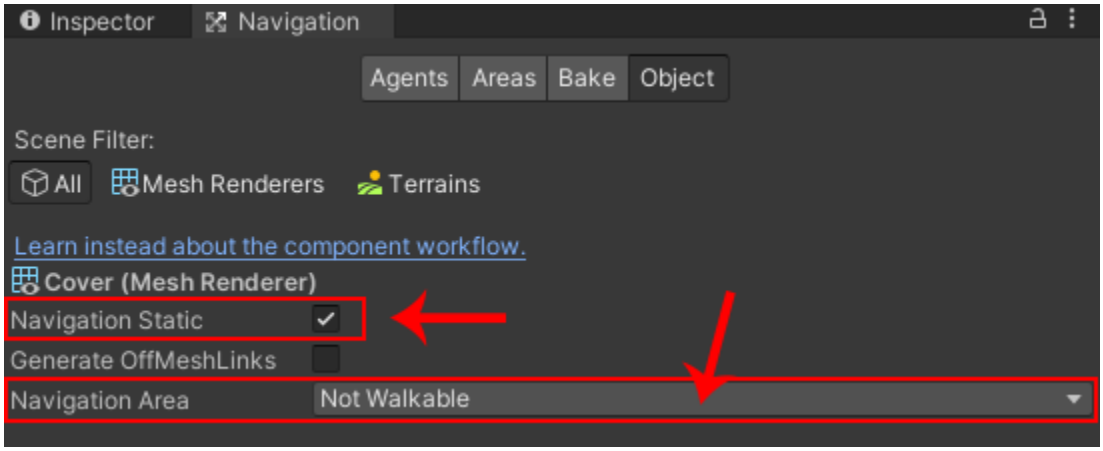
Setting up covers for cover shooter AI

Before following these steps make sure you have baked a navmesh on your plane. If not, follow the getting started section.

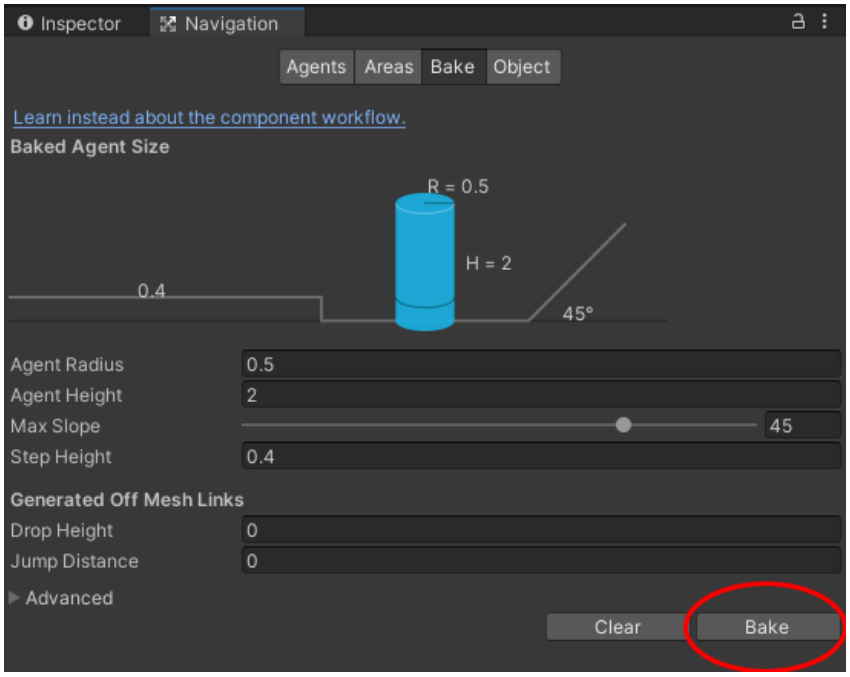
- Create your cover game objects or insert your cover models and give them a box collider.

- Then open the Navigation window using **Window** > **AI** > **Navigation**.

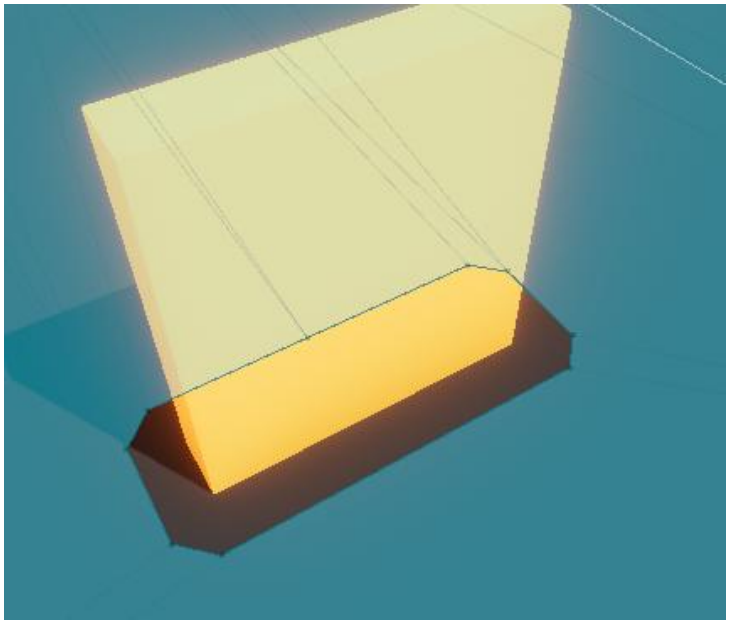
- Now that you've opened the navigation menu. Click on all of the cover game objects in the hierarchy and go to the **Object tab** and check on **Navigation Static** and set *Navigation Area* to **Not Walkable** like so



- Now go to the **Bake tab** and click on Bake.



- Now you'll find in the scene view that your covers have carved the navmesh around them as so.



- Last thing for covers setup is giving your covers a layer. It's a lot better to give your covers a unique layer and not set it to Default.

- Now that you have set up the covers it's time to go back to the AI. Expand the **Going To Cover Behaviour** script.

- Set the **Cover Layers** property to the layer of covers.

- **Hide Sensitivity** is how good you want the hiding spot to be. It's very rare that you'll be editing this. So just leave it as is as -0.25.

- **Search Distance** is the distance around the AI to search for covers. Enable **Show Search Distance** below it and in the scene view the radius will be shown as a light blue wire sphere so you can visually assimilate how good the distance is.

- **Min Cover Height** is the minimum height of cover to be eligible for search. To get the cover height of any game object simply add component **BlazeAIGetCoverHeight** and click on the button. It'll show you what height this game object is. *It needs to have a collider.*

- **High Cover Height** if the chosen cover height is **bigger** or **equals to** this value then the cover will be considered as a high cover and the high cover animation will play. If the chosen cover is less than this then it's a low cover.

- **High Cover Anim** the animation to play when the AI is hiding behind a cover with a height bigger than that of *Min Cover Height* property.

- **Low Cover Anim** the animation name to play when the cover height equals that of *Min Cover Height*.

- **Rotate To Cover Normal** if checked, when the AI reaches the cover it'll rotate so that it's back is to the cover.

And that's it now your AI can perfectly detect covers and go hide behind them. Everything else is self-explanatory and has tooltips (hover by mouse) that give more info.

Manually Setting Cover Positions

Sometimes you may need to add the cover positions manually instead of relying on the automated system. This may be because you have an uneven/complex mesh making it hard for the system to automatically choose an accurate one. To add a manual position:

- Click on your cover gameobject
- Add component: ***BlazeAICoverManager***
- Add positions in the *CoverPositions* array.
- One position one each object side will do.
- Enabling *ShowCoverPositions* will show the positions in the scene view and let you position them using handles.

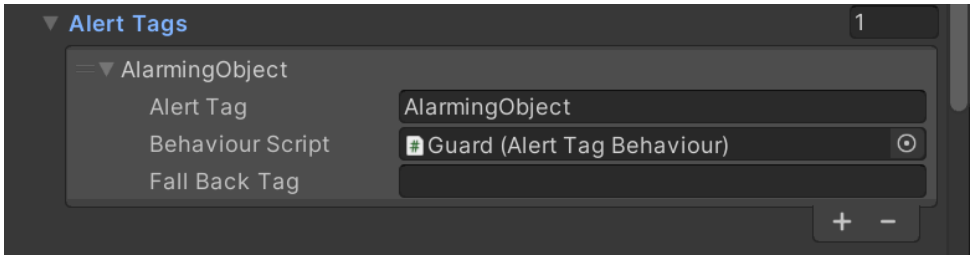
That's it! Now when the AI goes to cover it automatically chooses an auto-point and will instead go to the nearest manually-set one.

Alert Layers/Reacting To Certain Tags

If you've read the previous Adding Enemies part you may be asking, what are Alert Layers?

Alert Layers are the layers of Alert Tags (found below Hostile Tags in Vision class). Alert Tags are game objects with tag names that you want the AI to react to and turns the AI to **Saw Alert Tag** state. The AI will trigger the alert vision and play the alert state's move animation. **Check Demo 3 (full version only).**

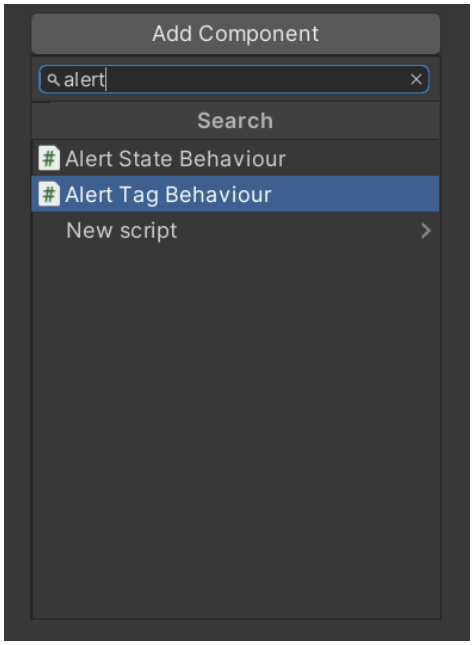
You start by adding the tag name of the game object you want to react to in the Alert Tag property inside the Alert Tags class in Vision.



As you can see I want the AI to react and get alerted by any game object with the tag name **AlarmingObject**.

The second property is the behaviour script you want to enable when this tag name is seen. You can set different behaviour to each alert tag. Blaze comes with a default script with numerous properties to customize the behaviour.

Simply add component to your AI: Alert Tag Behaviour



Then after adding the component, drag/drop to the **Behaviour Script** property in Alert Tags.

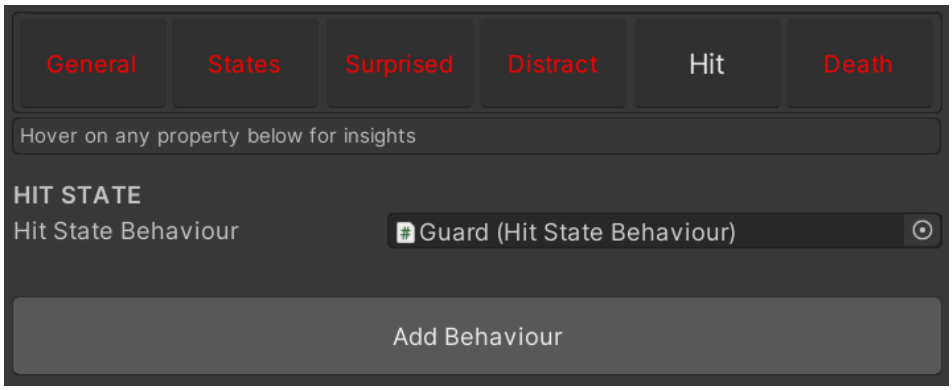
Last thing is the **Fall Back Tag** property. When the AI sees a game object with an alert tag it immediately changes the object tag to the fallback tag in order not to have itself or other AIs reacting to it all over again. Whatever you set in this property will be the new tag name of the game object. By default, if you leave this property empty the game object will fall back to “Untagged”.

That’s it! Now when the AI sees an alert tag the behaviour script will enable and when the duration ends. It’ll return to Alert State.

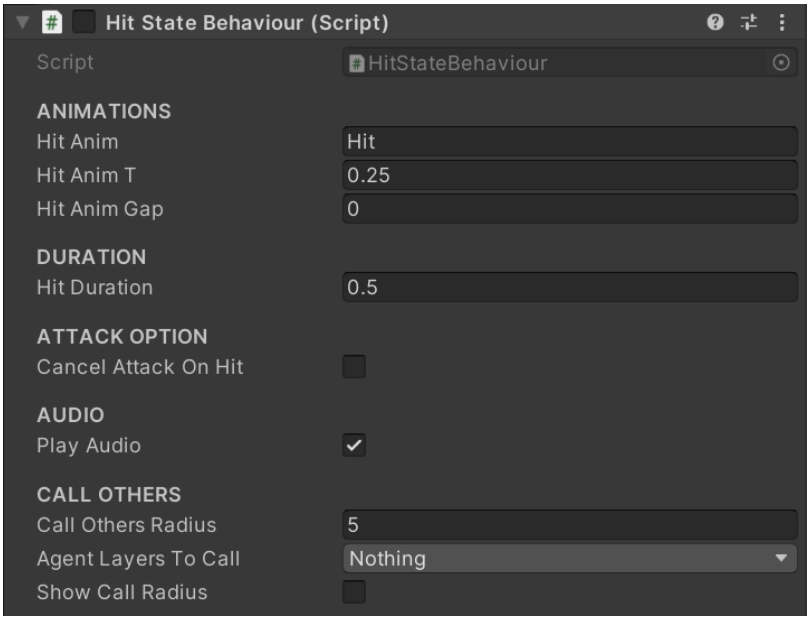
Hit

First of all, to enable the AI to turn to the hit state you need to add it's behaviour first. Because like any other state, a state needs a behaviour that instructs it how to act in that specific state. Really simple. Example demo to study is Hit & Death demo.

You start off by going to the Hit tab in Blaze and clicking the Add Behaviour button. This will add the Hit State Behaviour script component to your AI game object and set it to it's property.



This is the script after being added to the AI.



Like other behaviours, the script will be disabled. That's good.

For turning the AI to the hit state, you simply call the Blaze public method *Hit(GameObject hitter = null, bool callOthers = false)*.

This will turn the AI to the hit state and play the hit animation and audio and stay in that state for the time set in the **Hit Duration** property *(in Hit State Behaviour script)* and then exit from it.

The API as seen above has only two parameters:

***hitter* parameter:** If *hitter* is passed, upon exiting the hit state the AI will turn to attack state and move to the location of *hitter* and check out the location. If not passed, upon exiting hit state the AI will turn to alert and continue patrolling. It's by default set to *null*. **You can use this to set whether you want the player attacks to be anonymous or not.**

```
// AI will move after hit state to check location
blaze.Hit(player.gameObject);

// AI will turn to alert state after hit state and continue patrolling
blaze.Hit();
```

Both are valid but depends on what you're trying to do.

***callOthers* parameter:** If set to true, it'll call the nearby agents. if *hitter* is passed as well, it'll call AIs to the hitter location. If *hitter* isn't passed, it'll call AIs to it's very own location. **Configure the call radius and agent layers from the inspector of Hit State Behaviour.**

```
// will hit AI and call other AIs to player location
blaze.Hit(player.gameObject, true);

// will hit AI and call other AIs to current AI location
blaze.Hit(null, true);
```

For ragdoll knock outs that are part of the Hit Behaviour please check the ragdoll section.

Health

What about health you're asking? well, health is up to you. That means you can use the one that already comes with the asset. You can test it in **Hit & Death demo**. The script is located in **Demos > Assets > Scripts > Health.cs**. Or you can write your own or use your favorite health asset. Blaze gives you freedom of choice.

This also means that you need to write another simple script that calls the **Hit()** of Blaze and decrease the points of your health script. Let's check all this out one by one.

First of all a health script is as simple as:

```
using UnityEngine;

public class Health : MonoBehaviour

{

    public int healthPoints = 100;

}
```

This health script or similar should be on your AI. The idea is on attacking you decrement this **healthPoints** variable by the amount of attack damage.

Then you should have some sort of a hit manager function **on your player** in another script that handles both of decrementing the health points and calling the Hit state of Blaze.

Something like:

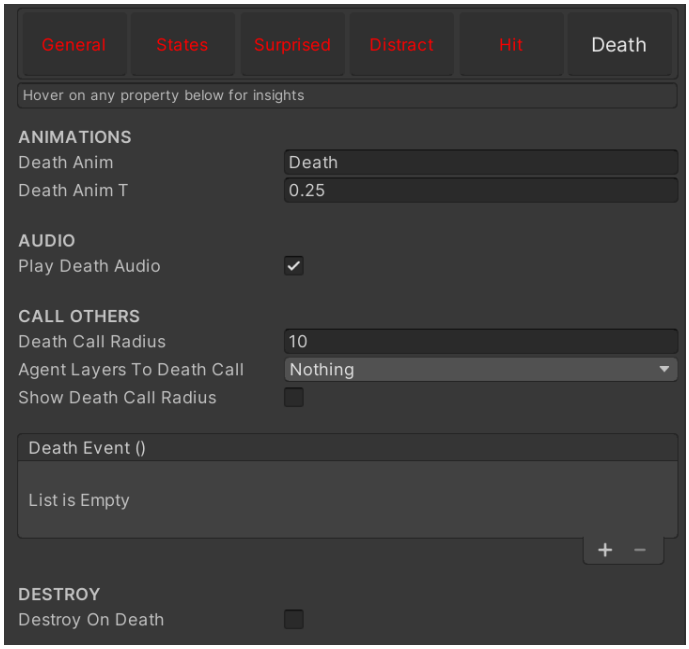
```
public void HitAI(int damagePoints)

{

    blaze.Hit(gameObject);

    healthScript.healthPoints -= damagePoints;

}
```

So this would be on your player and this is what you call when your player hits the AI.

Death

You don’t have to setup any behaviour. You simply call the public blaze method *Death(bool callOthers = false, GameObject player = null)*. **Check the Death demo. *For ragdoll death, please check ragdoll section*.**

Setting up the properties for death is in the Death tab in the main Blaze AI inspector.



Parameters:

Death() method takes two parameters and both are **optional** and have default values of **false** and **null** respectively.

callOthers: is whether you want to call other AIs to a location when AI is dead. You pass either **true** or **false**. False is default. Configure the radius and layers of calling from the inspector.

player: being the player game object to send other AIs to check it's location if the first parameter (callOthers) is true. It takes a **game object** and is by default set to **null**. **If this is not passed while callOthers is true the AI will call others to it's own location.**

// will kill AI and call other AIs to current location

blaze.Death(true);

// will kill AI and call other AIs to player location

blaze.Hit(true, player.gameObject);

You can also have a script on your AI that checks for health points. If it's less than or equal to 0 then call Death().

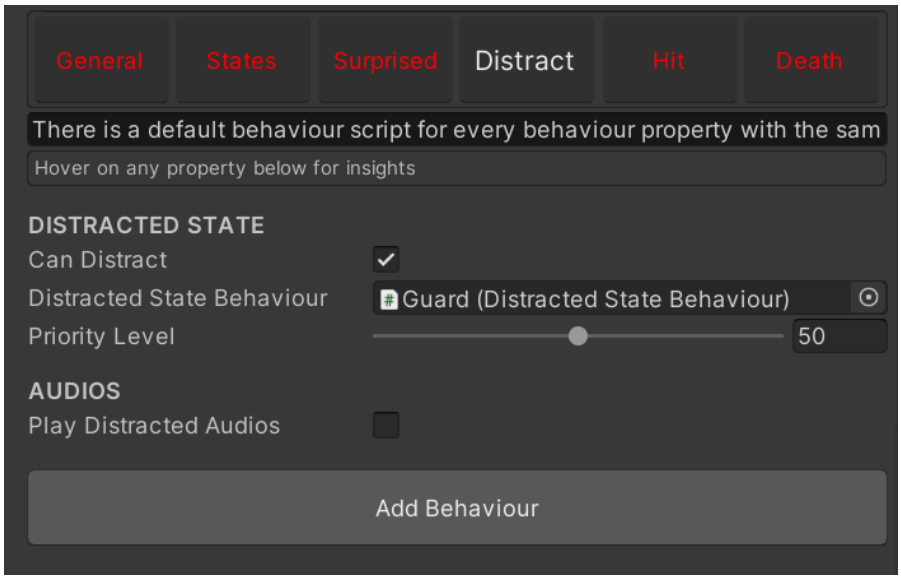
```
void Update()
    {
        if (healthScript.healthPoints <= 0) {
            // this won't call others since nothing is passed
             blaze.Death();
        }
    }
```

Of course the best way to do this is having healthPoints be a property to begin with and check for the health points inside the setter. But this way works too and it's easier if you're a beginner.

Distractions

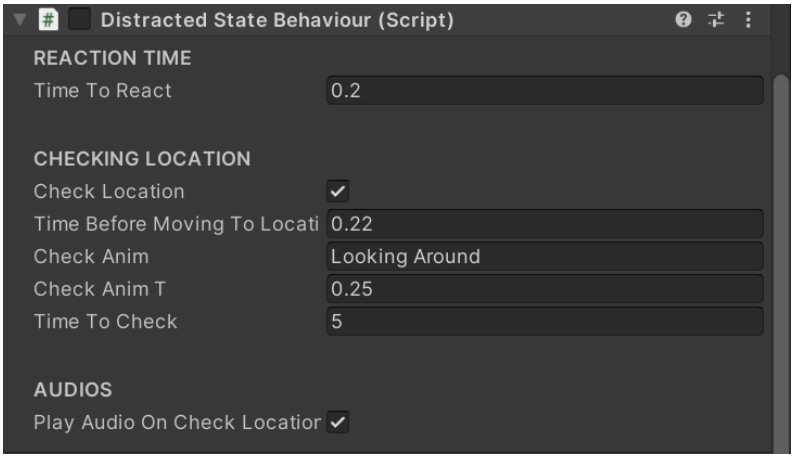
First of all go to the Distract tab in Blaze AI inspector.

Enable **Can Distract.** Then click on the **Add Behaviour** button.



This will add the default distracted state behaviour to your AI and set it to it's state property.

The added script is how you want AI to act when distracted. So fill it as you want.



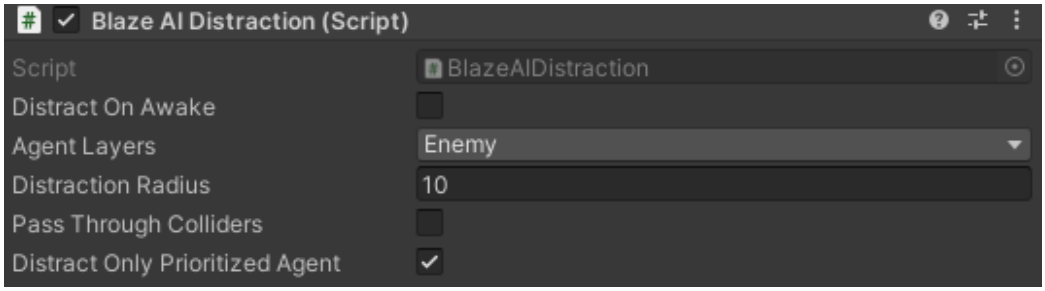
Now there are two ways to distract an AI.

You can either call the *Distract(Vector3 location, bool playAudio)* method on a single-specific AI by doing:
blazeScript.Distract(locationOfDistraction, true);

The first parameter is the location of the distraction.

The second parameter is whether the AI should play audio or not.

The second and most preferred way and also **the way to distract groups** is using the script: **Blaze AI Distraction**. Add this script to any game object/location you want to be the distraction.



After setting the properties (we'll get to them) you trigger the distraction using the public method of the script: ***TriggerDistraction()***. So you can do:

```
BlazeAIDistraction script = GetComponent<BlazeAIDistraction>();

script.TriggerDistraction();
```

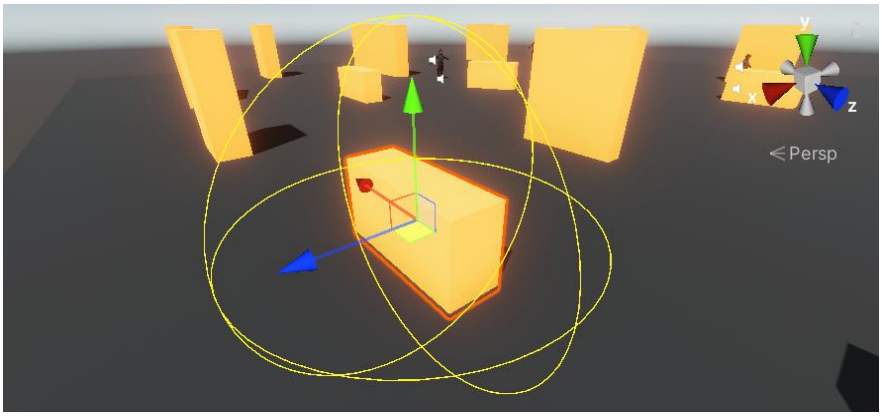
This is the preferred way as it does most of the work for you and also enables several AIs to be distracted.

Or you can trigger the distraction on awake using the first property you see in the image.

Now for the properties:

Agent Layers: the layers of the AIs you want to distract.

Distraction Radius: the radius that will check and distract AIs. You can see the distraction radius in the scene view as a yellow wire sphere that changes with the value of this property. So you can visually see how big the distraction radius will be. As so:



Pass Through Colliders: do you want the distraction to pass through walls and objects and distract the AI or not?

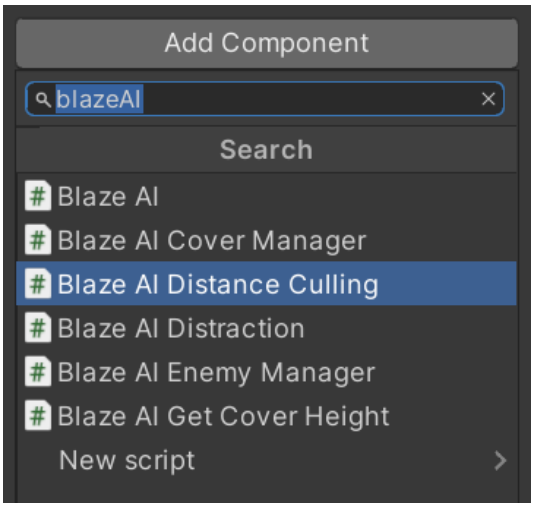
Distract Only Prioritized Agent: If enabled, only the AI with the highest distraction priority in a group will turn and face the distraction. If disabled, the entire group will face and look at the distraction but only the highest priority will check the location.

For seeing how distractions work in action check the Distractions demo.

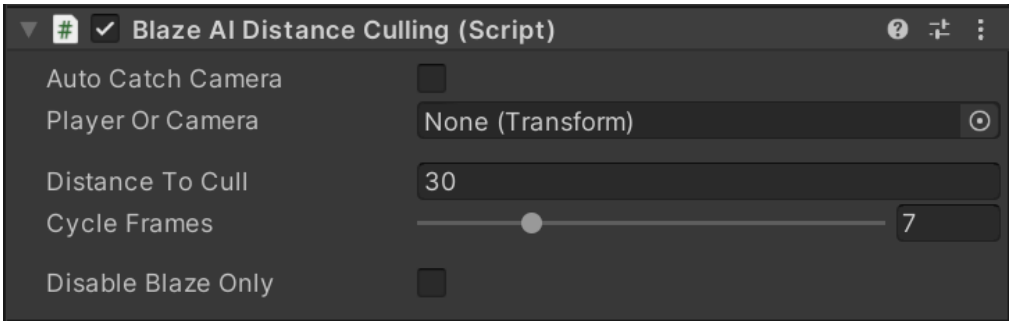
Distance Culling

This is a great system to drastically improve the performance of your game by disabling the AIs that are far away from the player or camera and re-enabling them when in range. It's also extremely easy to setup. **Take note: this also has APIs so check the APIs section.**

Start off by creating an empty gameobject in your scene and adding to it the **Blaze AI Distance Culling** script.



This will be the added script on your empty gameobject.



Distance culling uses either the player or the camera to calculate the distance to the AIs and it's up to you to choose which one is best depending on your game.

If the camera is best you can simply enable **Auto Catch Camera.** This will get the main camera on awake. So no need for any more manual work.

However, if your **camera gets spawned during runtime**. Disable Auto Catch Camera and when the camera is ready and spawned have a function in any script that does:

```
BlazeAIDistanceCulling.instance.playerOrCamera = Camera.main.transform;
```

If you want to compare the distance to the player character. You can disable Auto Catch Camera and stitch your player transform to the property **Player Or Camera** that appears *as seen in the image of page 21.*

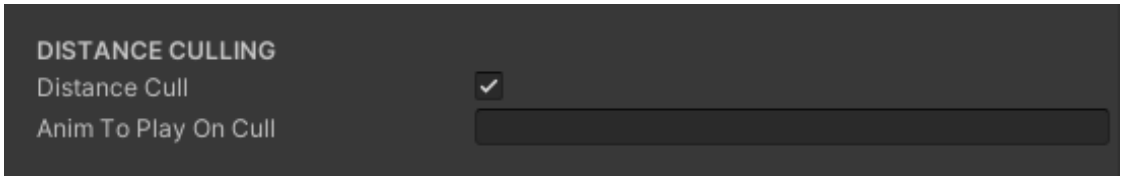
Distance To Cull is the distance you want to disable the AI when it exceeds this value.

Cycle Frames is a way to further improve performance by running the culling cycle every set frames. **By default it runs every 7 frames**. You shouldn't play with this unless as a last resort for bad performance in your game.

Disable Blaze Only will disable blaze component only and play the first idle animation of either normal or alert state. Depending on which state you set to use on Awake. Enabling this will make your culling look more natural with no pop-ins since it doesn't disable the game object. (will make your AI look as if it's waiting)

Now you have set the "central manager" for the distance culling. What's left is instructing the Blaze AIs to use this feature.

Go to your AI, open up the Blaze inspector in the General tab. Scroll down and enable **Distance Cull.**



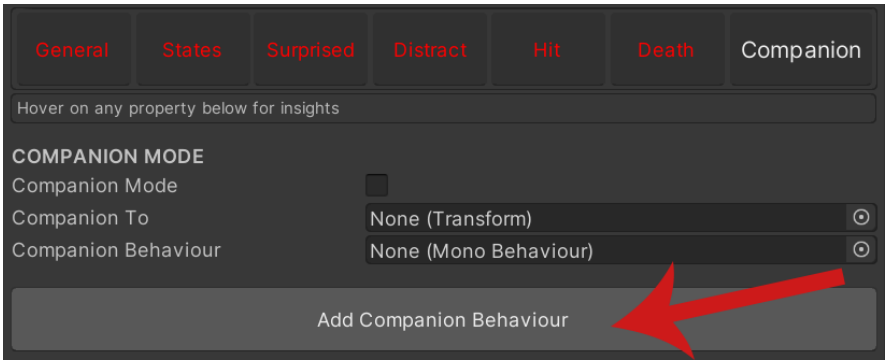
When you enable **Distance Cull**, a new property appears ***Anim To Play On Cull***. In this property set the animation name you want to play when the AI is culled. **This will only be considered if *Disable Blaze Only* is enabled in the main culling manager that we saw previously. You can also leave it empty if you don't want to set an animation.**

And that's it! Now as you play the game and move your player or camera further away from any AI, it'll disable that AI and re-enable when in range.

Companion Mode

Using companion mode you can turn any Blaze AI to your friend and make it fight alongside you. You can even use it to make an AI a companion of another AI.

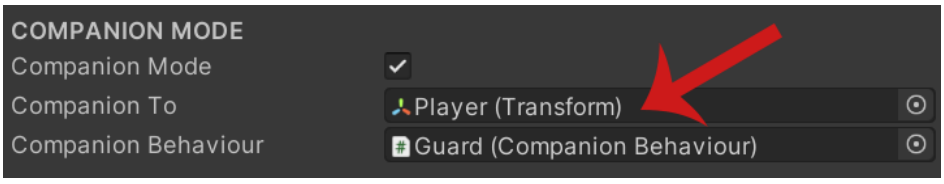
Start by going to the companion tab and click on **“Add Companion Behaviour”**



You will notice 2 things after clicking.

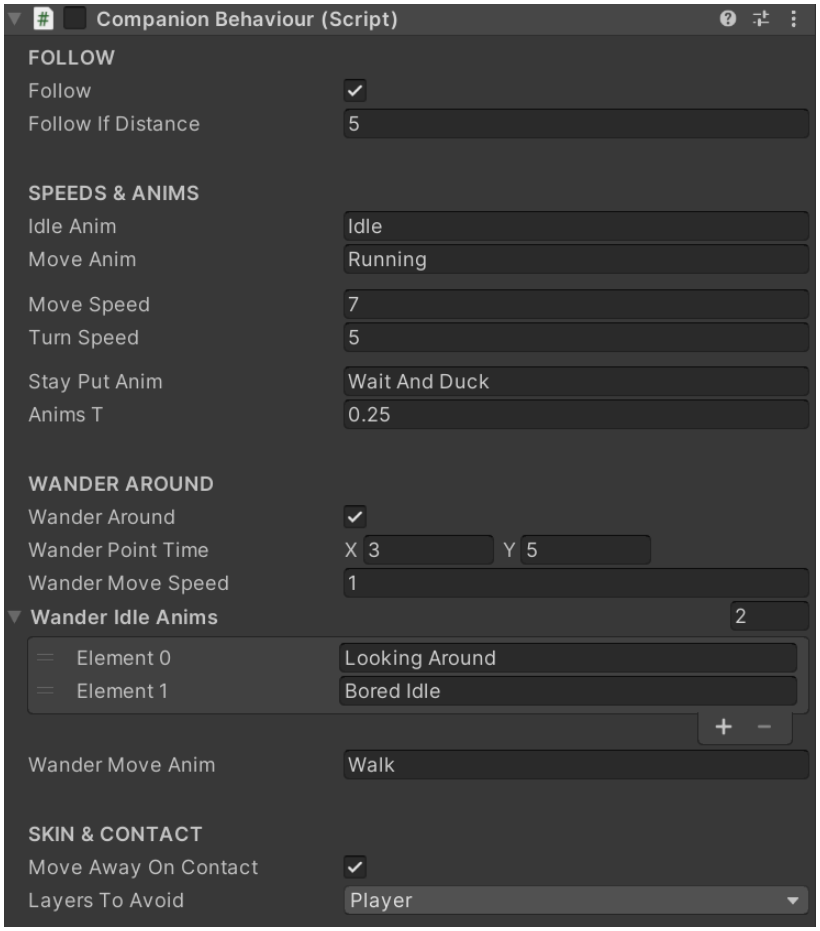
First is that the *Companion Mode* property has been set to true. **Second** is that the *Companion Behaviour* property has been set to a newly added script.

Next is drag and drop your **Player** (or any other) to the *Companion To* property. This means setting which game object you want the AI to be a companion to.



This also works in runtime. So you can change it dynamically.

Now we are done with the main inspector part of things. Now go to the newly added script **Companion Behaviour** to set the properties**.**



Properties:

Follow : by default it is set to true and this means the AI will follow the companion. If set to false, this means the AI has been commanded to stay put and the AI will oblige and stay put while playing the Stay Put animation indefinitely until follow is back to true again.

Follow If Distance : Set the distance that when exceeded the AI should follow while playing the *Run Anim*. When the distance is less the AI will stop and play the Idle Anim.

Walk If Distance : If the distance between the AI & companion is less or equal to this, the AI will walk using the *Walk Anim* and *Walk Speed*. This must always be greater than ***Follow If Distance*** property.

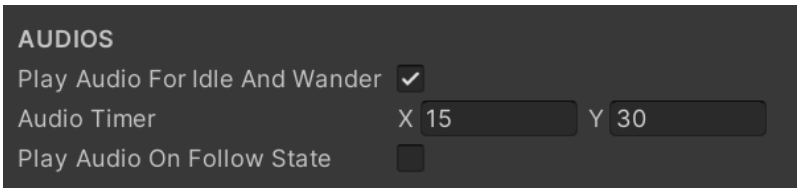
Wander Around : Using this option you can make the AI wander around the player when the distance has been meet. This can add more life to your game as the AI will be wandering around. The wander radius is the AIs navmesh agent height * 2 + 0.5.

Wander Point Time : The amount of time to spend in each wander point before moving again. A random value will be generated between the two set values for each wander point. For a constant time set the two (X & Y) values to the same value.

Move Away On Contact : Setting this property to true will make the AI move to a random position when it comes to contact with the below set layer. *You can use this to make the AI move when the player comes in contact.*

Layers To Avoid : When the AI comes in contact with any of these set layers it will move to a random position. *You can use this to make the AI move when the player comes in contact.*

Audios



Play Audio For Idle And Wander : Make your companion play a random audio every set time (Audio Timer) when idle or

wandering. Set the audios in the audio scriptable. *Check Audio section in this docs to know what the audio scriptable is.*

Audio Timer : A random time will be chosen between the two values on each cycle. For a constant time set the two values to the same number.

Play Audio On Follow State : This will make the companion play an audio when the follow state gets changed. In the audio scriptable you will find the two properties: **Companion On Follow** and **Companion On Stop.** In these you can set audios for each one. So for example if you set the follow state to false. You can make the AI say “Alright, I’ll stay here” as if it’s being commanded and when follow gets set to true it can go like “I’m on my way”.

How the companion system works?

Simply put: when Companion Mode is enabled the Companion Behaviour will run in normal & alert states instead of their default behaviours. As for the attack state, the default attack behaviour runs in order to make the companion attack other enemies alongside it’s companion.

Companion APIs?

The companion AI supports the APIs of any other Blaze AI. You can use the APIs to call it to a certain location, set it to attack an enemy, etc… Please check the APIs section in this document and use the API you like.

Public Properties & APIs

All classes/variables in the inspector can be accessed programmatically using the camel-case convention. Making only the first letter small case.

For example:

Use Root Motion -> blaze.useRootMotion

Sight Level inside of Vision class *-> blaze.vision.sightLevel*

Here are handy public properties & APIs (methods) to call:

Properties

state – returns a **State** enum of either:

State.normal

State.alert

State.attack

State.goingToCover

State.distracted

State.surprised

State.sawAlertTag

State.returningToAlert

State.hit

State.death

State.spareState

animManager.currentState – returns a string of the name of the current animation.

enemyToAttack – returns the gameobject of the enemy the AI is targeting.

potentialEnemyToAttack - returns enemy gameobject the AI is detecting if ***Use Vision Meter*** is enabled.

waypointIndex – returns (an int) the current index of the waypoint.

enemyColPoint **–** returns the collider point of the enemy detected. Can be used for last enemy position.

visionMeter - returns the value of the vision meter. If ***Use Vision Meter*** is enabled. Goes from 0 to 1. Increments to 1 when an enemy is detected and decrements to 0 if nothing detected.

agentAudio - Returns the main **AudioSource** of the AI that Blaze uses (dynamically generated on start) to play the audios.

distanceToEnemy - Returns the distance (float) between the AI and the targeted enemy. Use this with enemyToAttack to make sure there is a targeted enemy in the first place.

isAttacking - Returns true (bool) when the AI is moving to attack position or is already attacking.

isAttackingAnim - Returns true (bool) when the AI attack animation is playing.

sawAlertTagName - Returns the name (string) of the seen alert tag.

sawAlertTagPos - Returns the position (Vector3) of the seen game object with alert tag.

Cover Shooter Behaviour properties: (get CoverShooterBehaviour first then call)

hitPoint – Returns the ***Vector3*** point AI is shooting at.

shootingAt – Returns the ***gameobject*** it's shooting at. Useful to know whether the AI is shooting the player or their cover.

APIs

MoveToLocation (Vector3 location, bool randomize = false) - Move the agent to a location. The second parameter is whether you want to randomize location point. This is useful to avoid several AIs stopping at the exact same point.

IgnoreMoveToLocation () – Use this to ignore the previous forcing of moving to a location.

StayIdle () – Force the AI to stay idle and then move again after idle time has finished. ***This method can't be used if the AI is in attack state or going to cover state.***

IgnoreStayIdle () – Ignore the stay idle call and let the AI go back to patrolling.

IsIdle () – Returns a bool to check whether the AI is idle or not. Idle is when the AI reaches a waypoint and waits for the idle timer to finish before patrolling again or calling the StayIdle() API.

Distract (Vector3 location, bool playAudio=true) – Distract a single-specific AI to a certain location.

IsOnOffMeshLink() – Returns a bool whether the AI is on an off mesh link or not.

Attack () – Force the AI to attack it's target. ***This can only be used when the AI already has a target or else what is it going to attack?*** Use this with the check ***enemyToAttack != null*** to ensure the AI has a target.

StopAttack () – Stop the AI's attack.

ChangeState (string state) – Using this method you can change the AI's state between normal and alert only. The method takes a string of either "normal" or "alert" and will change the AI's state to that specific passed state.

SetTarget (GameObject enemy, bool randomizePoint = false, bool attackVisionForFrame = false) – Set an enemy for the AI and go check it's location. The second parameter is whether you want the AIs to stop at the location but with a little randomization to avoid crowds of AI in the same exact point. If the third parameter is passed as true, the AI's vision will turn to that of attack state for a single frame and if it catches any hostile in that frame, it'll engage. This is especially useful for cover shooters where the AIs attack vision ignores obstacles and covers. So passing the second parameter helps the AI catch the enemy directly instead of going to it's location first.

Hit (GameObject enemy = null, bool callOthers = false) – Use this method to hit the AI. *For more information check the Hit section in this documentation.*

KnockOut (GameObject enemy = null, bool callOthers = false) – Calling this will knock out the AI.

Death (bool callOthers = false, GameObject enemy = null) – Kill the AI. *For more information check the Death section in this documentation.*

DeathDoll (float timeToRagdoll, bool callOthers = false, GameObject enemy = null) – Kill the AI with animation and then ragdolls midway. *For more information check the Ragdoll section in this documentation.*

AddDistanceCulling () - This will add the AI to the distance culling manager.

RemoveDistanceCulling (bool enableObject = false) - Remove this AI from the distance culling manager. Takes an optional parameter. If passed as true, will also enable the game object if it's been disabled by the distance culling. Default is false.

CheckDistanceCulling () - Check whether this AI is added to the distance culling manager or not. Returns either true or false.

animManager.Play(string animName, float animTransitionTime) – using this public method you can play any animation you want even if Blaze is disabled.

TakeCover (GameObject playerEnemy) – makes the AI go to the best cover.

Additive Scripts

These are extra scripts provided that increase the functionality of Blaze AI.

BlazeAIEnemyManager – this is added by Blaze when it sees a hostile game object, if it's already added to the hostile object then Blaze will not add it again. This script component is the enemy manager that makes the Blaze AIs attack the hostile one at a time. You can add this before-hand in editor time to be able to control the interval of attacks of AIs. ***Setting callEnemies property to false will prevent any AI from attacking the target.***

BlazeAIDistraction – add this script to any game object you want to act as a distraction. Trigger this distraction programmatically using *TriggerDistraction().* This is how it's triggered in full:

```
GetComponent<BlazeAIDistraction>().TriggerDistraction();
```

This will make any Blaze AI be distracted and look at the distraction trigger source direction. You can obviously within the function that calls TriggerDistraction() also play an audio. This will simulate or look like as if the AI has heard a sound and got distracted by it. Sound distractions, this is how it works in games.

BlazeAIGetCoverHeight – Add this script to any cover obstacle with a collider and click on Get Cover Height button and it'll print you it's height in the inspector. Use it with cover shooter setup to be able to set the high and low cover heights.

StayInPosition - This component keeps the AI still in it's position as long as it's in normal and alert states. Add this script to your AI where Blaze is.

BlazeAICoverManager – Blaze AI that are in cover shooter mode add this script to any obstacle they're about to take cover in and set their transform in the occupiedBy property. When leaving the cover their transform from the same property mentioned earlier.

BlazeAIDistanceCulling - Add this script to any empty gameobject in your scene then enable distance cull in the Blaze inspector of the AIs. The AIs will disable when there distance is more than that set in the distance culling script.

Internal APIs for Behaviours

These are APIs in blaze that you can use when writing your own behaviour scripts. You will see all these methods in fact being used in the standard behaviours.

MoveTo (Vector3 location, float moveSpeed, float turnSpeed, string moveAnimName=null, float animT=0.25f, string direction="front") -> Moves AI to location. **Returns false while moving to location and true when AI reaches location.**

location: destination to move to.

moveSpeed: movement speed while moving to destination.

turnSpeed: speed of rotation while moving to destination.

moveAnimName: name of the movement animation to play.

animT: transition time from current anim to move anim.

direction: sets the direction vector of movement. Takes either “front”, “backwards”, “left” or “right”. By default set to front.

TurnTo (Vector3 location, string leftTurnAnim=null, string rightTurnAnim=null, float animT=0.25f, float turnSpeed=0) -> Turns the AI to a direction while playing animation. ***Returns false while turning and true when turning is finished.*** *The method will automatically determine which turn anim to choose from (left or right)*

location: the location to turn to.

leftTurnAnim: turning left animation name.

rightTurnAnim: turning right animation name.

animT: Transition time from current anim to turning anim.

turnSpeed: the speed of turning.

*RotateTo (Vector3 location, float speed) ->*Will rotate the AI to location.

location: the location to rotate to.

speed: rotation speed.

NextWayPoint() -> Sets the public ***waypointIndex*** property to the next waypoint index and **returns Vector3 of the destination.**

CheckWayPointRotation() -> Check whether the waypoint reached has a waypoint rotation or not. **Returns true if current waypoint has a rotation and returns false if not.**

WayPointTurning() -> turns the AI to the waypoint rotation and **returns true when done.**

SetState(State stateToTurnTo) -> sets the state of the AI.

> **stateToTurnTo:** the state you want the AI to turn to. Takes in (BlazeAI.State.normal, etc…) check the State enum in Blaze AI script.

Switching Behaviours/Weapons & Fleeing

Blaze's design gives you the ability to switch behaviour scripts of any state at run-time. Giving more freedom to the behaviour of your AI.

So, for example, we want the AI to flee when it's health is below 30% and is in attack state. This will require a complete change in the attack-state behaviour. Which Blaze is completely fine with.

I will create a new script that will be the flee behavior for the AI that moves it to the location when enabled. This script will play a running animation and does:

```
// to move the character
navmeshAgent.Move(moveLocation);
```

I will add this new script to the AI and create another new script that tracks the health and switches the attack state behaviour to the new behaviour when health is less than 30%.

```
MonoBehaviour fleeBehaviour;
BlazeAI blaze;
void Start() {
        fleeBehaviour = GetComponent<FleeBehaviour>();
        blaze = GetComponent<BlazeAI>();
}
void Update() {
        if (health <= 30) {
                Blaze.attackStateBehaviour = fleeBehaviour
        }
}
```

With the swapping made to the attack state behaviour, Blaze will automatically disable the old script behaviour and enable the new flee behaviour script. Now, what drives the attack state is the new behaviour which takes control. Moving the AI to the location far from it's target.

Changing Attack Weapon or Attack Mode

Another quick and easy form of this behaviour switching is enabling/disabling ***coverShooterMode*** property (in Blaze) which will make the AI switch between Attack State Behaviour & Cover Shooter Behaviour in game time. You can also add to a single AI multiple Attack State Behaviours and switch the one linked to Blaze with another one. This is how to make the AI change attack methods/weapons. For actual weapon change animation, combine this with spare states.

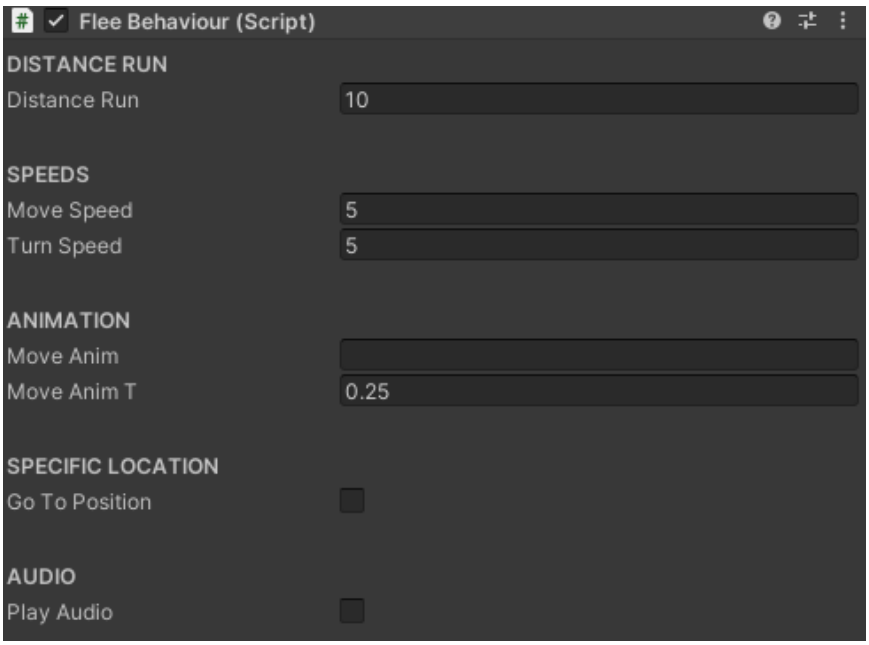
Fleeing

Now, it was important for you to read the first part of this section (Switching Behaviours) before getting to this part. So you know that you can change behaviours at run time and you can make an enemy AI that attacks naturally and then under certain circumstances make them flee.

That said, a much more advanced flee behaviour script already comes with Blaze that you can use.

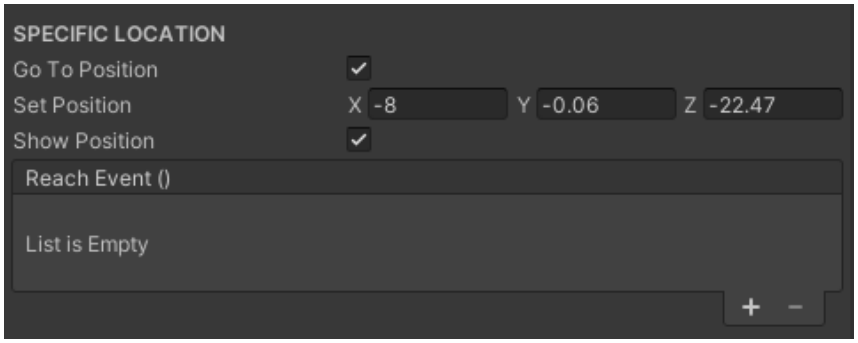
Let’s say, we want to make some sort of animal AI. When it sees the player it flees immediately. This is very easy.

- We start by adding the Flee Behaviour to the AI.

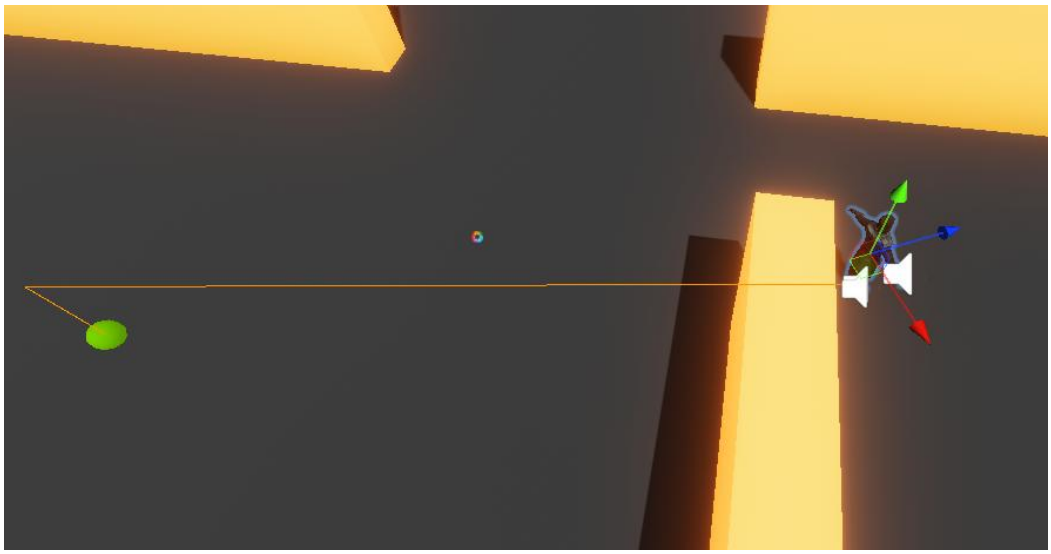


- Set the distance you want the AI to flee away in **Distance Run**.
- Set the **Move** and **Turn** speeds during fleeing.
- Set the running animation in **Move Anim**.

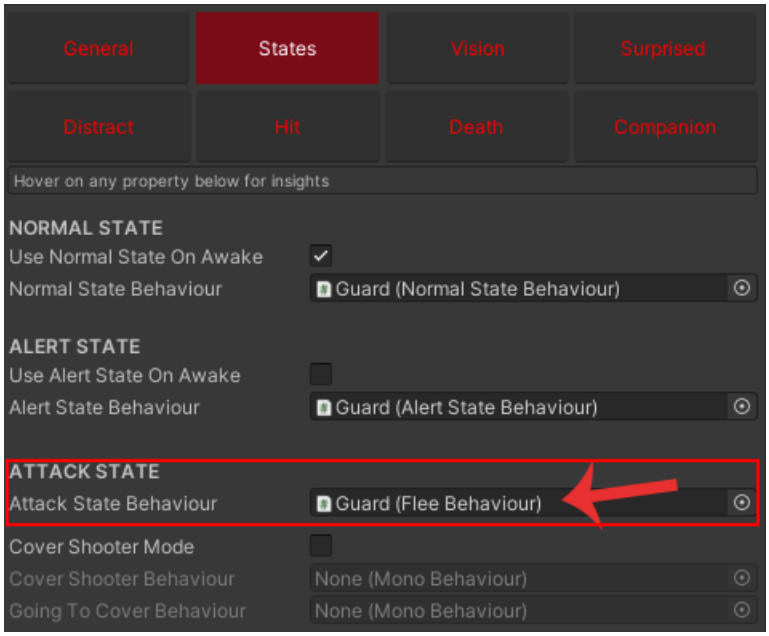
- If you want the AI to go to a specific location when fleeing rather than running randomly, you can enable **Go To Position**. A bunch of other properties will appear and you can set the position inside **Set Position**.



- You can also fire an event when the AI reaches that specific location using **Reach Event**.
- If you enable **Show Position** then you can easily see the **Set Position** location in the scene view as a green sphere. As so:



- Lastly, we need to replace the Attack Behaviour with the Flee Behaviour inside the Blaze inspector in the States tab. Simply drag and drop the flee behaviour to the property.



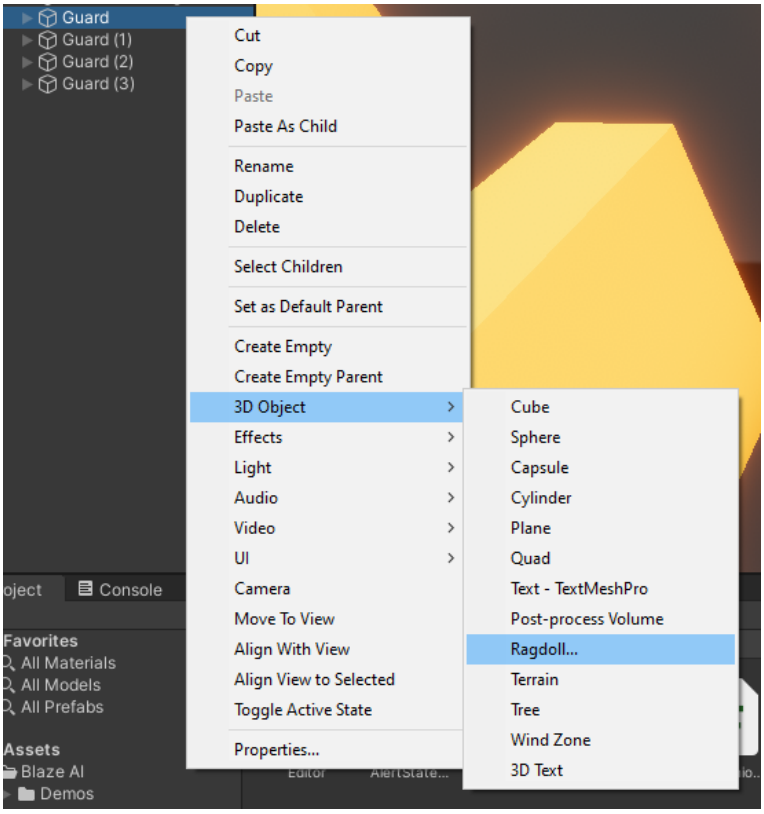
- Make sure you've set the hostile in the Vision class. If you don't know how then please read the **Vision & detecting enemies section.**

- Now when the animal AI sees the player it'll turn to attack state but the behaviour controlling the attack state is the flee behaviour. So the animal AI flees.

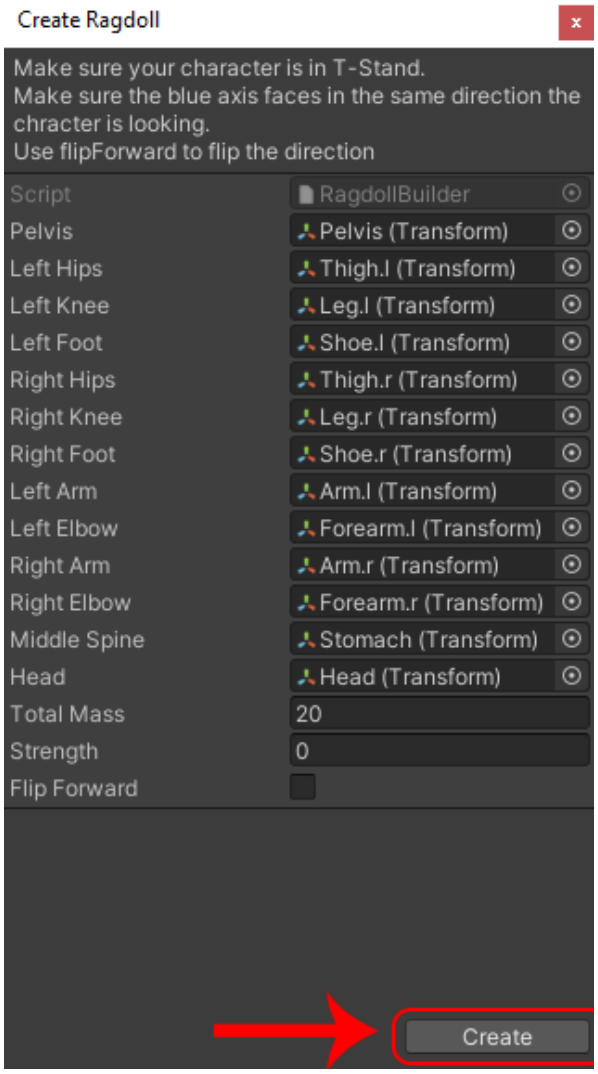
Ragdoll

Blaze supports ragdolls in Death and Knockout (part of the hit state). But, first you need to setup the ragdoll either using Unity's ragdoll wizard or any 3rd party asset like PuppetMaster. In here, I'm going to use Unity's.

Right click on the AI in the hierarchy and go to **3D Object > Ragdoll.**



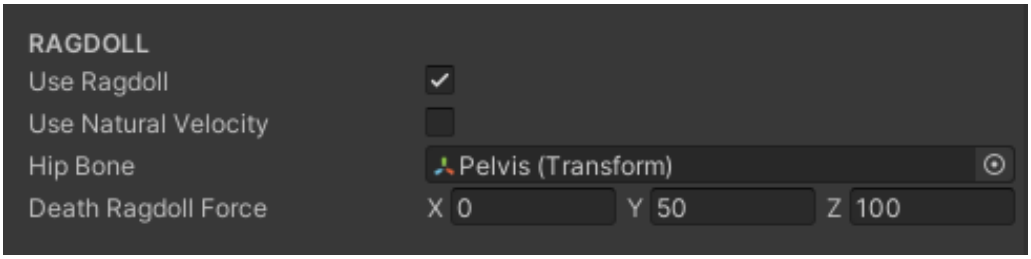
Then drag and drop the respective transforms in the AI game object to setup the bones of the character and click **Create.**



After creating your ragdoll it's time to use it. We'll start with ragdoll **on Death** and then check **Knockout**.

Ragdoll on Death

Go to the **Death tab** in the main Blaze AI component and enable *Use Ragdoll.*



You will find a bunch of properties appearing. Let's go through them.

Use Natural Velocity: having this enabled will not apply any added force to the ragdoll. Instead, it'll use the natural velocity. While disabling this will give you the ability to apply force to the ragdoll.

Hip Bone: this is where the force will be applied. Set it to the pelvis or chest transform. If you're going to add some custom transform that isn't part of the ragdoll make sure it has a *Rigidbody* component.

Death Ragdoll Force: the force you want to apply to the ragdoll. This can be changed dynamically through code before calling *Death()* to change the force according to the way of death.

Now you are done! You have setup everything and what's only missing is actually triggering the death state. You do that by simply calling the public function ***blaze.Death()***. When it's called the AI will die with ragdoll physics. If you want to play a death animation and then ragdoll midway like for instance in a stealth kill then call ***blaze.DeathDoll(float timeToRagdoll)*** – but take note: ***Use Ragdoll*** in Death tab must be enabled.

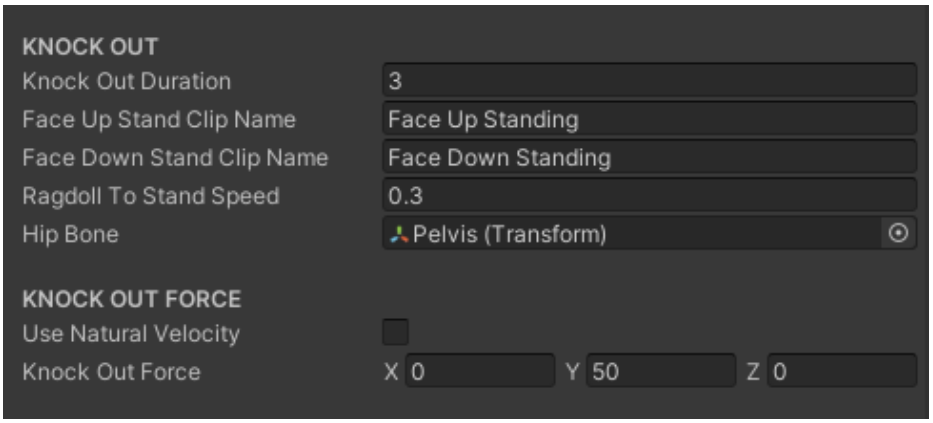
*To reset the AI simply call: ChangeState("normal"); **or** ChangeState("alert"); depending on which state you want. The ragdoll will automatically reset.*

Ragdoll on Knockout

Knockout is basically to ragdoll the AI and after a certain time it'll get up again. This is part of the Hit State Behaviour.

After setting up the ragdoll as mentioned in the beginning of this section. Add the Hit State Behaviour component to your AI (mentioned in the Hit section)

You will find two sections in the Hit State Behaviour. **KNOCK OUT** & **KNOCK OUT FORCE**. These properties are where you'll setup the knockouts so let's go through them.

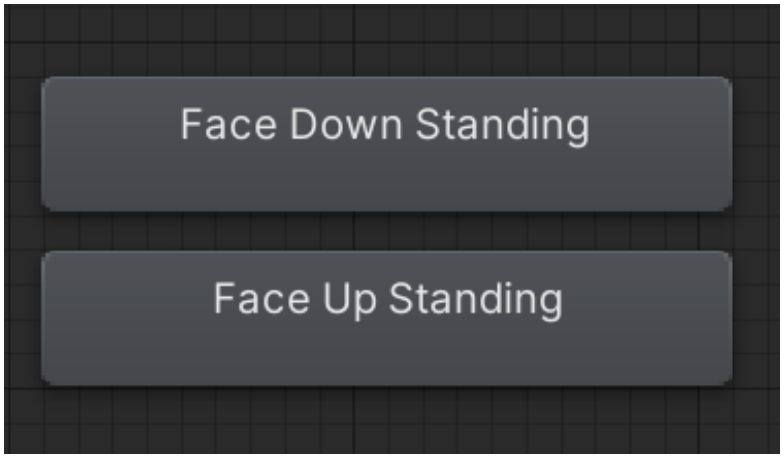


Knock Out Duration: Set for how long you want the AI to stay ragdolled (knocked out).

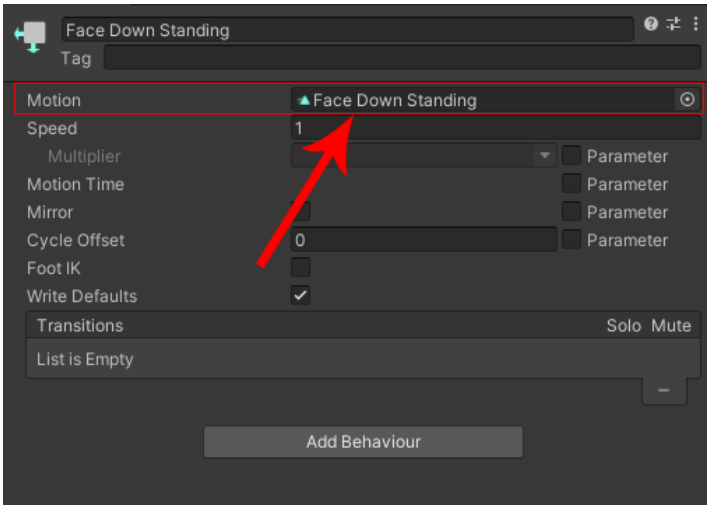
The next two properties **Face Up Stand Clip Name** and **Face Down Stand Clip Name** are tricky. The animation state names in the Animator and the actual clip names must be the same. Or else, it won't work.

Here's an example:

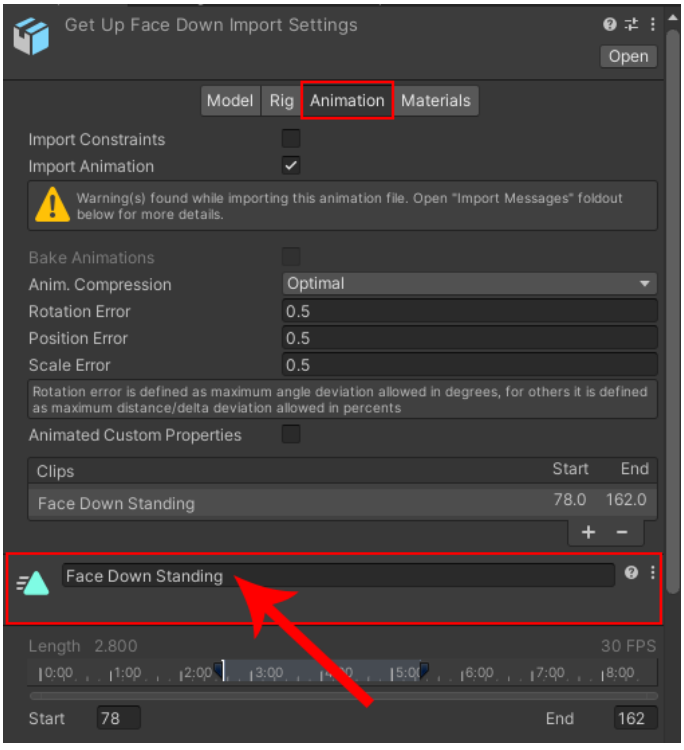
These are my two get up animations in the Animator. Like we always do in Blaze.



Now I need to make sure the actual clip name is the same. If I click on **Face Down Standing** I get this.



Make sure the clip name is the same as the state in the Animator. If not, easy. Simply click on the animation file, go to animation tab and then rename as shown below to the same name in the Animator.



Then click **Apply** below after changing the name to apply the new name.

Now let's get back to the properties.

Face Up Stand Clip Name: if the AI after ragdoll is face up (on it's back) then it'll use this animation to get up.

Face Down Stand Clip Name: if the AI after ragdoll is face down (on it's stomach) then it'll use this animation to get up.

Ragdoll To Stand Speed: the transition speed between being ragdoll to the stand up animation.

Hip Bone: set this to the pelvis. This is important and has two functions. First, the knockout force is applied on this bone. Second, this bone is used to determine whether the AI is face up or face down.

Use Natural Velocity: if enabled, no added force will be applied to the ragdoll on knockout. Instead, it'll use the natural velocity at that given time.

Knock Out Force: add the force you want to apply to the ragdoll. You can change this dynamically through code to apply different forces depending on what caused the knockout.

Now that you have setup the properties what's left is actually calling the knockout. It's simple. Just do *blaze.KnockOut()*.

It takes two parameters with default values.

KnockOut (GameObject enemy = null, bool callOthers = false)

If you pass the enemy game object that knocked it out. After standing the AI will turn to attack state and move to the enemy location.

The second parameter is whether you want the knocked out AI to call others or not. If the enemy game object is also passed then the AIs will be called to the enemy's location. If not enemy parameter passed then the AIs will get called to the actual knocked out AI location.

Target/Player Death

When you kill your player, you will notice that the AI is still attacking and engaging the dead player's body. That's because the AI still detects a hostile game object in front of it and there's nothing telling it to leave it alone.

The way to solve this is extremely simple. When the player dies, simply change it's tag name to anything non-hostile like *Untagged* for example. The AI will no longer detect any hostile and thus will dis-engage leaving the dead target/player alone and continuing on in it's patrols.

Change the tag name of your player when dead, it's as simple as:

```
if (healthPoints <= 0) {
        player.gameObject.tag = "Untagged";
}
```

Off Mesh Links

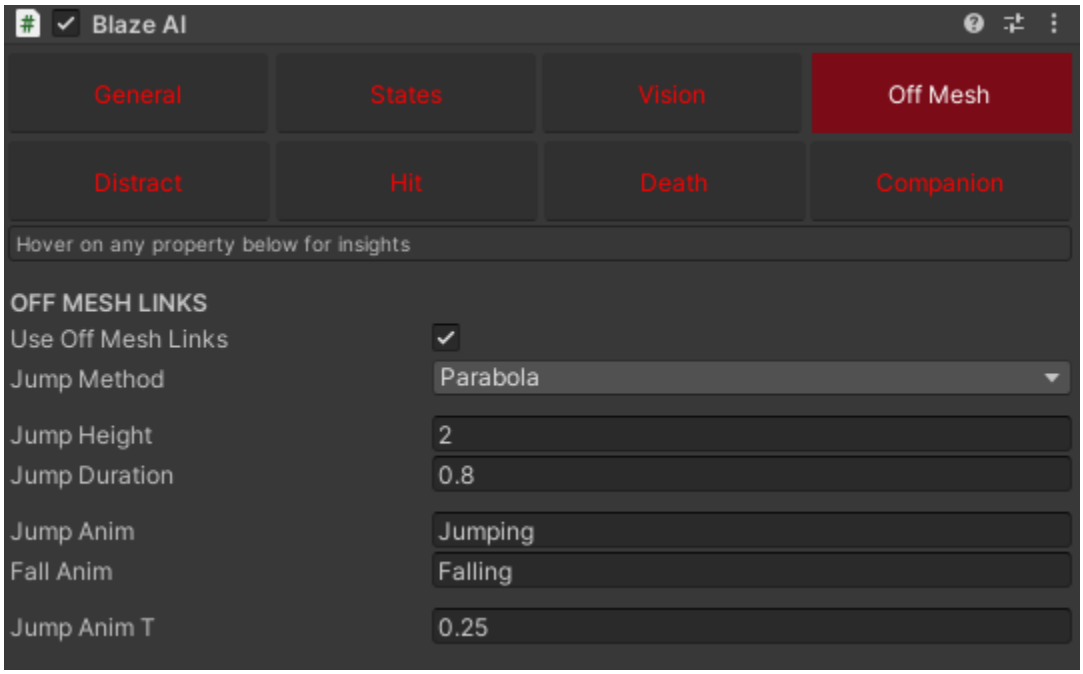
Blaze AI completely supports off mesh links. First things first, you need to actually generate the off mesh links. To do so: please watch these:

1- Tutorial by Unity for Off Mesh Links
2- Generating Nav Mesh Links

After you've done setting the off mesh links and everything is connected time to work with Blaze.

Simply go to the **Off Mesh tab** in the main Blaze inspector and enable **Use Off Mesh Links**.

A bunch of properties will appear for you to easily fill.

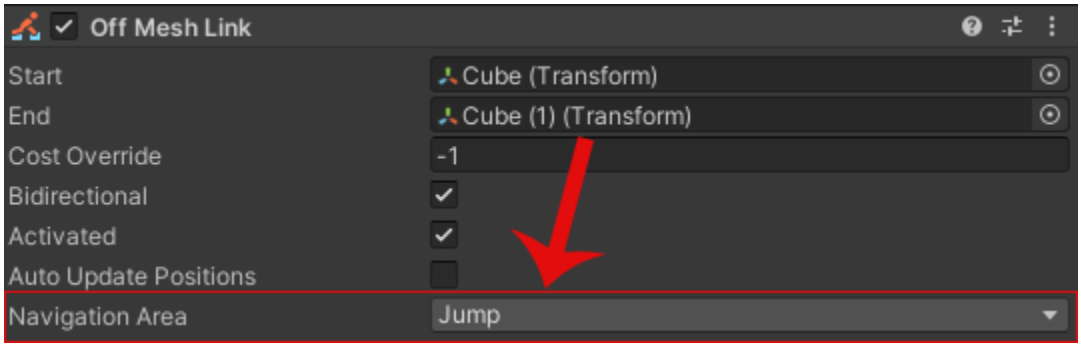


The jumping animation plays when the Y point of the end destination is bigger or equal to the AI's transform.position. While the fall animation will play if the end destination Y point is lower than that of transform.position.

If you don't want to have a fall animation you can surely set it to the jump animation with no problems.

And that's it for jumping! Now if you set a waypoint to a location where the AI needs to go through a link it'll automatically jump and take care of everything for you.

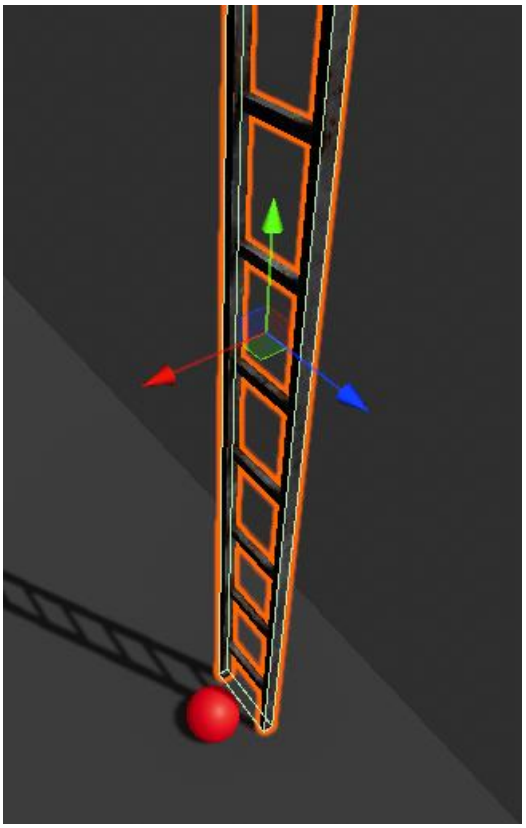
*Take Note: if **Use Off Mesh Links** is disabled and the off mesh link component **Navigation Area** is set to Jump, the AI will completely ignore destinations that go through the link. Only when Use Off Mesh Links is set to true, will the AI look for jumpable navigation areas.*



Climbing Ladders

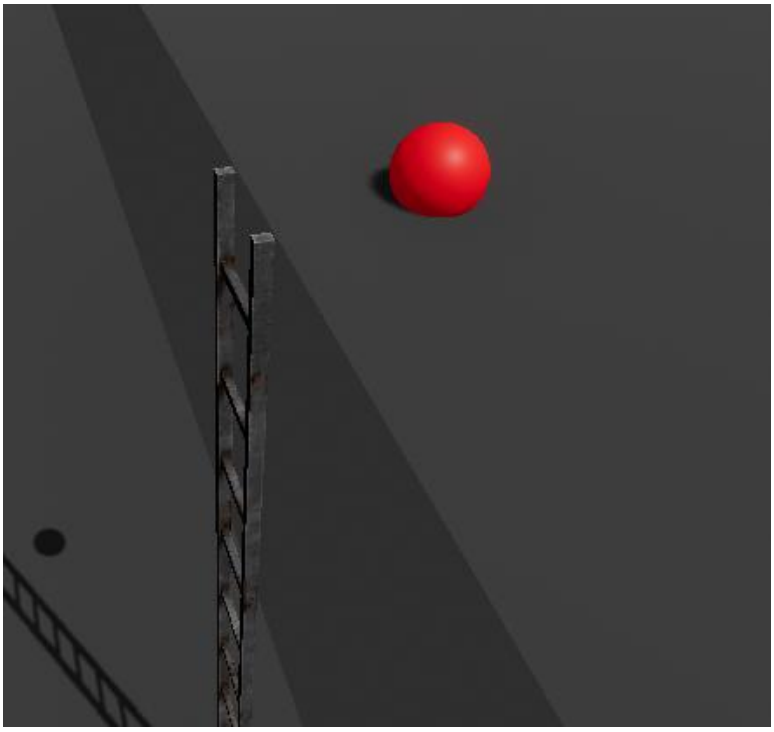
Take note blaze can only climb up ladders and not down.

First of all, let's setup the ladder. Add your ladder game object to the scene. **It must be 90 degrees up straight**. And give it a unique layer. I'll give mine a layer of "Ladder" and **it needs to have a collider**, preferably a box or mesh collider.



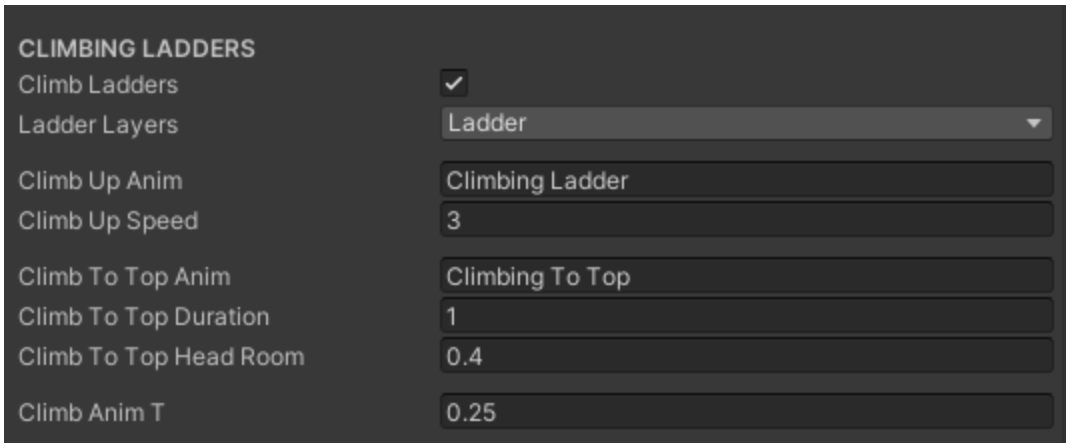
Add the off mesh link and it's **start position** near the ladder. Mine is the red sphere below to show you. This is the beginning of the ladder.

Add the **end position** of the off mesh link at the ground after the ladder as so:



Now we're done setting up the ladder.

Get back to Blaze, select the Off Mesh tab, make sure Use Off Mesh Links is enabled and then enable **Climb Ladders**



- Set the ladder layer that we made earlier. *Remember, the layer must be the one with the collider.*

- Set the climbing up animation and the climb speed.

- **Climb To Top Anim** & **Duration** is the animation that will play when the AI has reached the top of the ladder and is moving towards the plane and out of the ladder. So set the animation and the duration.

- **Climb To Top Head Room** how much head room to give the AI to indicate that it has reached the top of the ladder. It differs between different AI types as their height is different this'll need some trial and error on your behalf. This triggers the climb to top sub-state.

Now set a waypoint to a different plane with an off mesh link with a ladder. What will happen is when the AI is on the off mesh link it'll detect the ladder and start climbing.

How it Works?

When an AI is on an off mesh link with **Climb Ladders** enabled, it'll trigger an overlap sphere with a radius of the agent. If it detects any gameobject with the layer of the ladder then it start playing the climbing animation.

If it detects nothing then it'll jump.

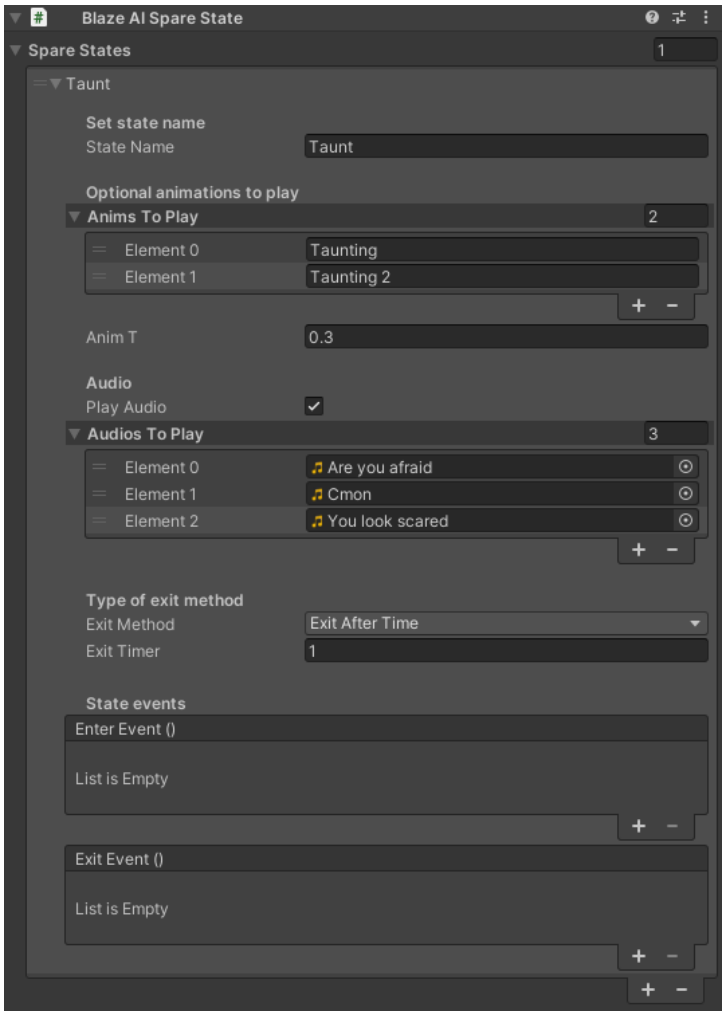
If the AI is on the very same off mesh link with the ladder but Climb Ladders is set to false then it'll jump.

Spare States (Emotes)

Spare states is a feature that lets you to activate a temporary custom state that plays any animation, triggers events and then exit out of the state either by an automatic timer or manually using an API. **Such feature can be used as emotes to taunt player mid-battle, block player attacks or running custom behaviour, etc…**

Here's how to get started:

- Add the **Blaze AI Spare State** component to the AI where Blaze AI exists and add an item to the list.



- In the ***State Name*** give the state a name (this is important as the name will be used to call the state so make sure it's unique)

- (Optional) In ***Anims To Play*** you can add animations in the list and a random one will be selected and played when state is called. If using this, remember to set the ***Anim T*** property to a good transition time like ***0.25***. If you don't want to play an animation, you can leave both empty.

- (Optional) Same thing with audios you have the option to insert audio clips in ***Audios To Play*** and enable ***Play Audio***. This'll play a randomly selected audio when the state is called.

- In the ***Exit Method*** you have two methods of exiting the state. Either choosing ***Exit After Time*** which automatically exits the state after ***Exit Timer*** value has passed or ***Manual Exit*** which will require the API: ***blaze.ExitSpareState()*** to be called for the state to exit.

- In the **State Events** you can set both Enter and Exit events for the state.

- After setting the spare state you can call it anytime in the game using: ***blaze.SetSpareState("stateName");***

Continue reading for the Spare State APIs

Important APIs

To call a state:
blaze.SetSpareState("stateName");

To call a state with specific animation and audio:
blaze.SetSpareState("stateName", animIndex, audioIndex);

To call a state with specific animation and randomize audio:
blaze.SetSpareState("stateName", animIndex);

To call a state with specific audio and randomize animation:
blaze.SetSpareState("stateName", -1, audioIndex);

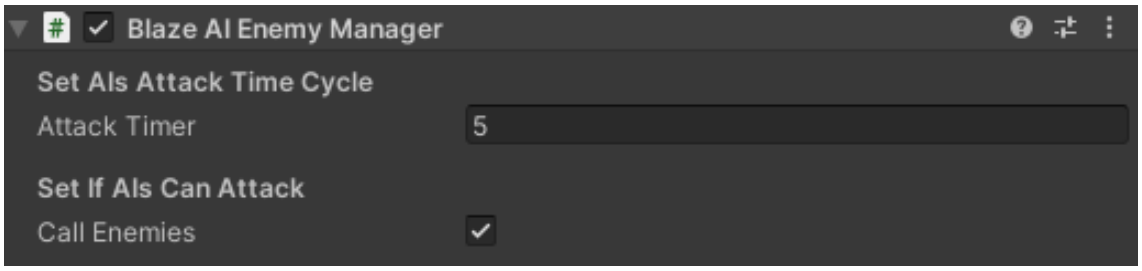
To manually exit:
blaze.ExitSpareState();

To check if AI is in spare state or retrieve spare state info:
SpareState stateInfo = blaze.CurrentSpareState();

*If AI isn't in spare state then will return **null**.*
*If AI is in spare state then will return data of type **SpareState**.*

Enemy Manager

When an AI catches a hostile gameobject (player), it automatically adds to it the ***BlazeAIEnemyManager*** component. This is a vital component in the AI's life-cycle.



You can add this enemy manager manually in editor-time as well.

Attack Timer is the amount of time before the manager calls an AI to attack it.

Call Enemies is the property that flags whether it's ok to attack this manager. If disabled, the AIs will never attack and wait for this property to turn true. It's good to use this when your player is doing a finisher which you don't want to interrupted so you can temporarily disable this.

Uses of the Enemy Manager

It schedules the attacks of the AIs. Making the AIs attack on by one. This only happens to the AIs that have ***Attack In Intervals*** disabled in Attack State Behaviour. If the property is enabled the AI will manage it's own attacks using it's own timer with no regard to any other AI. Cover shooter mode is the same, has it's own timer.

Important APIs

enemyManager.targetedBy : Using this enemy manager API you can check if your player is being targeted by any AIs. This'll return a list of type Blaze AI (List<BlazeAI>) with all the AI's already seeing and engaging the manager.

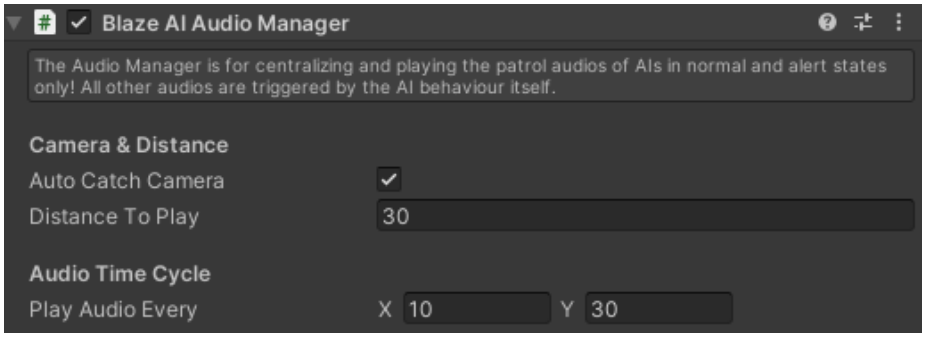
enemyManager.potentialEnemies : This will return the AI's that are potentially targeting the player using Vision Meter. So if an AI has **Vision Meter** enabled and it's bar is incrementing (hasn't detected you yet!) because you are in it's vision, then you'll find the AI here using this API. Use this to check if your player is in potential danger. This returns a list of type Blaze AI (List<BlazeAI>)

Audio Manager

The audio manager is used to play patrol audios of the AIs in **normal and alert states only**. All other state audios are triggered and played by the AI itself not this manager.

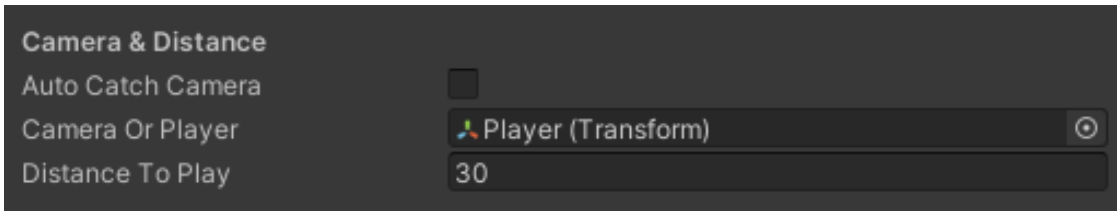
Here's how to get started with patrol audios:

- Create an empty gameobject and add the component ***Blaze AI Audio Manager***.



- The AIs will play their patrol audios when the camera or player is close enough to the ***Distance To Play*** property. If you want to use the camera for distance you can leave ***Auto Catch Camera*** enabled. Your camera must have the **MainCamera** tag or else it won't be found.

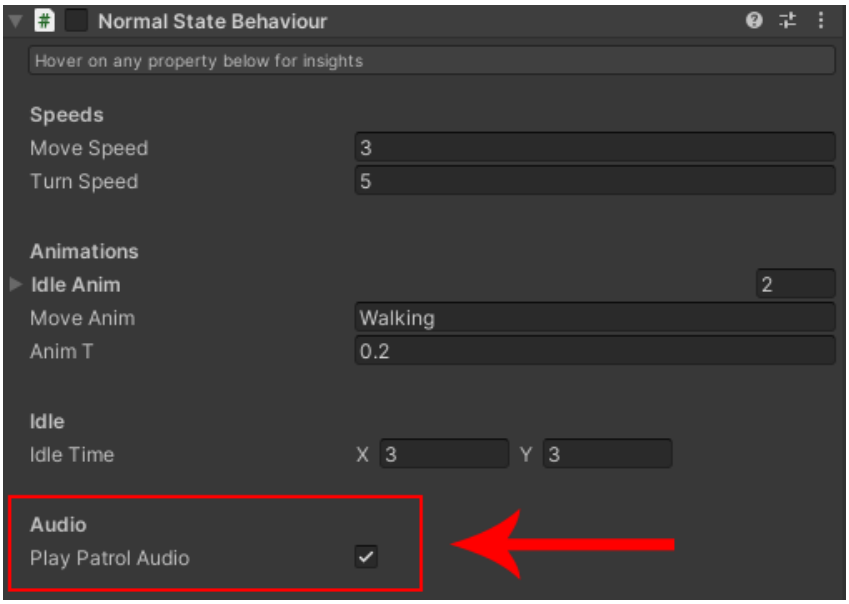
- If you want to instead use the player transform, then simply disable Auto Catch Camera and drag/drop your player to the ***Camera Or Player*** property that gets drawn.



- When the distance between the player and an AI (or camera and AI) is smaller or equal to ***Distance To Play***, the AIs within that distance will play their patrol audios. Set the distance you like.

- A random time will be generated between the two values of ***Play Audio Every*** property. When the timer is finished an AI will play a patrol audio. *For a constant time, set the two fields to the same value.*

- Lastly, go back to **Normal** and **Alert** Behaviours and enable ***Play Patrol Audio***.



Now with this audio manager, the AI audios in patrol won't interfere with each other and only those close enough to the player will be allowed to play.

Remember, the audio manager is used to play the patrol audios only. For actually setting the audios you add them in the audio scriptable as mentioned here.

Writing New Behaviours

Blaze gives you the ability to write new behaviours from scratch and link them to the engine for custom actions. It's extremely easy but there is however a few basic points to take care of.

Create a new C# script and open it in your editor.

First, you must wrap your class name with the namespace ***BlazeAISpace***. This is seen in the red rectangle 1. (screenshot in next page)

Second, extend your class from ***BlazeBehaviour*** not ***MonoBehaviour*** which is the default. This is seen in the red rectangle 2. Don't worry you'll still have access to MonoBehaviour stuff.

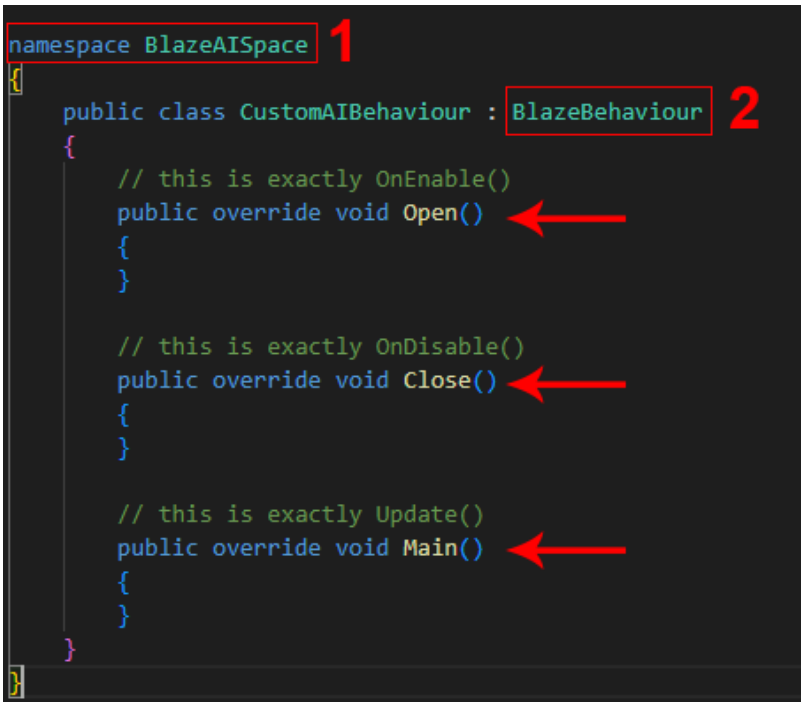
Third and lastly, you must write and ***override*** the 3 main functions:

- ***Open()*** which is equivalent to *OnEnable()*
- ***Close()*** which is equivalent to *OnDisable()*
- ***Main()*** which is equivalent to *Update()*

These 3 functions must be public too.

Main() is where you'll run most of your code because it's exactly the same as *Update().*

Next page for screenshot

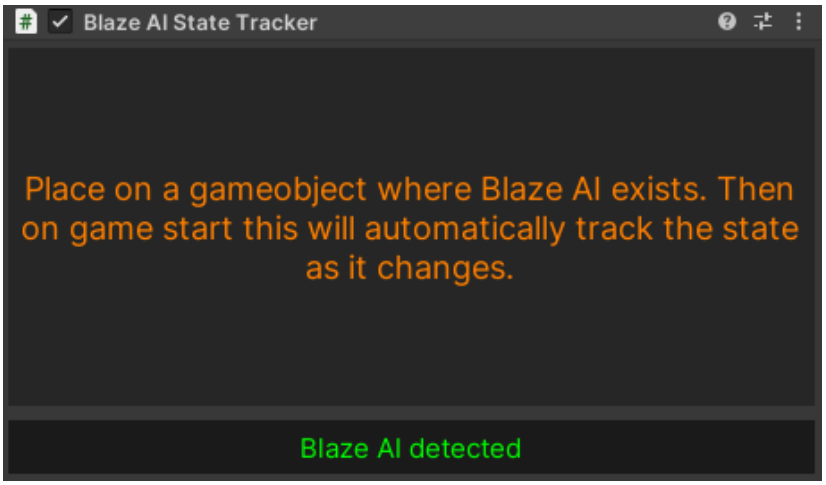


You can use the other MonoBehaviour functions normally like ***OnValidate()***, ***Reset()***, ***OnDestroy()***, etc…

Tracking/Debugging AI State

Blaze AI comes with a tool that helps you track which state the AI is currently in. It's extremely simple to use.

Simply add the **Blaze AI State Tracker** component to where Blaze AI exists. Meaning, on the same gameobject.



The tool will even help out and notify you whether Blaze AI has been detected or not as shown in the bottom bar in green text.

Now simply play game and the tool will print the AI's state as it changes.