

# Universal AI 2.0


## Welcome

Welcome aboard!


## Welcome aboard!

Welcome to the **official** documentation of "**Universal AI 2.0**" Please don't hesitate to *ask for support* in our **support platforms**:

- Discord -> <https://discord.gg/qwzqWcDF6j>
- E-Mail -> [info@darkingassets.com](mailto:info@darkingassets.com)
- Roadmap -> <https://trello.com/b/MzI706aj/universal-ai-20>
- Website -> <https://www.darkingassets.com>

Please follow the documentation first, and don't forget to **Review The Asset** honestly 

 Most of the **common problems** are stated in  **FAQ** part, please check it out.

 You can also write me directly through discord: **NEVERM1ND#0001**

 Please don't **review** the asset, before asking **for support** 

Join the Darking Assets Discord Server!  
Discord

Darking Assets - Asset Store  
UnityAssetStore

[Asset Store Page](#)

Home · DarkingAssets/Universal-AI-2.0 Wiki  
[GitHub](#)

[API Documentation](#)

## FAQ

Here, you can scroll through the frequently asked questions.

### Frequently Asked Questions

> [Why Does My AI Disappear On Start?](#)

> [Why Can't I Damage My AI / Can't Take Damage?](#)

> [Why Can't My AI Move?](#)

> [Why Is My AI Not Playing An Animation?](#)

# Get Started

## Installation & Set Up

Here, you will learn how to install & set up the Universal AI for your project!

### Installation





Make sure you are using at least the **Unity Version 2019.4 +** before importing the asset!

1. Navigate to the menu: "**Window / Package Manager / My Assets**" and find **Universal AI 2.0**
2. After downloading the asset, import the **Universal AI 2.0** asset to your project.

And **That's All!** Now you have the **Universal AI 2.0** installed & ready to be used!

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## Set Up Your Scene



It is recommended to create a new scene for **testing & setting** up the scene & AI!

1. Bake a "**Navmesh Area**" in your scene. If you don't know how to, read the [Unity Navmesh docs](#).
2. Create a new **Tag & Layer** to use for your AI. We use "AI" but you can use anything that works for you. Unity has come [good docs on setting up layers and tags](#) if you need some more guidance.

And **That's All!** Now you are ready to **Set up Your First AI!**



## Create Your First AI

Here, you will learn how to set up a new AI



Make sure to do the ☐ **Installation & Set Up** part first.

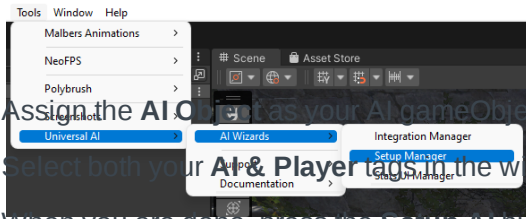


We **highly** recommend following the ☐ **AI System & Modules** part too after this part.

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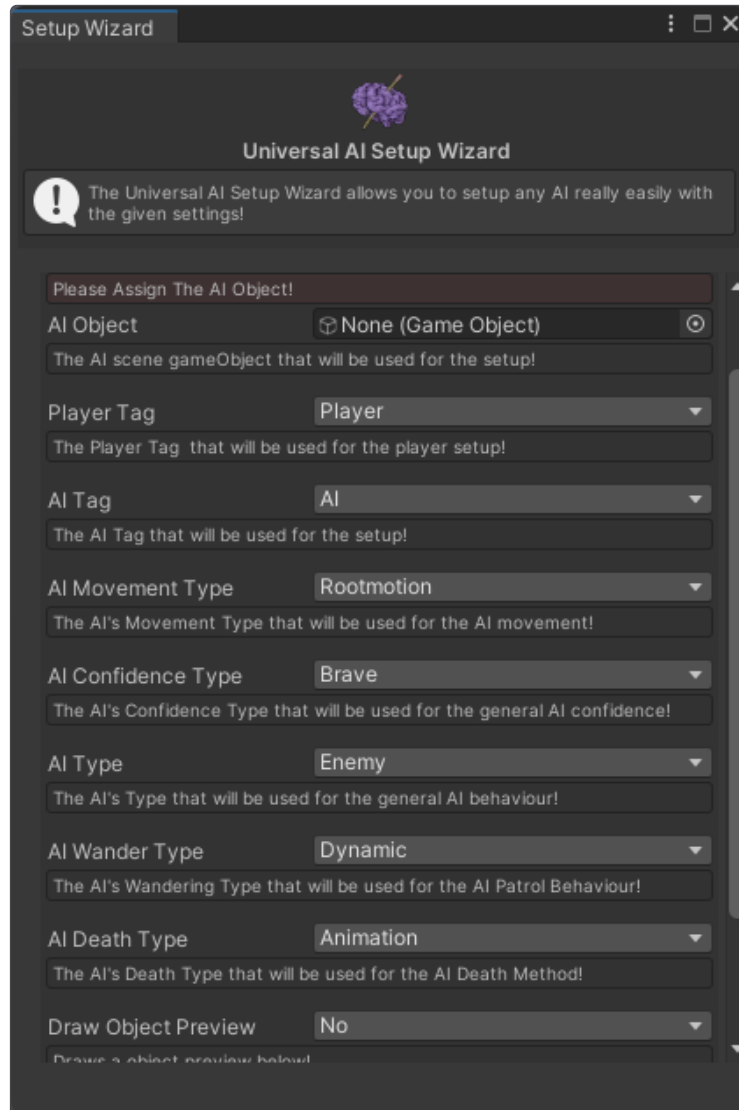
## Using The Setup Manager

1. Navigate to the menu: "**Tools / Universal AI / AI Wizards / Setup Manager**" and open it.



2. Assign the AI Object as your AI gameObject model in the scene and adjust the given settings.
3. Select both your AI & Player tags in the wizard.
4. When you are done, press the **Setup AI** button to create your AI.

**i** If you get any **error messages** during the setup process, please read them and **change your settings** accordingly!





Setup Wizard

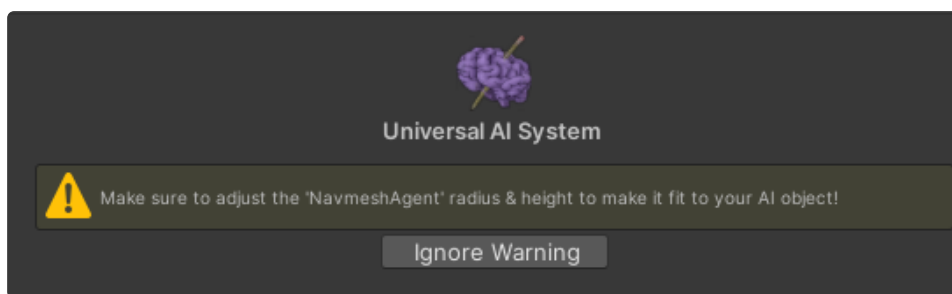
## Set Up Your First AI

Here, you will learn how to set up your new AI correctl

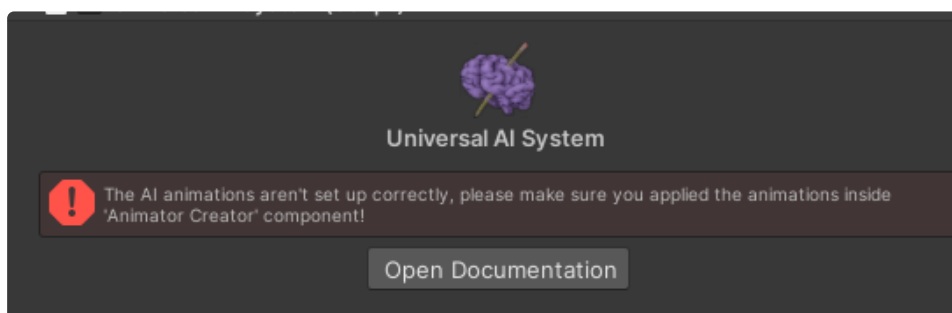
## Universal AI Inspector

 Make sure to first **create a new AI** using the setup wizard ->  **Create Your First AI**


1. You will see the **setup wizard** has created new components like **Navmeshagent, collider, Universal AI 2.0 script..**
2. Adjust the **Radius & Height** of the created **Navmeshagent & collider** components so that they fit your AI object.
3. Now, you can follow the **Error & Warning** popups above the **Universal AI 2.0 Inspector** to finish your AI setup. The popups are there to guide you and fix the possible mistakes you can encounter on setup.



Example warning popup



Example error popup

Now, please create **animations** for your AI by following this part ->  **Set Up AI Animations**

## Set Up AI Animations

Here, you will learn how to set up animations for your AI.

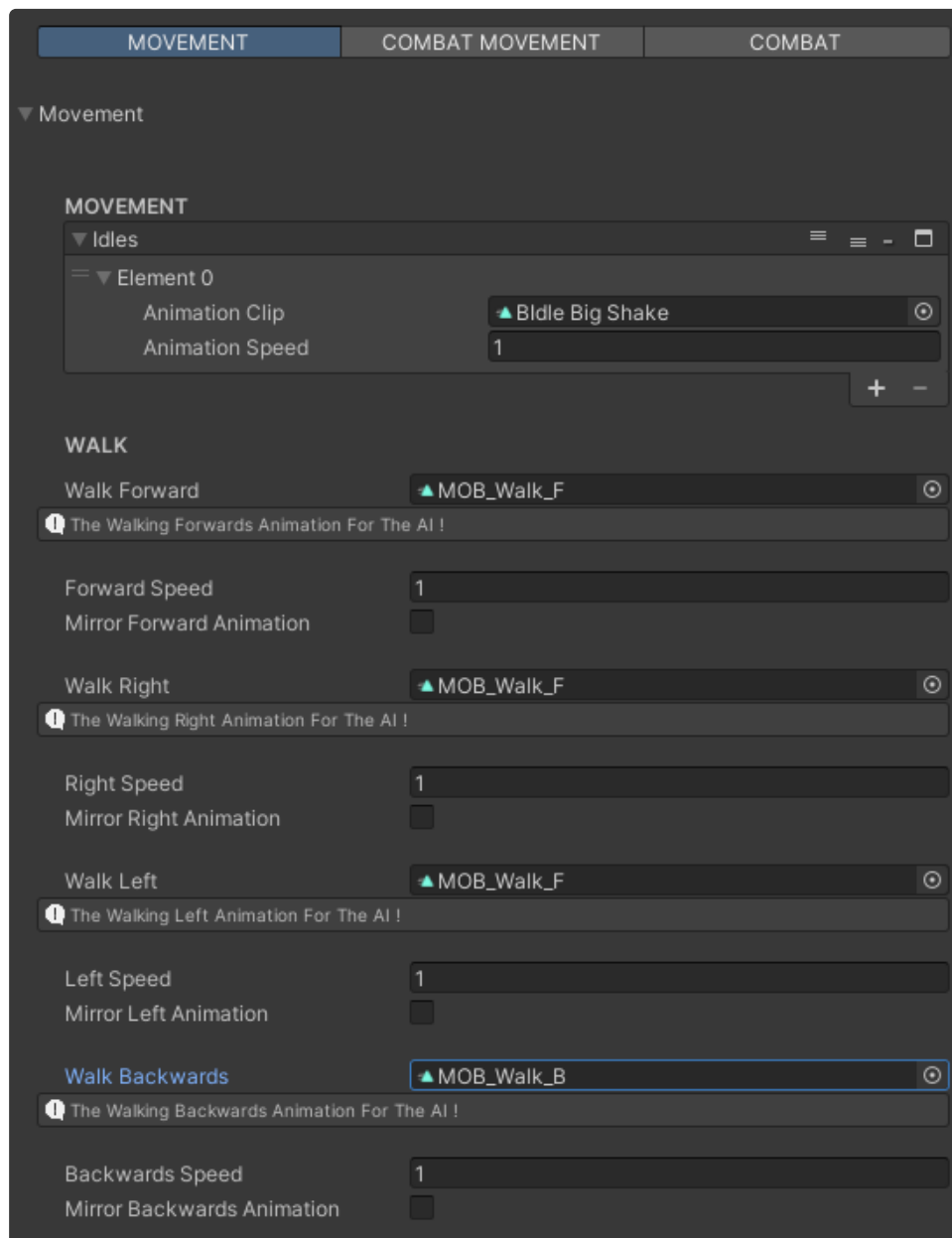
## Universal AI Animator Creator

 Make sure to first **set up** your AI by following this part ->  **Set Up Your First AI**

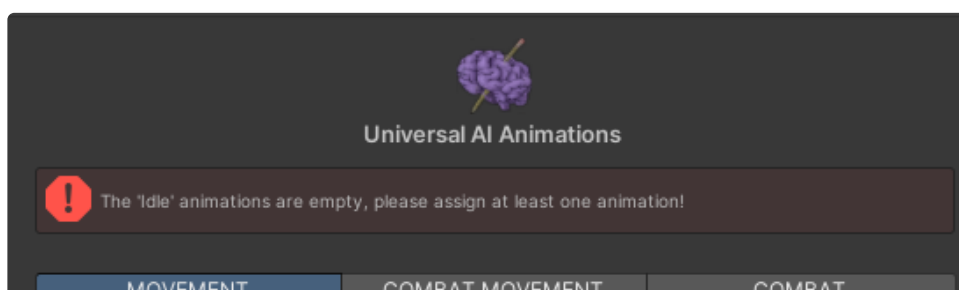
1. Find the **UniversalAIAnimatorCreator** component that has been assigned to your **AI object**.

2. You will see 3 tabs -> **Movement / Combat Movement / Combat**.
3. Assign the **necessary animations** to the given fields, and follow the **error popups** above the script if there are any errors on the setup. Those error popups are there to **guide and fix** your possible errors.

**i** You will need to have the "**UniversalAIAttack**" animation event on your **Attack Animations**. Whenever your AI attack starts on the animation, you need to put this event. Make sure to watch this tutorial to understand better -> (SOON)



Example





Example error popup



Example warning popup


## Damage AI / Player

Here, you will learn how to damage your AI & make AI damage your Player.

 Make sure to first **set up** your AI by following this part ->  **Set Up Your First AI**

### Damage AI

#### Using A Integration

- If you are using an **integrated** controller with our AI asset, you can follow the  **Ready Integrations** part to complete this setup.

#### Using Custom Controller

- If you are using a **non-integrated** controller with our AI asset, you can follow the steps below to complete this setup.
1. **Universal AI 2.0** uses the "**UniversalAIDamageable**" interface for handling damages. You can call the **TakeDamage** void inside that interface to damage your AI anywhere. Here are some examples:

> **Using Raycast To Apply Damage**

> **Using TriggerEnter To Apply Damage**

You can always ask for support in our [discord](#) server.

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## Damage Player

### Using A Integration

- If you are using an **integrated** controller with our AI asset, you can follow the [☐ Ready Integrations](#) part to complete this setup.

### Using Custom Controller

- If you are using an **integrated** controller with our AI asset, you can follow the [☐ Ready Integrations](#) part to complete this setup.
1. **Universal AI 2.0** uses the "**UniversalAIPlayerReference**" script for handling player health & damage. You will need to initialize your **Player Health & Damage** methods to this script to apply damage to your Player. Here are some examples:

> **Initializing Our Player Health**

> **Damaging Our Player**

You can always ask for support in our [discord](#) server.

⚠ Make sure that your attack animations have **UniversalAIAttack** event as the -> [☐ Set Up AI Animations](#) part says.

✓ Now, you should be able to **Damage AI / Damage Player**.

## ▲ Ready Integrations

Here, you will learn how to use integrations for the AI

ℹ To use **Integrations**, please first create an AI by following this -> [☐ Create Your First AI](#)

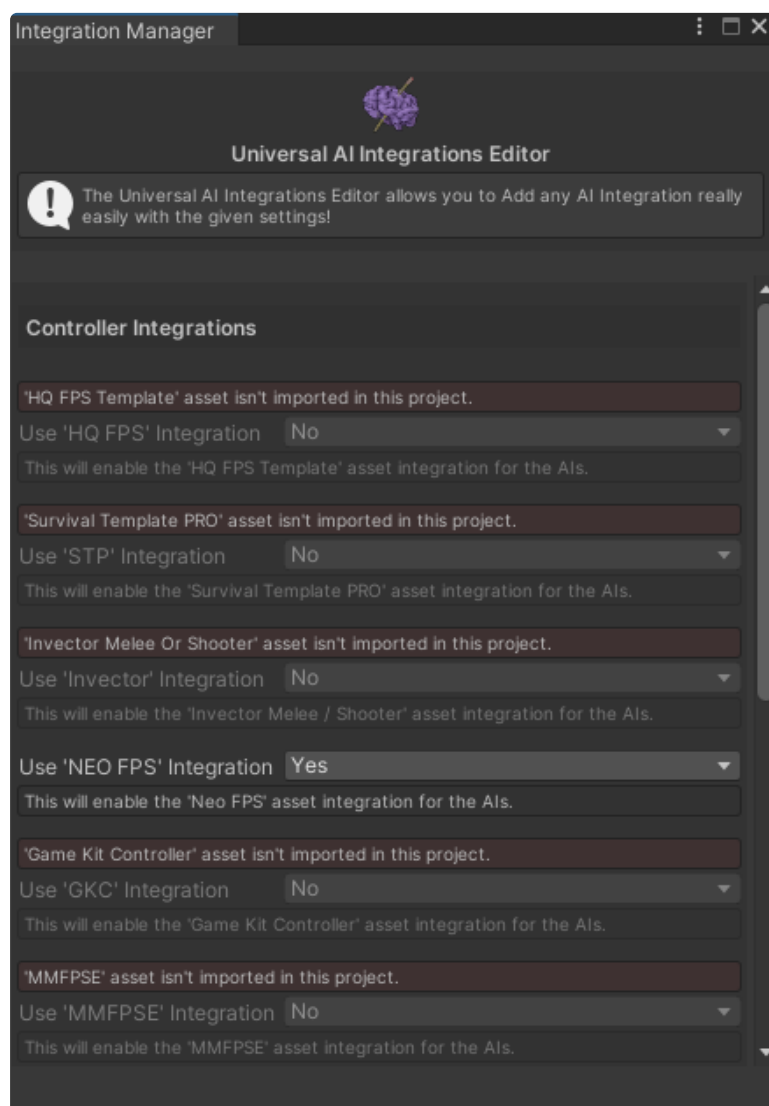


⚠ For the "**A\* Pathfinding Project Pro**" integration, check **here**: [📄 A\\* Pathfinding Project](#)

⚠ For the "**Easy Save 3**" integration, check **here**: [📄 Easy Save 3](#)

## Integration Manager

1. Navigate to the menu: "**Tools / Universal AI / AI Wizards / Integrations Manager**" and open it.
2. Choose one of the **Controller Integrations** as you like, and choose as many **MISC Features** as you like!



Integrations Manager

And actually, that's all! Now you can play the game and **damage your AI / take damage!**

i For **Custom Integrations**, please check this part:



# A\* Pathfinding Project

Here, you will learn how to use the A\* Pathfinding Project with AI

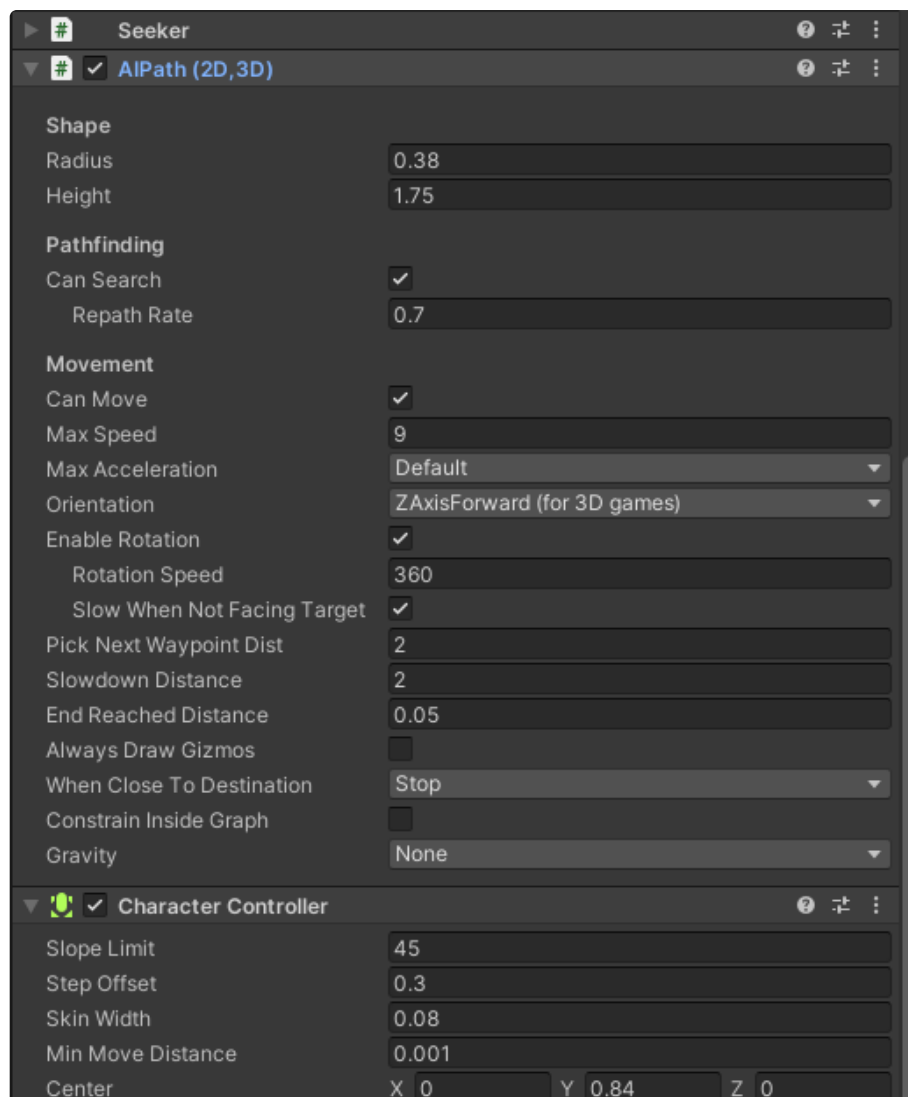
## Enabling The Integration

1. Navigate to the menu: "**Tools / Universal AI / AI Wizards / Integrations Manager**" and open it.
2. Enable the "**A\* Pathfinding Project Pro**" integration.

## Setting The AI For The Integration

1. First, create an **AI** and enable the **Integration**.
2. Delete the **NavmeshAgent**, **Capsule Collider** components from your AI Object.
3. Add the "**AIPath**" and **CharacterController** components to your AI.
4. Adjust the **CharacterController's** and **AIPath's** radius & height for your AI

And now it should look **something** like **THIS**:

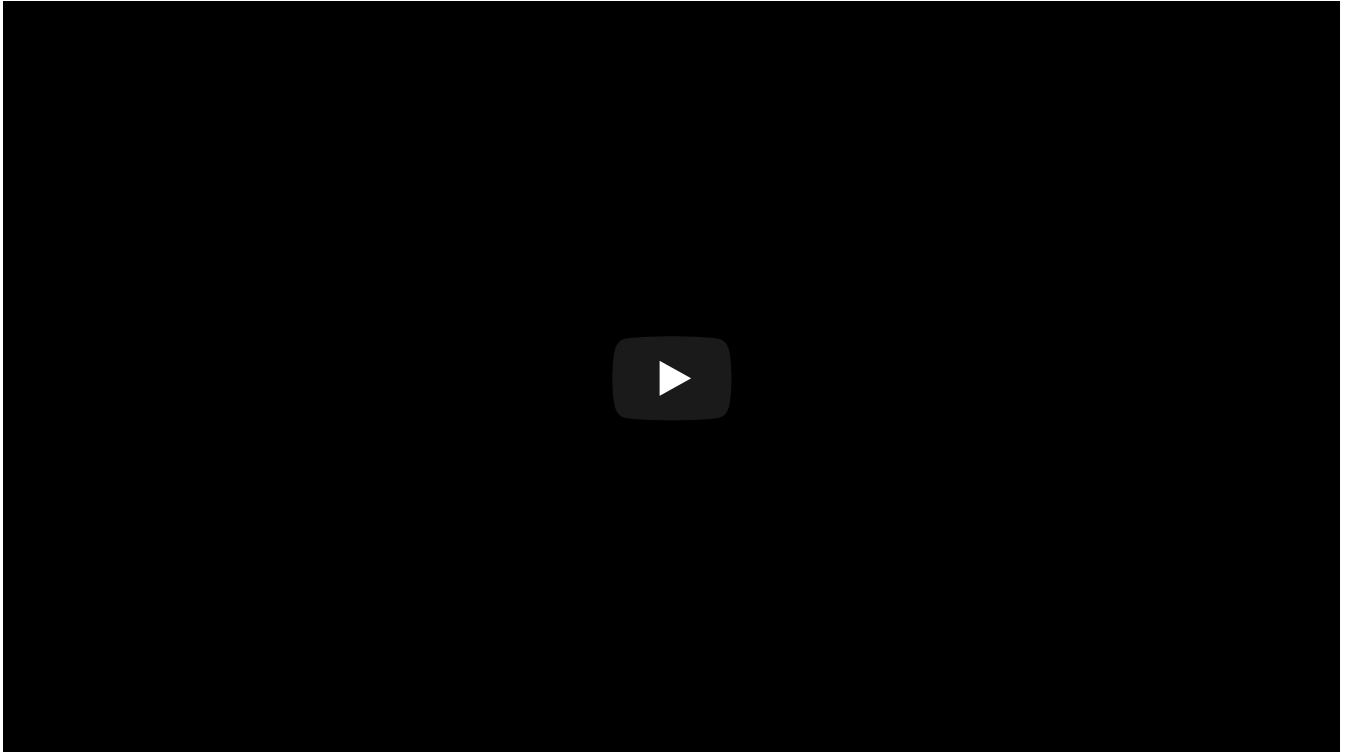


Radius	0.38
Height	1.66

Example

## Setting Up The Scene

You can follow their **documentation** to set up and adjust the other settings & paths.



Official A\* Pathfinding Project Tutorial

## Easy Save 3

Here, you will learn how to use the Easy Save asset with the AI system

### Enabling The Integration

1. Navigate to the menu: "**Tools / Universal AI / AI Wizards / Integrations Manager**" and open it.
2. Enable the "**Easy Save 3**" integration and exit.

### Setting The AI For The Integration

1. Go to your AI Object and add the "**UniversalAIEasySave**" component.
2. Change the settings as you like on the component and your AI is ready to be saved!

And the inspector now should look like **THIS**:

Universal AI Easy Save (Script)

## Universal AI Easy Save

General Settings

### GENERAL SETTINGS

Save File Name

The Save File's Name !

Save Key

The 'UNIQUE' Save Key, To Load Saves (Make This Unique) !

Load On Start

Yes

Will It Automatically Load On Start ?

Save On Quit

Yes

Will It Automatically Save On Quit ?

Encrypt Save File

Yes

Will It Encrypt The Save File ?

Debug Load Events

No

Will It Debug The Loaded Values Too ?

AI System

Zombie 1 Nav Pro (1) (Universal AI Syst...

Variables To Save

### VARIABLES

Save Health	Yes
Save Position	Yes
Save Rotation	Yes
Save Current Target	Yes
Save Current Destination	Yes
Save Alerted State	Yes
Save AI Confidence	Yes
Save Frozen State	Yes
Save Ignored Targets	Yes
Save Non Ignored Targets	Yes

DELETE SAVE FILE

OPEN SAVE FILE

Example


# AI System & Modules

## Create Ragdoll For AI

Here, you will see how to create ragdoll for your AI



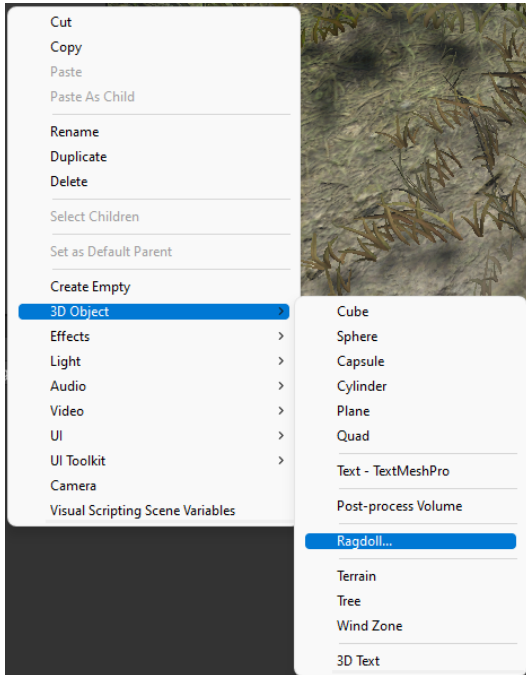


Please first read and do the  **Get Started** parts first!

## Create Ragdoll With Ragdoll Wizard

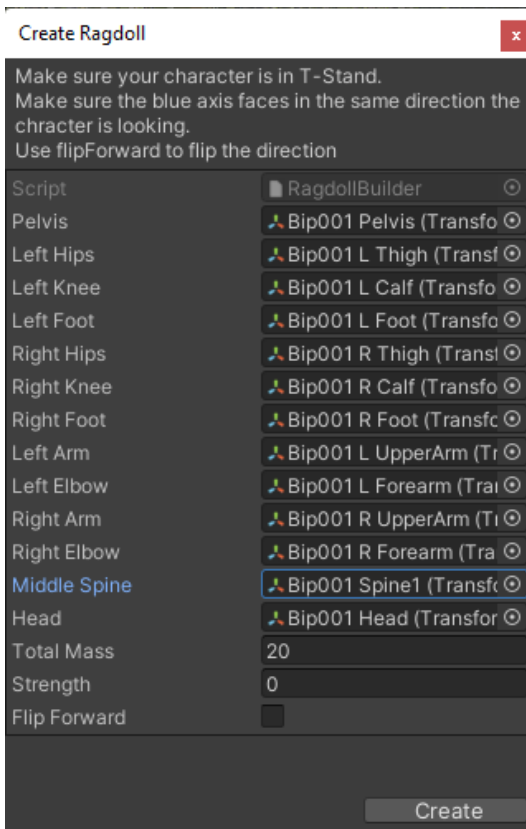
- We will use the **built-in** unity ragdoll creator wizard for creating our ragdoll bones in this tutorial. You can use other **ragdoll creators** like the **Puppet master**, **ragdoll wizard**...

- Right-click on your hierarchy and select -> "**3D Object / Ragdoll...**" and select it.



The Ragdoll Creator Wizard

- Assign your **AI** bones to the given fields in the **Creator Wizard** and press **Create**.



✓ Now, your AI has ragdoll bones **ready** to be used.

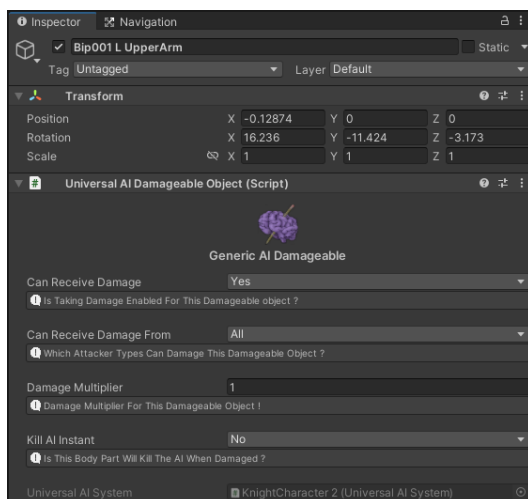
## Location-Based Damage

**Location Based Damage** is for damaging your **AI object bones** individually and it is optional.

- We will now add the required components to our bones, the **Location-Based Damage** part is optional.

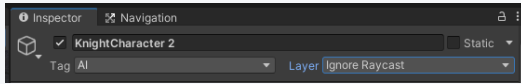
## Adding Required Components

1. Select the **Ragdoll Bones** under your AI object, and add the "**UniversalAIDamageableObject**" component to them. You can adjust the settings on the script too if you want to. Make sure that this bone has a **collider** attached.



2. Now, your **Weapon / Damage Method** should only damage the **Bone Colliders** instead of the **AI Collider**. To do this, make sure to set the **AI Layer** to something you can't damage but set the **Bone Layers** to something you can damage.


#### AI Layer Example: "Ignore Raycast"



(You can use any layer that you can't damage)

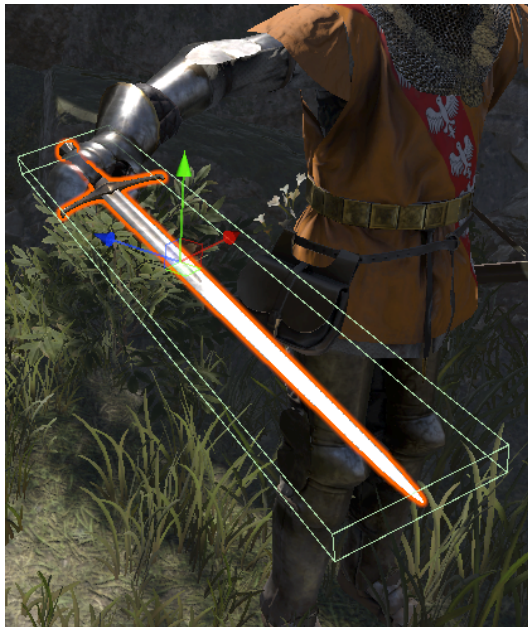
## Create Melee Weapon

Here, you will learn how to create a melee weapon

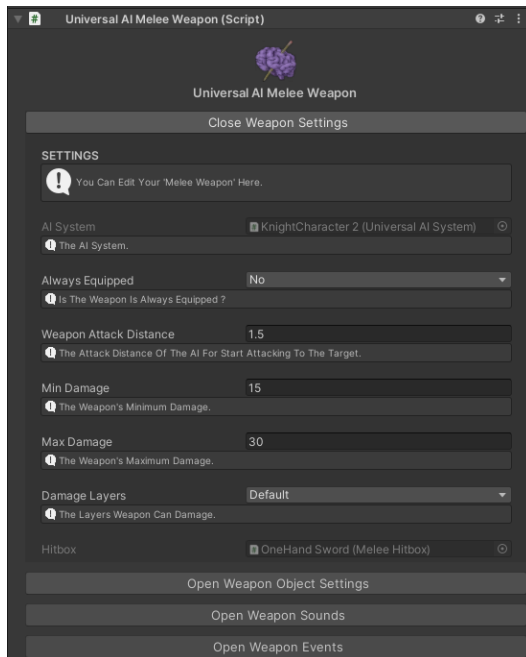
 First, create a working AI by following here: [Get Started](#)

### Creating The Melee Weapon

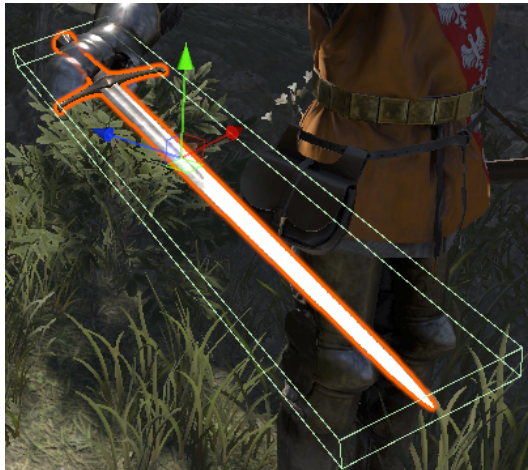
1. Put your **Melee Weapon Model** under the right-hand bone of your AI.



2. Select your **Weapon Model** and add the "**UniversalAIMeleeWeapon**" component to it.



3. Adjust the **Automatically Added Box Collider** as you like for the **Hitbox**!



You can always ask for support in our [discord](#) server.

✓ **And now**, you can edit the settings as you like and your **melee weapon** should work fine!

i You can check the **Melee AI** demo scene too for more info.





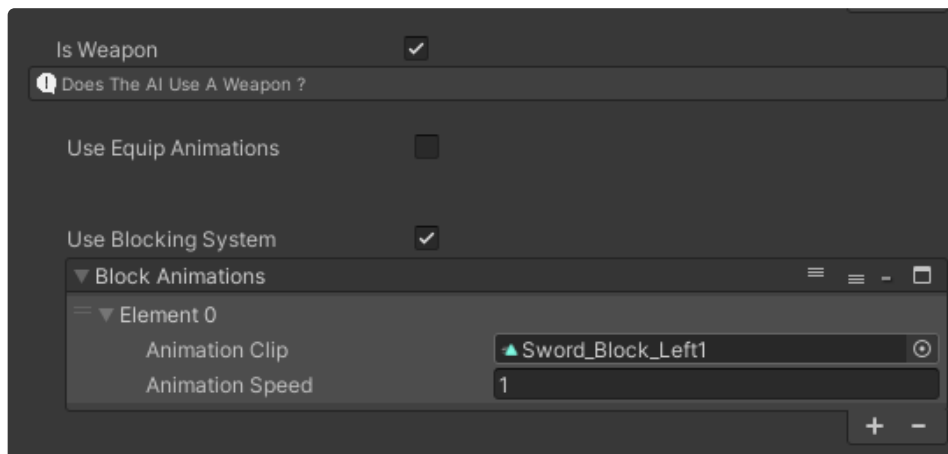
## Melee Block System

Here, you will learn how to use the blocking system for your melee AI

- First, follow the part -> [Create Melee Weapon](#)

### Creating Animations

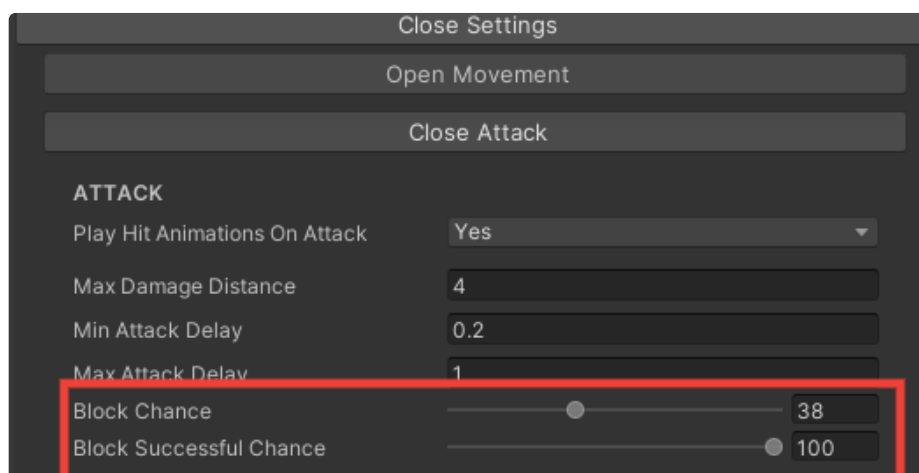
- Make sure that you selected **Use Block System** on AI animations setup, and also assigned your **Block Animations**.



Example Animator Creator

### Adjusting AI Settings

- After assigning **Block Animations** and applying the animator setup, you will now see **2 new variables** have been created.




The New Created Variables

- You can **adjust** these settings as you like, to make your AI look more **natural or defensive**.

## Create Shooter Weapon

Here, you will learn how to create a Shooter Weapon

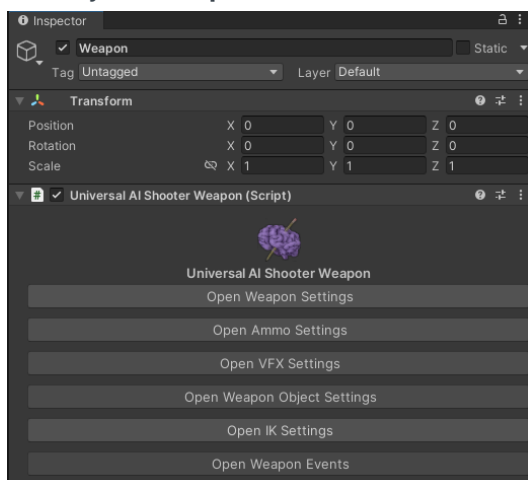
 First, create a working AI by following here: [📄 Get Started](#)


### Creating The Shooter Weapon

1. Put your **Shooter Weapon Model** under the right-hand bone of your AI.



2. Select your **Weapon Model** and add the "**UniversalAIShooterWeapon**" component to it.



 Your weapon object is now **ready**, you can adjust the settings as you like!

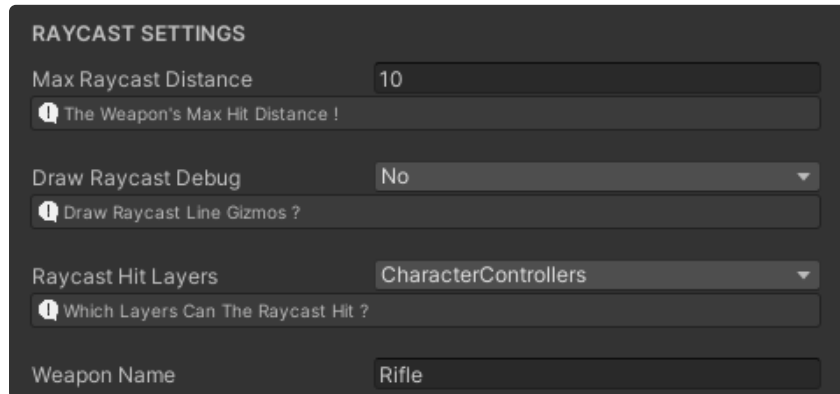
## Setting Up The Bullet

### Raycast Based

#### How To Create A Raycast Weapon

1. Navigate to: **"Weapon Settings / Fire Type"** and set it as **Raycast**.
2. Navigate to: **"Weapon Settings / Raycast Settings"** and change the values as you like.

This is all for setting up the **raycast weapon**.



**RAYCAST SETTINGS**

Max Raycast Distance: 10  
The Weapon's Max Hit Distance !

Draw Raycast Debug: No  
Draw Raycast Line Gizmos ?

Raycast Hit Layers: CharacterControllers  
Which Layers Can The Raycast Hit ?

Weapon Name: Rifle

Example

### Projectile Based

#### Setting Up The Projectile Weapon

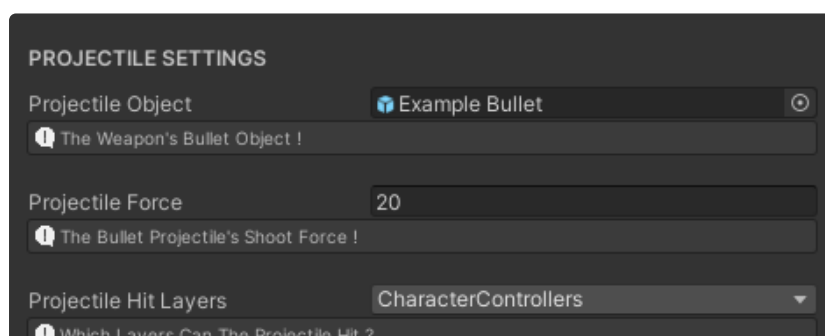
1. Navigate to: **"Weapon Settings / Fire Type"** and set it as **Projectile**.
2. Navigate to: **"Weapon Settings / Projectile Settings"** and change the values as you like.

This is all for setting up the raycast weapon.

#### Setting Up The Bullet Projectile

1. Make sure that your bullet projectile prefab has a **"Rigidbody"** component attached to it.
2. Add the **"UniversalAIProjectile"** component to it.
3. Assign this prefab in your weapon script: **"Weapon Settings / Projectile Settings"**.

This is all for setting up the **projectile weapon**.





**PROJECTILE SETTINGS**


Projectile Object: Example Bullet  
The Weapon's Bullet Object !

Projectile Force: 20  
The Bullet Projectile's Shoot Force !

Projectile Hit Layers: CharacterControllers  
Which Layers Can The Projectile Hit ?

## Example




 If you want to use **Equip & Unequip** animations, please follow ->  **Weapon Equipping** .

 If you also want to use the **Inverse Kinematics** system on your AI, please follow ->  **Inverse Kinematics** .

## Weapon Equipping

Here, you will learn how to use the reloading system.

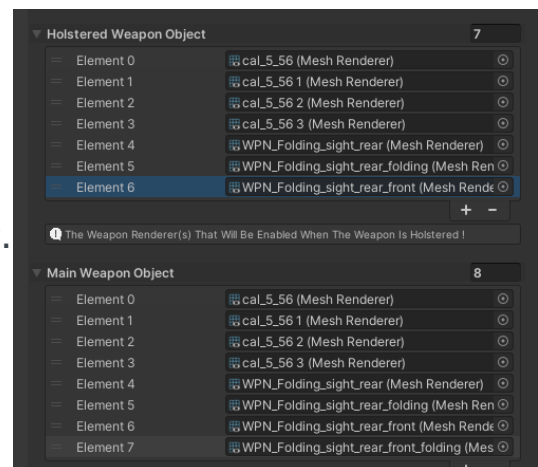
 This part is the same for both **Shooter & Melee** weapon scripts.

 Make sure to finish the  **Create Shooter Weapon** or  **Create Melee Weapon** part first!

### Setting Up The Holstered Weapon

1. Navigate to: "**UniversalAIShooterWeapon / Weapon Object Settings**" or

"**UniversalAIMeleeWeapon / Weapon Object Settings**".

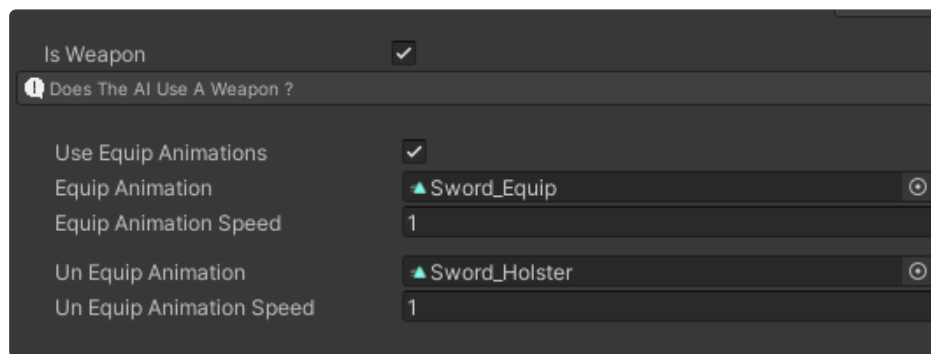


2. Add both your **Weapon** and **Holstered Weapon** renderers there.



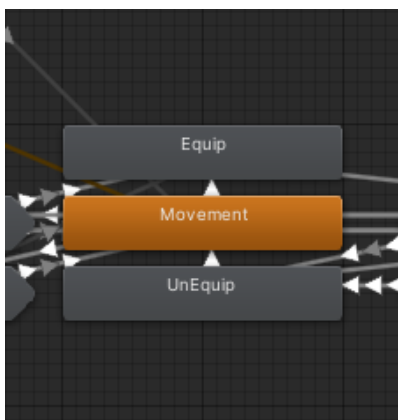
## Setting Up The Animations

- In the **AI** setup, you selected **Use Equip Animations** on AI animations setup, and also assigned your **Equip & Un Equip Animations**.



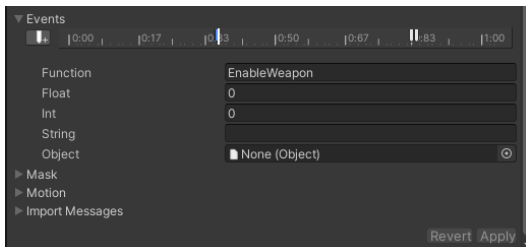
Don't forget to press APPLY :)

1. Open the **Animator** on your AI and navigate to the **Equip & UnEquip** state.



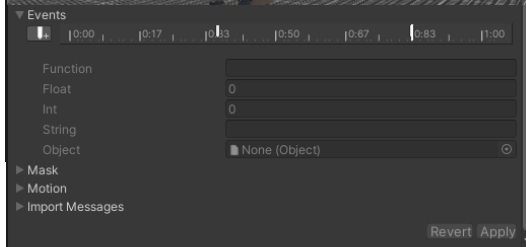
You can find these after **clicking** on your **Animator Controller**

2. Then, when your character **Equips** the weapon; call the **EnableWeapon** event.

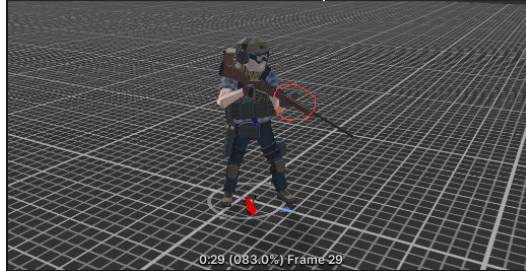


When your AI **Equips** its weapon.

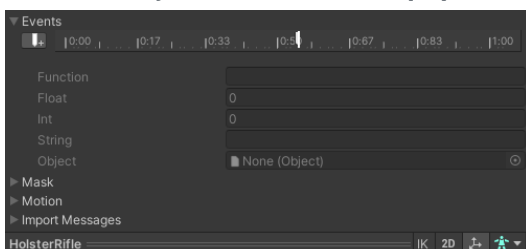
3. When your character **both hands** are on the weapon, call the **EnableIK** animation event.



When your AI's **Both Hands** are on the weapon.



4. Then, when your character **UnEquips** the weapon; call the **DisableWeapon** event.



When your AI **Un Equips** its weapon.





You can always ask for support in our [discord](#) server.

✓ Now, your AI should be working fine.

## 🤝 Create Companion AI

Here, you will learn how to create an Companion AI

 First, create a **fully working AI** by following ->  **Create Your First AI**

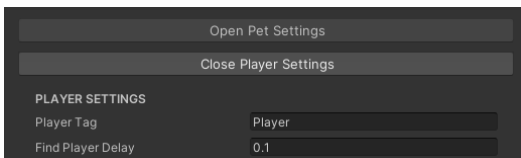
## First Step


1. Navigate to: "**UniversalAISystem / General /** ".
2. Set the **AI Type -> Companion**.

## Player Settings

- For your **AI** to find your **Player Object**, you need to change a few settings. To do this:

1. Navigate to: "**UniversalAISystem / Type Settings / Player Settings**".
2. Enter your **Player Tag** and **Find Delay**.

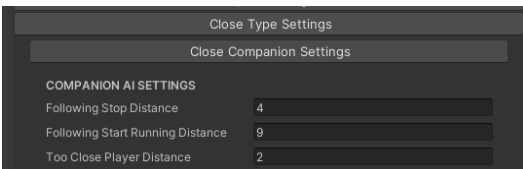


 **Player Find Delay** is to make sure the AI will search for the Player Object after it spawns.

## Companion Settings

- You can adjust these settings as you like for creating the **best** companion AI for you.

1. Navigate to: "**UniversalAISystem / Type Settings / Companion Settings**".
2. **Adjust** the settings as you like.





 And that's all, now your **Companion AI** should work without any problems.



**Create Pet AI**

Here, you will learn how to create a pet AI

 First, create a **fully working AI** by following ->  **Create Your First AI**

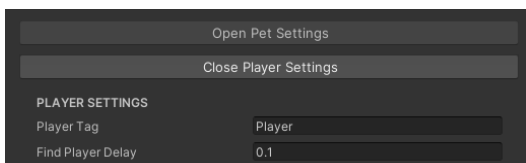
## First Step


1. Navigate to: "**UniversalAISystem / General /** ".
2. Set the **AI Type -> Pet**.

## Player Settings

- For your **AI** to find your **Player Object**, you need to change a few settings. To do this:

1. Navigate to: "**UniversalAISystem / Type Settings / Player Settings**".
2. Enter your **Player Tag** and **Find Delay**.

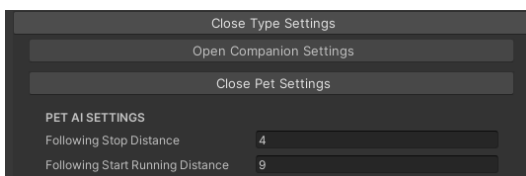


 **Player Find Delay** is to make sure the AI will search for the Player Object after it spawns.

## Pet Settings

- You can adjust these settings as you like for creating the **best** pet AI for you.

1. Navigate to: "**UniversalAISystem / Type Settings / Pet Settings**".
2. **Adjust** the settings as you like.



 And that's all, now your **Pet AI** should work without any problems.



# Inverse Kinematics

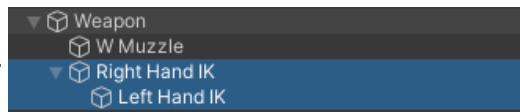
## 👉 Hand IK

Here, you will learn how to use the HAND IK

📘 Please complete the  **Create Shooter Weapon** part first.

### Setting Up The Hand IK

1. After creating a **Shooter Weapon**, you will notice that a **Right Hand IK** & **Left Hand IK** named object was created under the weapon parent.

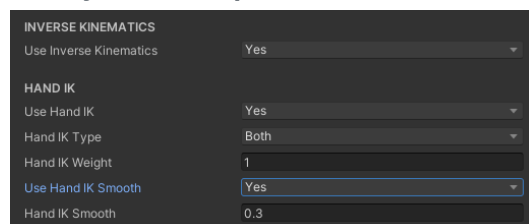


2. While in the **Playmode**, adjust their position as you like for the **hand positions**, and don't forget to **Copy** their transform before exiting the play mode, and **Paste** their transform after.



3. After making sure that's done, Navigate to: "**UniversalAISystem Component / Inverse Kinematics /**

**HAND IK**". And enable the **Use HAND IK** option.




✅ And that's all, **HAND IK** should work without any problems!

## 🎯 Aim IK

Here, you will learn how to use the AIM IK

 You will first need to complete the # **Creating The Shooter Weapon** part!

 **AIM IK** only works for the **Shooter AI(s)**!

## Setting Up The Aim IK

1. After creating a **Shooter Weapon**, you will notice that a **W Muzzle** named object was created under the weapon parent.

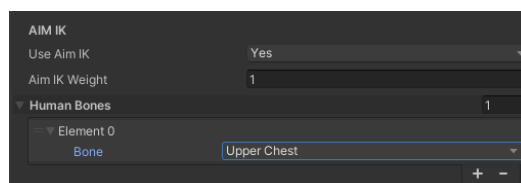


2. Put it on the **tip of your gun**. It will be where the **bullet of your gun** comes out.



3. After making sure that's done, Navigate to: "**UniversalAISystem Component / Inverse Kinematics / AIM IK**". And enable the **Use AIM IK** option.
4. Add the **Bones** you want to be used in the **Aim IK** to the "**HumanBones**" list. Adding the **UpperChest**

bone only is *recommended*.



 And that's all, **AIM IK** should work fine without any problems now!

## Look At IK

Here, you will learn how to use the LOOK AT IK

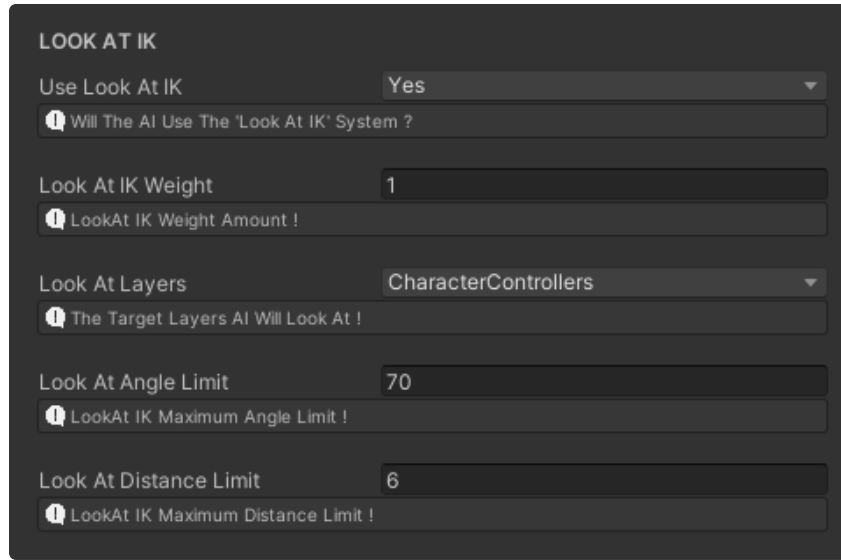


 Inverse Kinematics only works for **Humanoid** rigged AI(s).

### Setting Up The Look At IK


1. Navigate to: "**UniversalAISystem Component / Inverse Kinematics / LOOK AT IK**".
2. Enable the **Use Look At IK**.
3. Add the **Layers** of the objects that your AI Should **Look At**.

And now, if the AI **Detects Any Objects** with the given layer and distance, it will Look at them!




**LOOK AT IK**


Use Look At IK Yes

 Will The AI Use The 'Look At IK' System ?


Look At IK Weight 1

 LookAt IK Weight Amount !


Look At Layers CharacterControllers

 The Target Layers AI Will Look At !

Look At Angle Limit 70

 LookAt IK Maximum Angle Limit !

Look At Distance Limit 6

 LookAt IK Maximum Distance Limit !

Example

 You can check the **Look At IK** demo scene for more info too.

## MISC FEATURES



### Action Zones

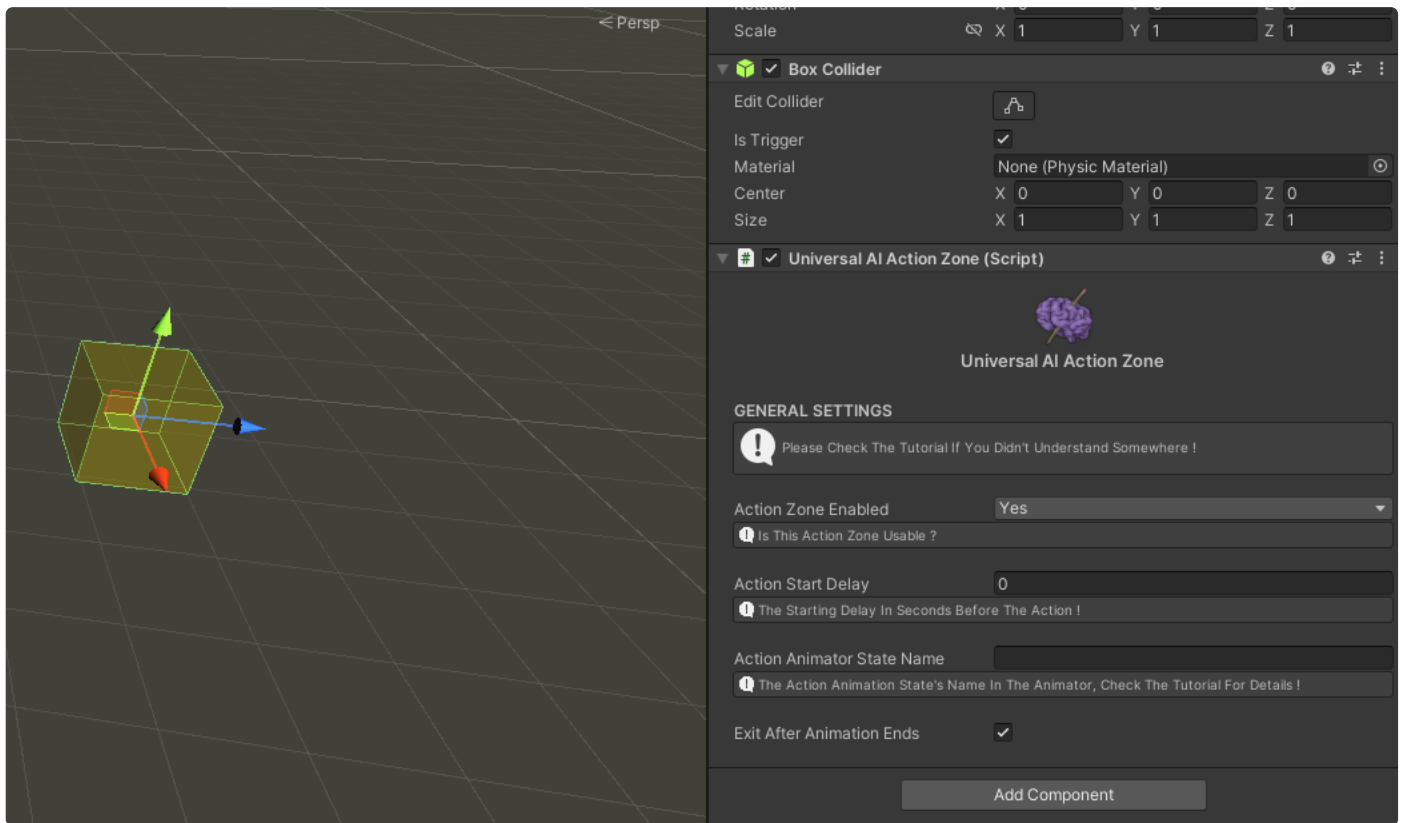
Here, you will learn how to use Custom Action Zones

 Action zones allow you to use any **Custom Animation** on entering a zone!

### Creating A Action Zone

1. Create a new **GameObject** and add the "**UniversalAIActionZone**" component to it!
2. Edit the added **BoxCollider** on the object as you like.

Now it should look like **THIS**:

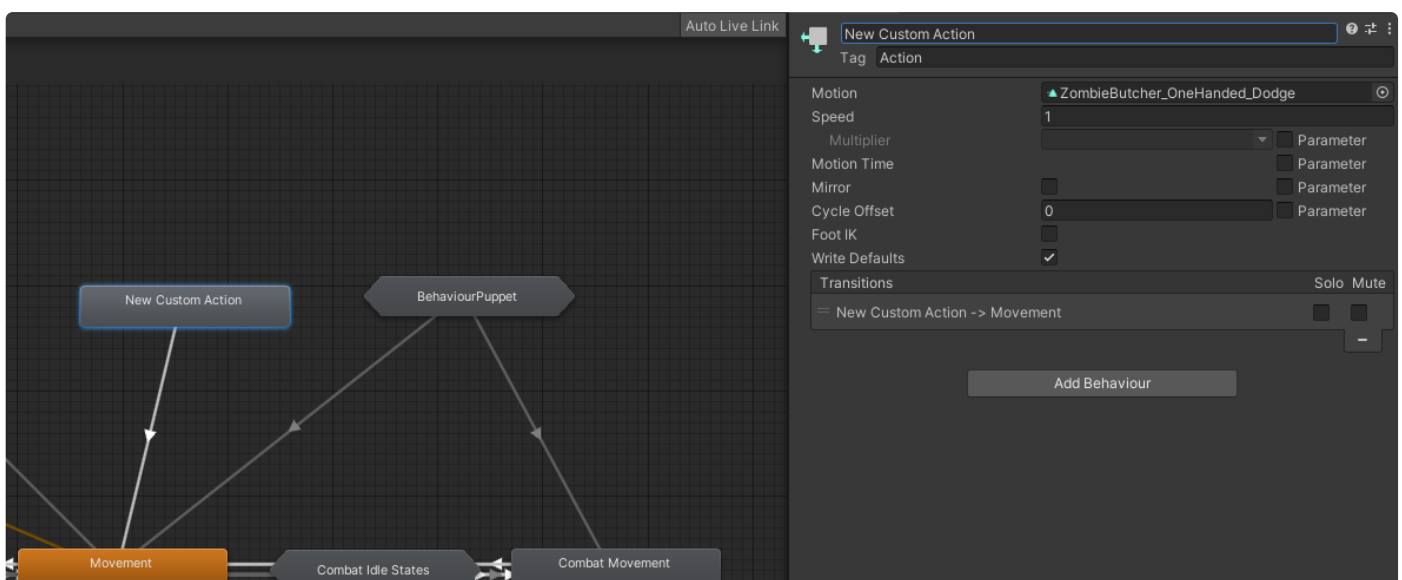


An Action Zone Example Image

## Setting A Custom Animation Action

1. Open your **Animator Controller** on your AI.
2. Drag and drop your **Custom Animation Clip** to the Animator.
3. Name the **New Animation State** added to the animator as you like.
4. Click on the **New Animation State** and set its **TAG** as: "Action".

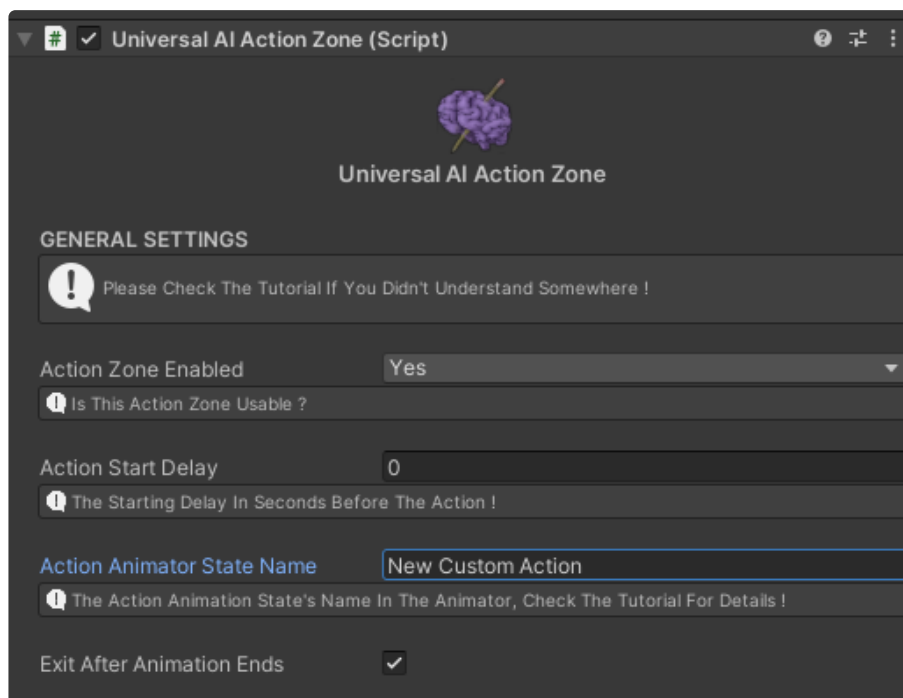
And now, your animator should look like **THIS**:



## Setting The Action Zone Component


1. Go to your **Action Zone** object.
2. If you want to add a **Start Delay** for your action, increase the **Action Start Delay!**
3. Set the **Action Animator State Name** as your newly created **State's Name** above!

And now, it should look like **THIS**:



An Action Zone With Custom Animation Example Image

 If you are stuck, please follow the tutorial video below:

 And that's all! Now when your AI enters the zone, it should play the **Custom Animation!**

## Sound Detection

Here, you will learn how to set up the Sound Detection for your AI

### Setting up the sound detection

1. Open the script where you want to initialize a sound, (**For example, the script your gun shoots**)
2. Add this code method to make your AI(s) detect the sound:

```
1 // SoundType: The sound type you want to initialize. Ie: Shooting Sound.
2 // Sound Radius: The distance the AI(s) can hear this sound. Ie: 10 meters.
3 // Sound Source: The object who made this sound. Ie: The Player.
4
5 //Example:
6
7 public void Start()
8 {
9     UniversalAI.UniversalAIManager.SoundDetection(UniversalAIEnums.SoundType.ShootSound, 10,
10 }
```

And that's all, now the AI(s) who are inside the sound radius will detect the threat!



## Stats UI

Here, you will learn how to use the Stats UI for your AI

### Adding The UI

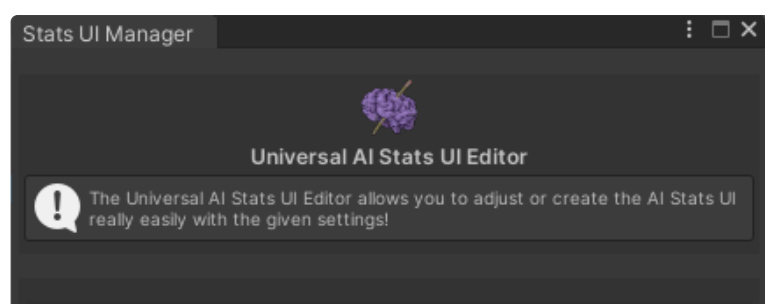
1. After creating an AI, you can find the **Stats UI** prefab under the project: "**Assets / Universal AI 2.0 / Resources / Prefabs / Stats UI**".
2. After finding the prefab, basically, drag and drop it as a **Child** for your **AI Object**.

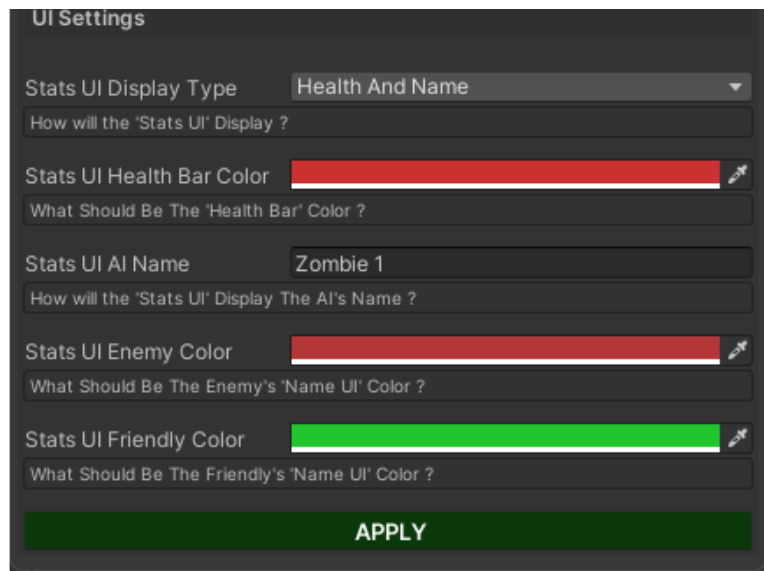
Now, your AI's **Stats UI** should be ready to be edited.



### Editing The UI

1. Navigate to the menu: "**Tools / Universal AI / AI Wizards / Stats UI Editor**" and open it.
2. Select your **Stats UI** prefab in the hierarchy.





Stats UI editor

And now, you can edit the settings as you like, and don't forget to press **APPLY!**

 You can check the **Stats UI** demo too for more info.

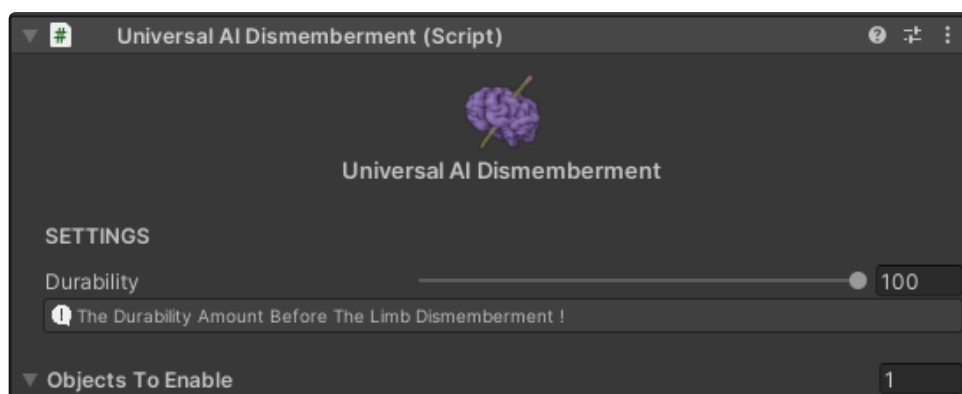
## Dismemberment

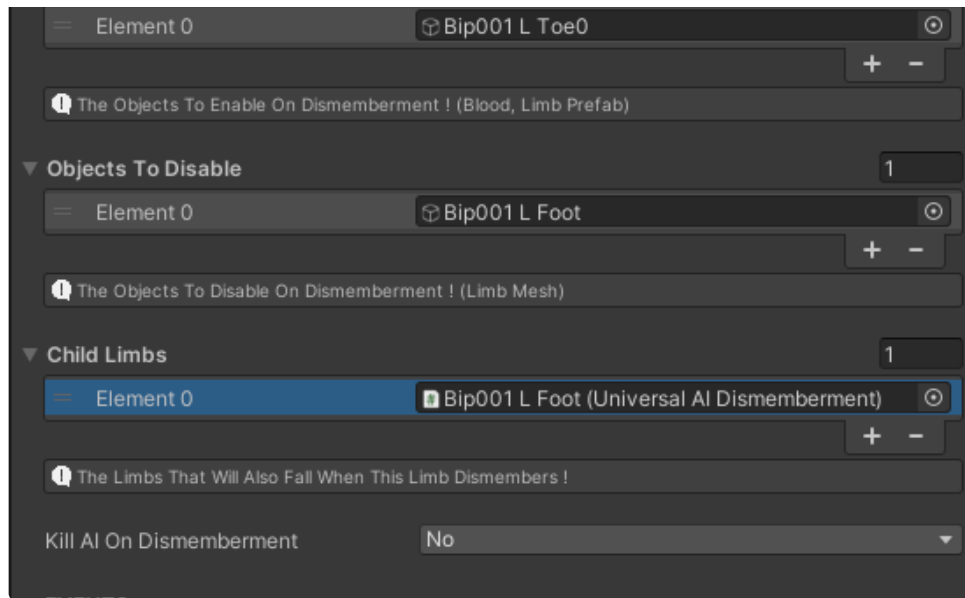
Here, you will learn how to use the Dismemberment system for your AI

 You will need to have a **Separate Mesh Of Your Limb** for using this!

### Using Dismemberment System

1. Go to one of the **Ragdoll Bone** you want to use dismemberment on.
2. Add the **"UniversalAIDismemberment"** component.
3. Add your **Limb** mesh to the **Disable Objects** list.
4. Add your **Limb Rigidbody** prefab to the **Enable Objects** list.






Example

And now, when the bone durability finishes, your **Disable Object Mesh** should be disabled and the rigidbody limb prefab should be enabled automatically.

# API Code

## API Code

Here, you will learn the API of the AI Code.

 The **API Code** of the AI is explained on another **Github Repository**. Check it out ->

Home · DarkingAssets/Universal-AI-2.0 Wiki  
GitHub

API DOCS