Ultimate Zombie AI Documentation

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Thank You

Thank you very much for choosing Ultimate Zombie AI. Be careful, you are about to create some flesh and blood hungry Zombies!

Overview

In this Documentation, we will discuss how to create a Zombie and all the Behaviours and other crucial properties :

- Hints
- Locomotion
- Idle
- Patrol
- Chase
- Enemy Sight
- Hearing
- Attacking
- Health
- Death
- Sounds
- Gizmos

I know that AI is a sophisticated field and to make it user friendly, quick and easy to customize, I have specifically tailored the uzAI Inspector and uzAI Wizard Window for hassle free creation and customizations.

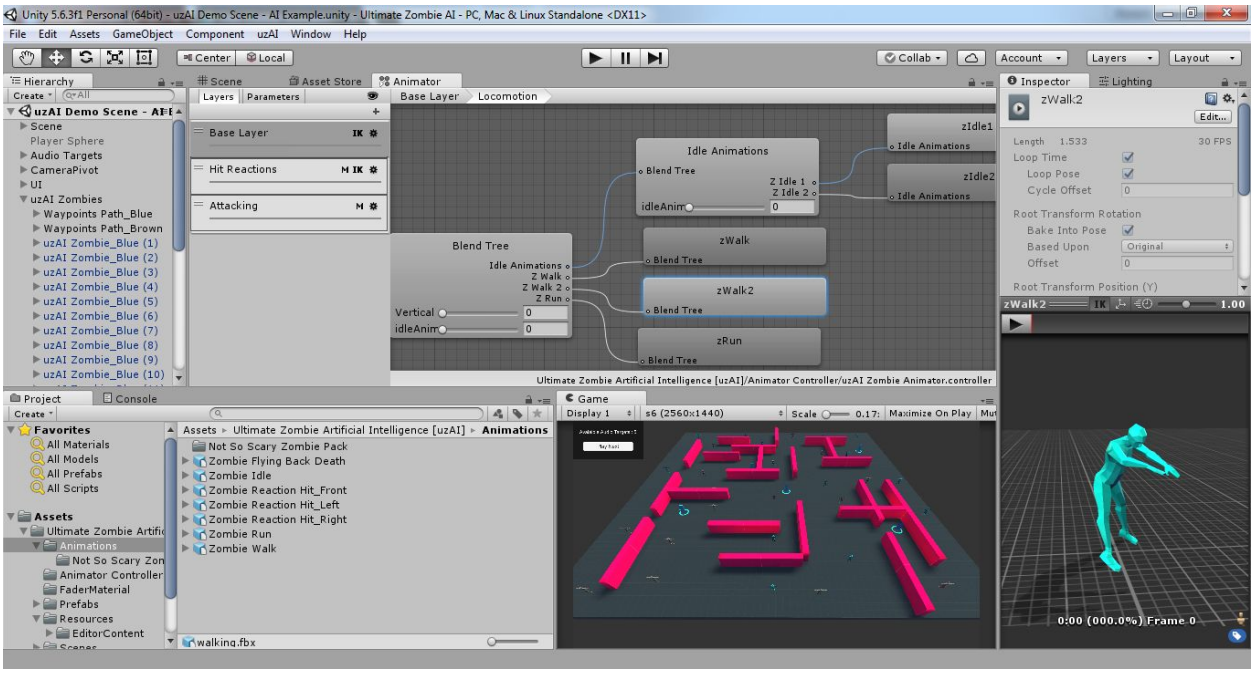
Pre-Requisites

You just need to have a basic understanding of the Unity Editor like what is Inspector, Hierarchy, Game and Scene Window.

However, you are required to download and import the Free Animations which are used in this package after importing it into your Project.

DOWNLOAD FROM HERE →
https://drive.google.com/open?id=1jieXlAmt_9Urzqn7xwVlh5v2fubA3q-P

After you have downloaded the Animations.rar file, please extract it and move its contents into your package like so :-

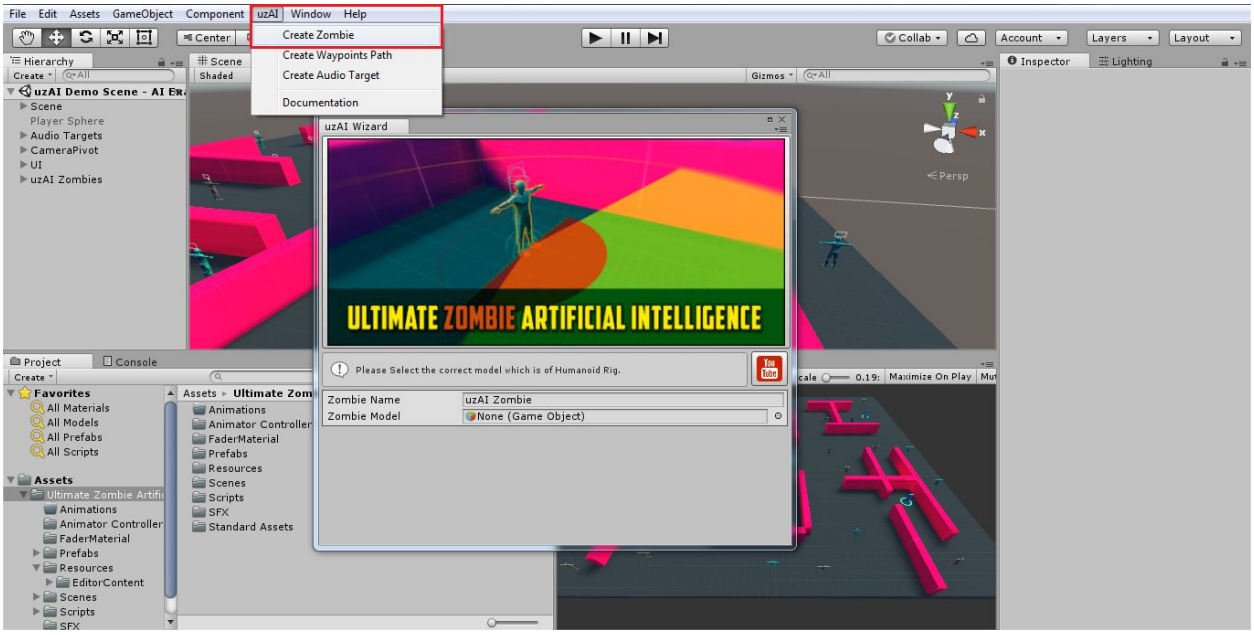


You will now see, after selecting any Zombie, the Animator Controller has been assigned all the respective Animations. Awesome! :)

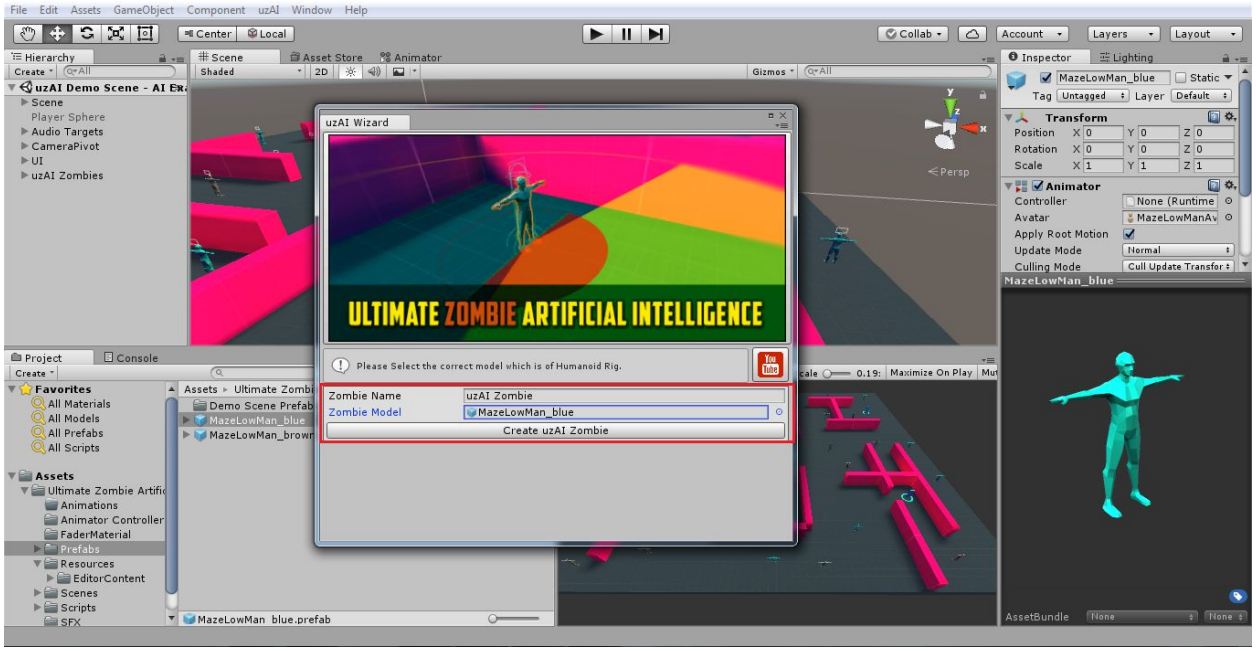
How to Create an AI?

Please go to the Top Menu - uzAI > Create Zombie.

It will open the **uzAI Wizard** Window.



Now drag and drop any **Humanoid** Model in the Zombie Model field!



You can change the **Zombie Name** as well. Now hit the **Create** Button. That's it!

Explanation of Created Zombie

We just created in the Previous step our First **uzAI Zombie.**

After creating it, we see 2 things in our Hierarchy.

First is the uzAI Zombie that we just created and another is the Waypoints Path which will be the Waypoints Route of this uzAI Zombie. However, if you want this Zombie to be Idle and not Patrol at all, you can delete this Waypoints Path!

uzAI Zombie Inspector

The whole uzAI Inspector is divided into 10 Toggle Buttons. These are as follows :

1. Hints
2. Locomotion
3. Idle
4. Patrol
5. Sight
6. Chase
7. Attack
8. Health
9. Sounds
10. Gizmos

We will be taking an in depth look into these Toggles one by one.

Hints Toggle

The uzAI Zombie, has very complex values in the Inspector and no one, even myself can't remember their use. Therefore, to remove this difficulty, we have this Handy **Hints** Toggle Button in the Inspector. It is the Very First Toggle and on Top of the whole Inspector.

(a)

(b)

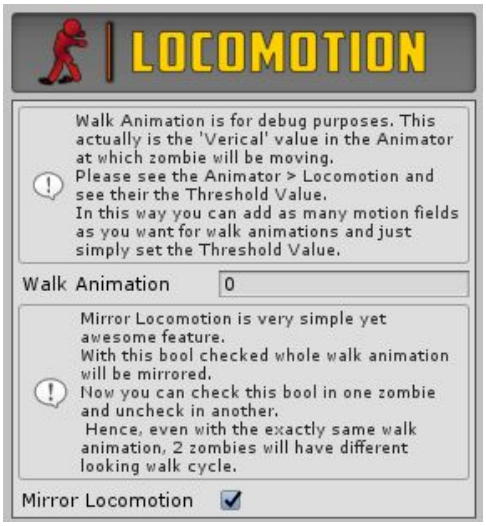
(a) Image shows Inspector **without** Hints Toggle Enabled.

(b) Image shows Inspector **with** Hints Toggle Enabled.

Locomotion Toggle

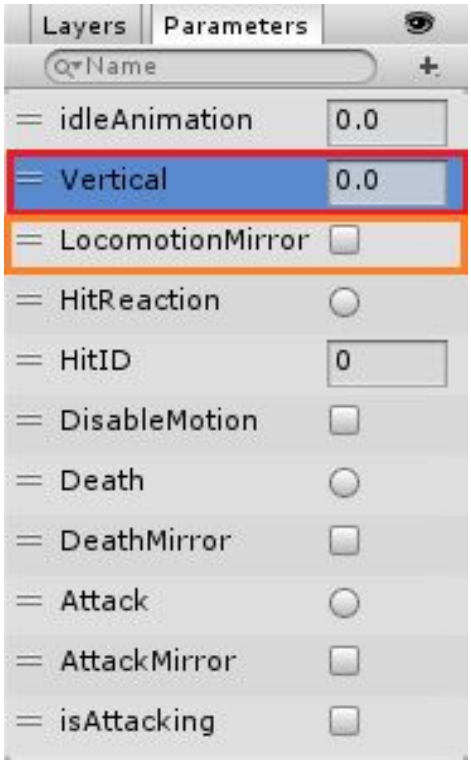
Locomotion Toggle holds 2 very important Properties.

- Walk Animation
- Mirror Locomotion



Walk Animation - This property is for debug purposes and its value will be changing in the Runtime.

This is actually the "Vertical" parameter in the Animator and it defines, which walk animation Zombie is playing right now.



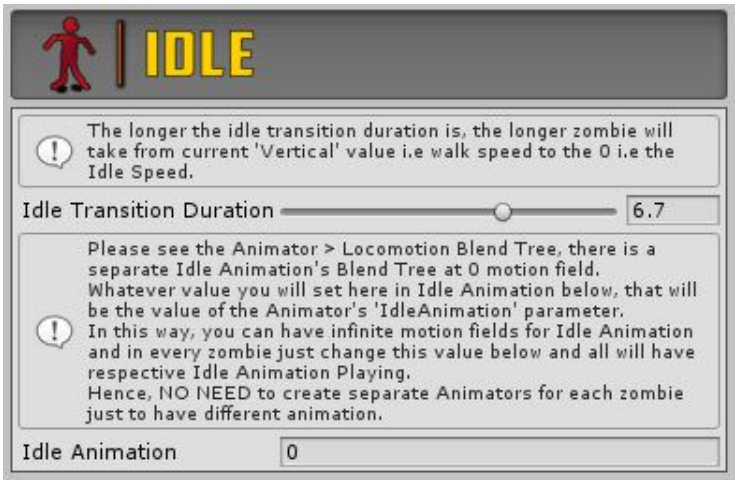
Mirror Locomotion - This is a very handy boolean. If this boolean is checked, the "LocomotionMirror" boolean parameter of the Animator will be checked at Runtime.

With the Mirror Locomotion checked, the Zombie's whole locomotion Blend tree will be playing all the Mirrored Animations. This means, check this bool in one zombie and uncheck in another, and you will have 2 different zombies witch exactly same animations but but different looking walk Cycles. Awesome!

Idle Toggle

Idle Toggle holds 2 Properties.

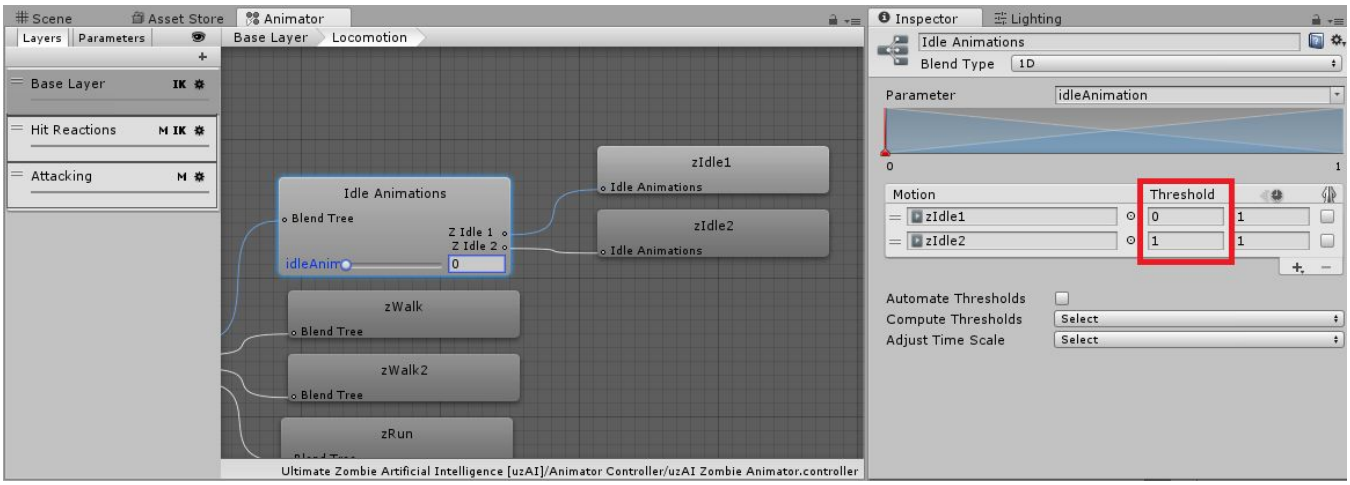
- Idle Transition Duration
- Idle Animation



Idle Transition Duration - The longer Idle transition duration is, the loger Zombies will take from current 'Vertical' value i.e walk speed to the 0 i.e the Idle Animation.

Idle Animation - It sets the idleAnimation parameter of Idle Animations Blend tree which is a separate Blend Tree in the Locomotion Blend Tree. You can add infinite animations into this blend tree. Now see their Threshold value in the Animator and write that value in the **Idle Animation** in Inspector. Hence, NO NEED to create separate Animators for each Zombie.

To understand this clearly, please see the **Animator Controller**.

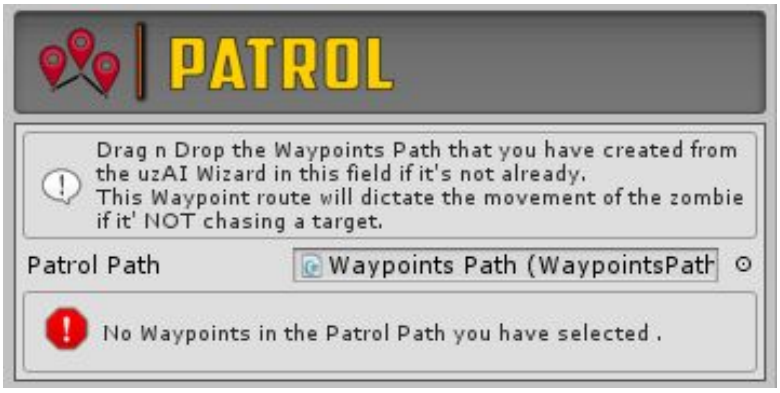


Patrol Toggle

Drag and drop the Waypoints Path which was created with this Zombie in the empty Patrol Path field only if you want this Zombie to Patrol.

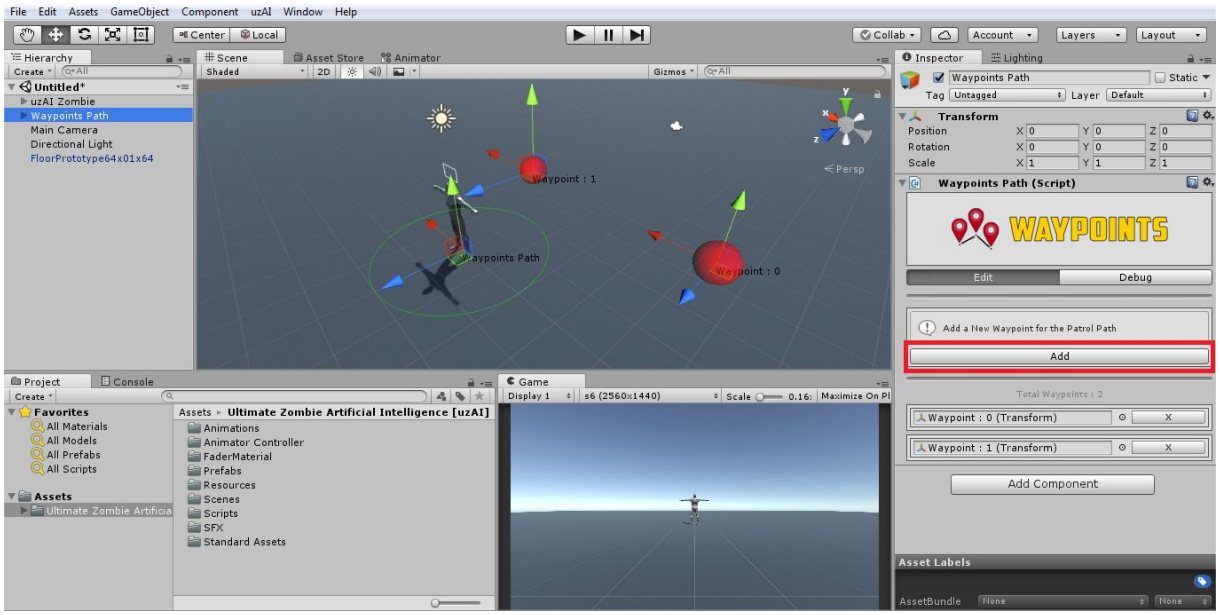
There will be an error message showing in the Inspector if you won't assign the **Patrol Path**. However, once assigned, the message will show something like this.

This means we have to Add Waypoints into in the Waypoints Path which we have just added in the **Patrol Path**.

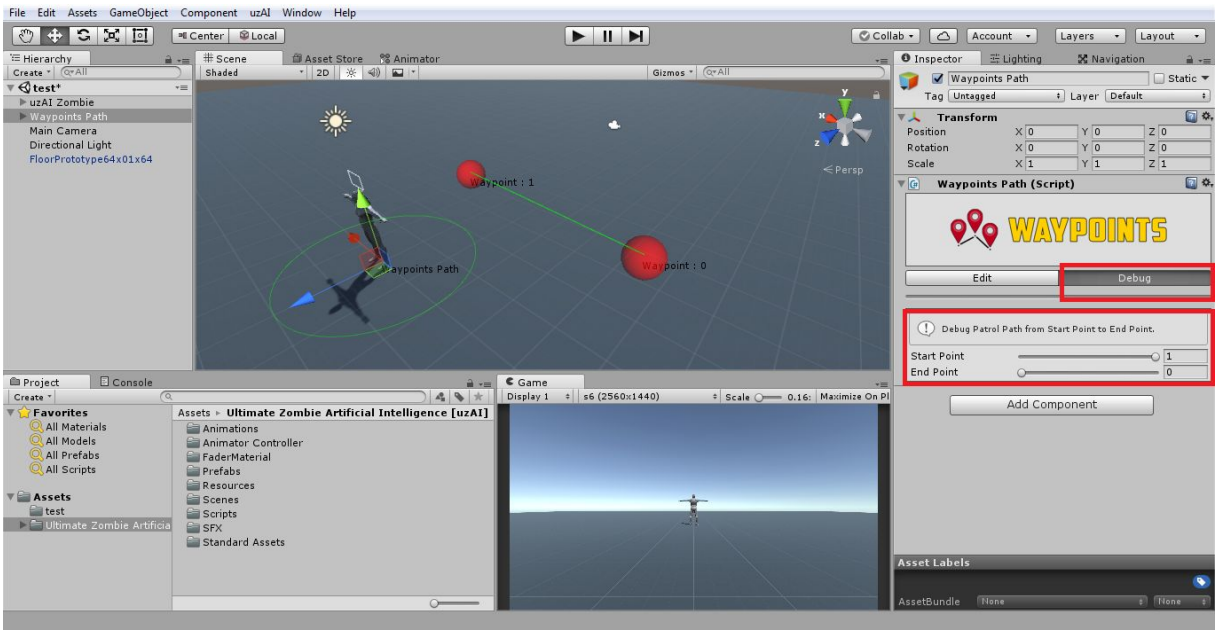


To Add the Waypoints in the Waypoints Path simply click the Add Button in the Inspector and move the waypoint to desired location.

You can see the change in the Scene view without pressing the Play Button! Cool right? :)



One more thing, since we are here in the Waypoints Path Script only, you can Debug the Path by pressing the Debug Button and selecting the Start point and End Point.

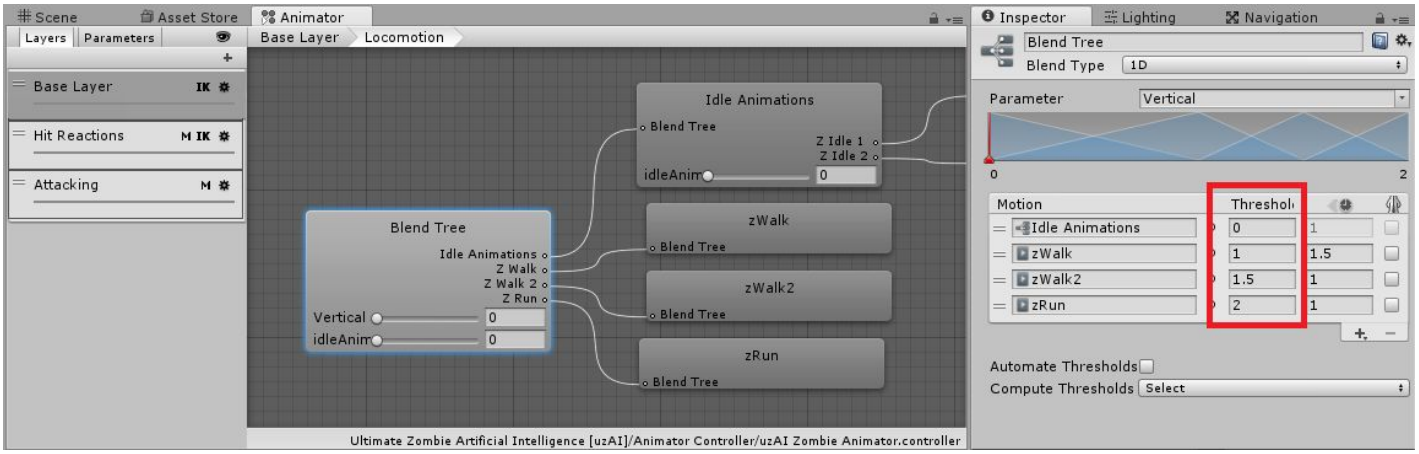


Now after we have added waypoints in the Waypoint Path, our **Patrol Toggle** will look something like this.

We now see 2 more Parameters showing in the Inspector.

Patrol Animation - This is similar to Idle Animation, just write the Threshold Value of the Animation you want to play while Patrolling from the Locomotion Blend Tree.

Please see **Animator Controller** Below for better understanding.



Patrol Delay - This is the main Delay in moving from one waypoint to next waypoint / moving from Idle state / Chase state to Patrol State.

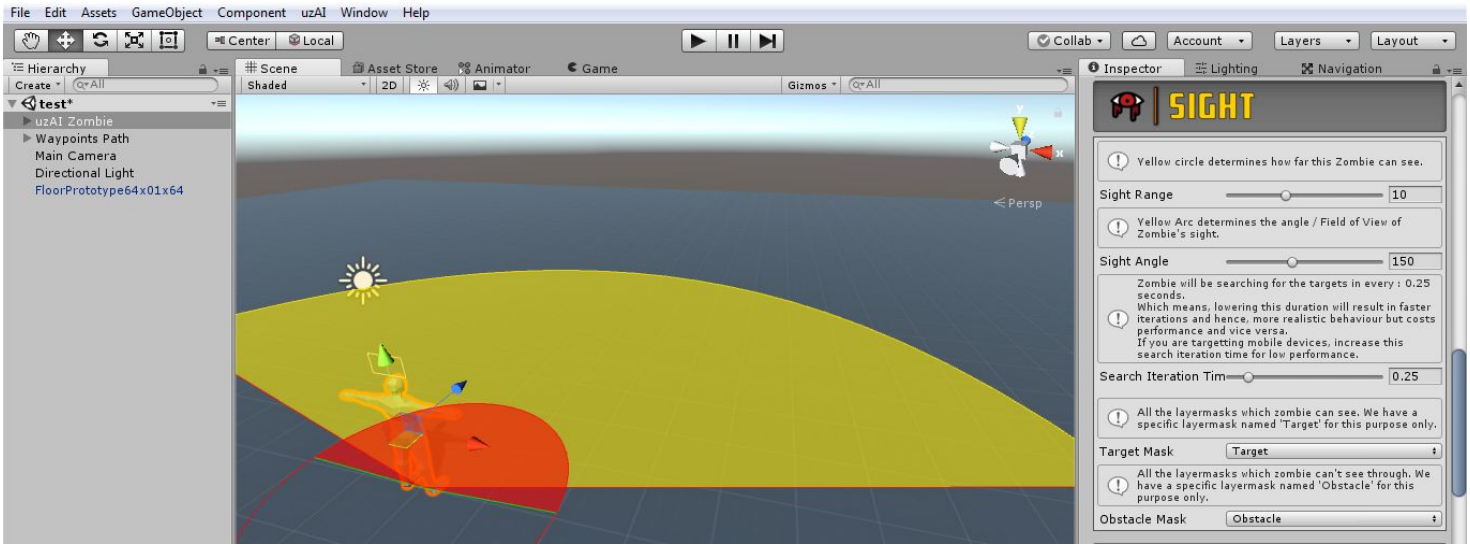
Sight Toggle

This holds the properties which determine what Zombie can see, what zombie can't, how far he can see, etc.

For ease of Understanding, I have divided this script in 2 parts.

Part I

- **Sight Range** : The yellow circle determines how far the zombie can see.
- **Sight Angle** : Yellow Arc determines the Angle / Field of View of Zombie's Sight.
- **Search Iteration Time** : Define how fast you want the Zombie to search for the Targets. If you increase the duration, Zombie will react slowly but it will decrease the performance. If you are targetting mobile platforms, try increasing this value for better performance and frame rates.
- **Target Mask** : All The Layermasks which zombie can identify as threat. We have a separate layermask 'Target' for this purpose only.
- **Obstacle Mask** : All the Layermasks which will block the Zombie's Field of View. We have a specific layermask 'Obstacle' for this purpose only.



Part II

This part II holds the List of Tags which Zombie can detect as Threat and will start chasing as soon as it comes in above defined Sight Range and Sight Angle.

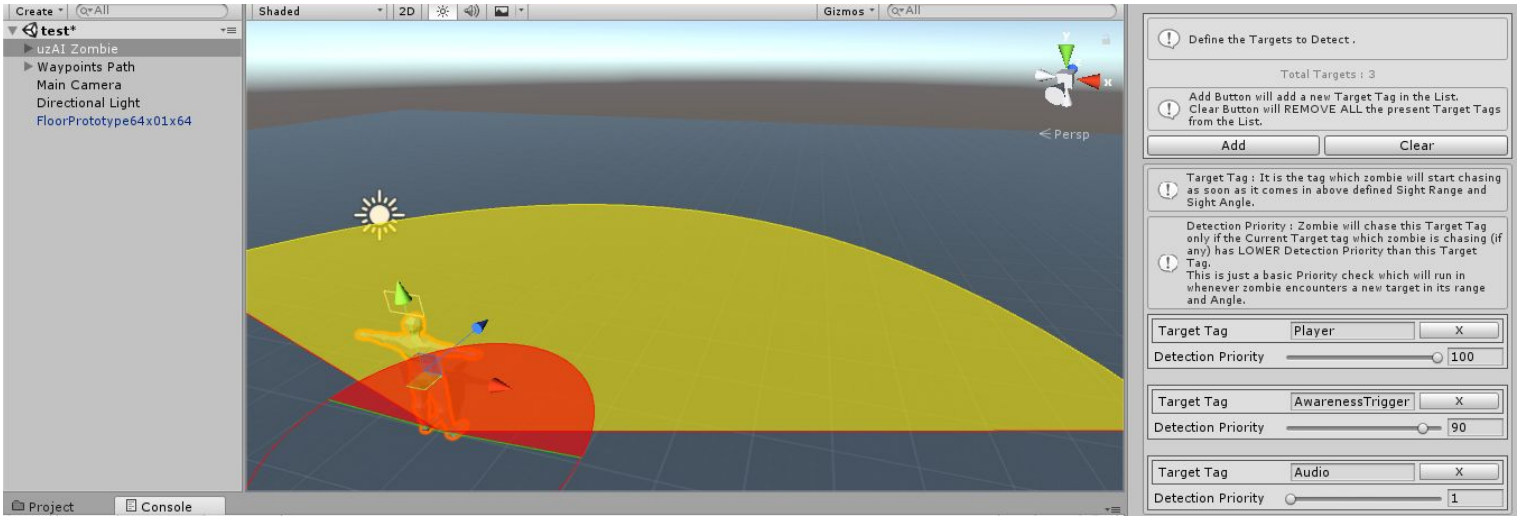
Add button will add new Target Tag in the list and Clear Button will remove all the present Target tags from the list.

Each added target tag comes with 2 properties :

- Target Tag : Tag which zombies will start chasing as soon as it comes in above defined Sight Range and Sight Angle.
- Detection Priority : Suppose, Zombie is chasing a Target Tag “XYZ” with Detection Priority of **90**. While chasing “XYZ”, Zombie see another object whose Tag “ABC” is in this list as well.

  If “ABC” is having the Detection Priority **> (Greater than)** Detection Priority of “XYZ”, then Zombie will stop chasing “XYZ” and start chasing “ABC”.

  Detection Priority is basically a Priority Check which will run whenever Zombie see a new target in its Sight Range and Sight Angle.



Chase Toggle

Chase Toggle contains **2 Sets** of Properties.

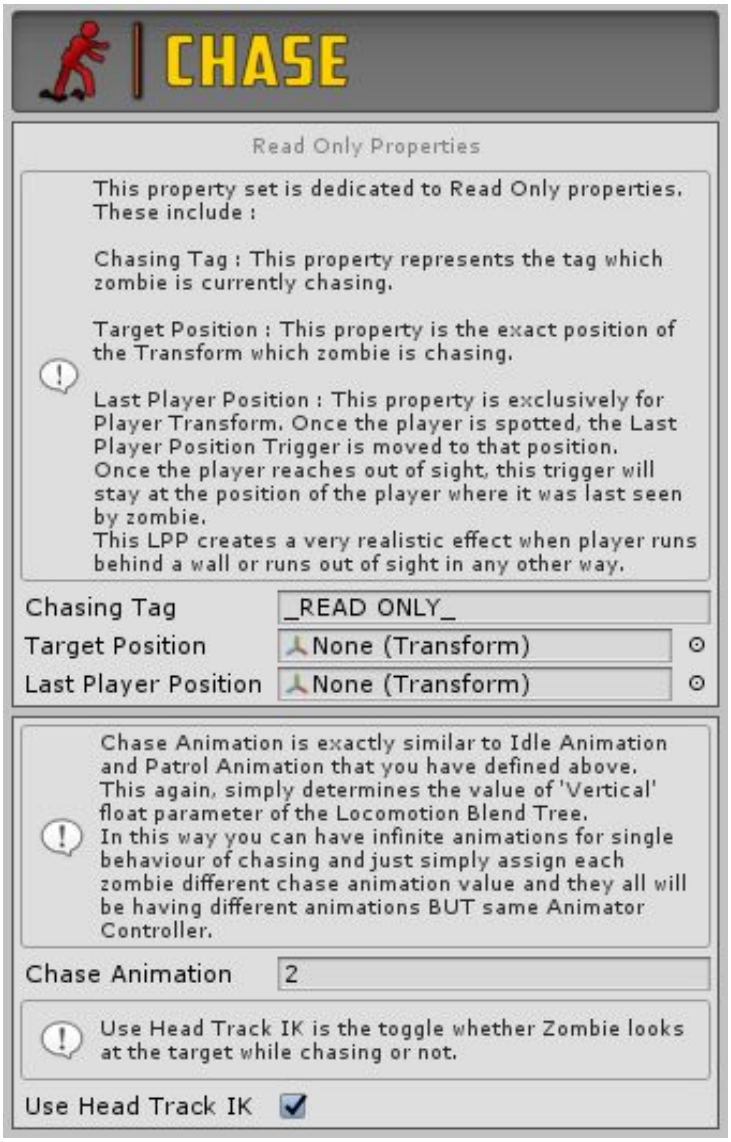
Set I : This Set contains Read Only Properties.

- **Chasing Tag** : Tag which Zombie is currently chasing.
- **Target Position** : Transform of the Target Zombie is chasing currently.
- **Last Player Location (LPP)** : This is a dynamic Transform which means its location will be changing according to Player Location. Once the Player is spotted, the LPP Trigger will be moved to that position. Once, Player moves out of Sight Angle / Sight Range this Trigger will be at the position where the Zombie has last spotted the Player.

  In this way, this LPP creates awesome Realistic effect like when Player runs behind a wall or runs out of sight.

Set II : This Set contains 2 Properties

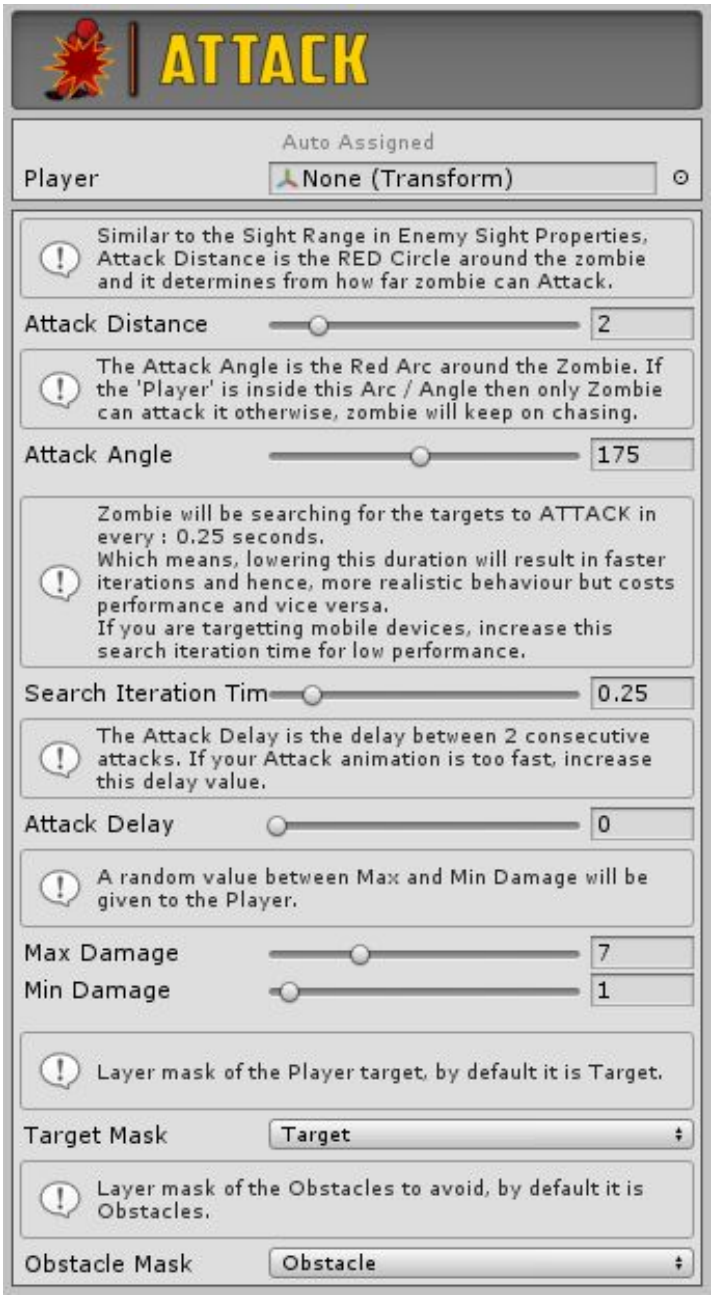
- **Chase Animation** : This is exactly similar to Idle Animation and Patrol Animation that you have read before. This again, simply determines the Threshold Value / Vertical Parameter of the Locomotion Blend Tree. In this way you can have as many chase animations as you want and just assign different Chase Animation value here in Inspector to different Zombie. No need to have different Animator Controllers for different Zombies.
- **Use Head Track IK** : If true, Zombie will look at the Target while chasing.



Attack Toggle

Attack Toggle contains properties like Attack Range, max and min damage, etc.

- **Player** : Will be Auto Assigned at RUNTIME.
- **Attack Distance** : The Red Circle around the Zombie. It determines from how far this Zombie can Attack.
- **Attack Angle** : Red Arc around the Zombie. If Player is inside this Arc / Angle then only Zombie can attack it.
- **Search Iteration Time** : Zombie will be searching to attack Player in every Search Iteration Seconds you have defined. Increasing this Time will result is better performance but lenient behaviour. However, I recommend increase this value if you are making a mobile game!
- **Attack Delay** : Delay between 2 consecutive attacks.
- **Max Damage** : Max amount of damage this Zombie can inflict to Player.
- **Min Damage** : Min amount of damage this Zombie can inflict to Player.
- **Target Mask** : Layer mask in which Player resides. By default it is set to "Target".
- **Obstacle Mask** : Layer Mask of the Objects to avoid while attacking. By default it is set to "Obstacles".

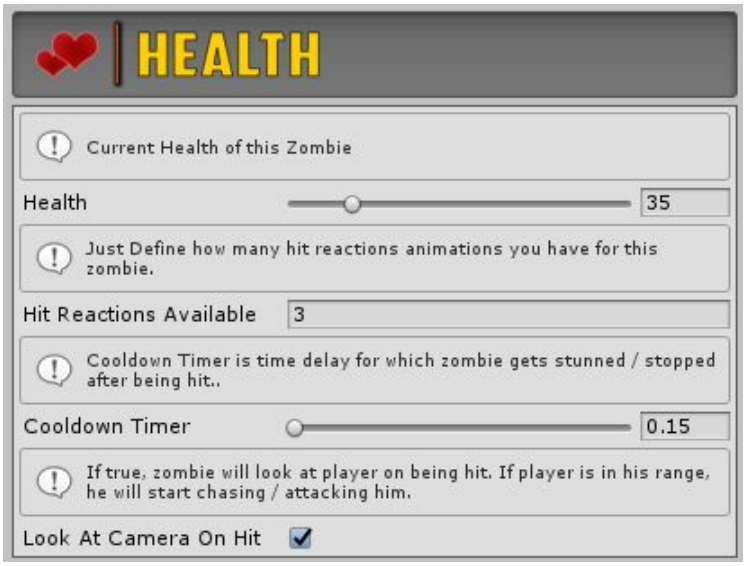


Health Toggle

Health Toggle is divided into 2 parts. Part I contains max zombie health, hit reaction on getting damage, etc. Part 2 contains Fade Effect On Death Properties of Zombie.

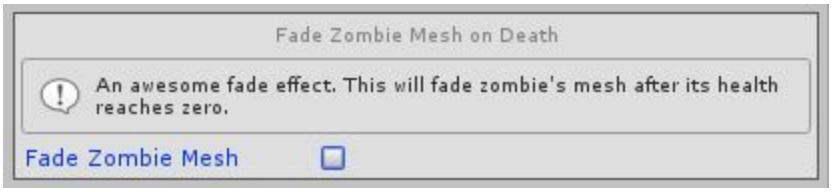
Part I

- **Health** : Health of the Zombie.
- **Hit Reactions Available** : Define how many hit Reaction animations we have in the Animator.
- **Cooldown Timer** : Time Delay for which Zombie will remain Stunned / Stopped after being hit.
- **Look At Camera on Hit** : If true, Zombie will look at Player on being hit. If player is in his range, he will start chasing / attacking him.



Part II

This is a unique and awesome mesh fade effect. But it will be only triggered on Death if the Fade Zombie Mesh Bool is set to true.



Once, it is true, uzAI Inspector will show the rest of the properties.

- **Fade Material** : Material whose properties will be used to fade the zombie's mesh.

- **Fade Delay** : How long should we wait after Zombie's death before starting this Fade Effect.

- **Fade Duration** : Total Duration of This Fade Effect.

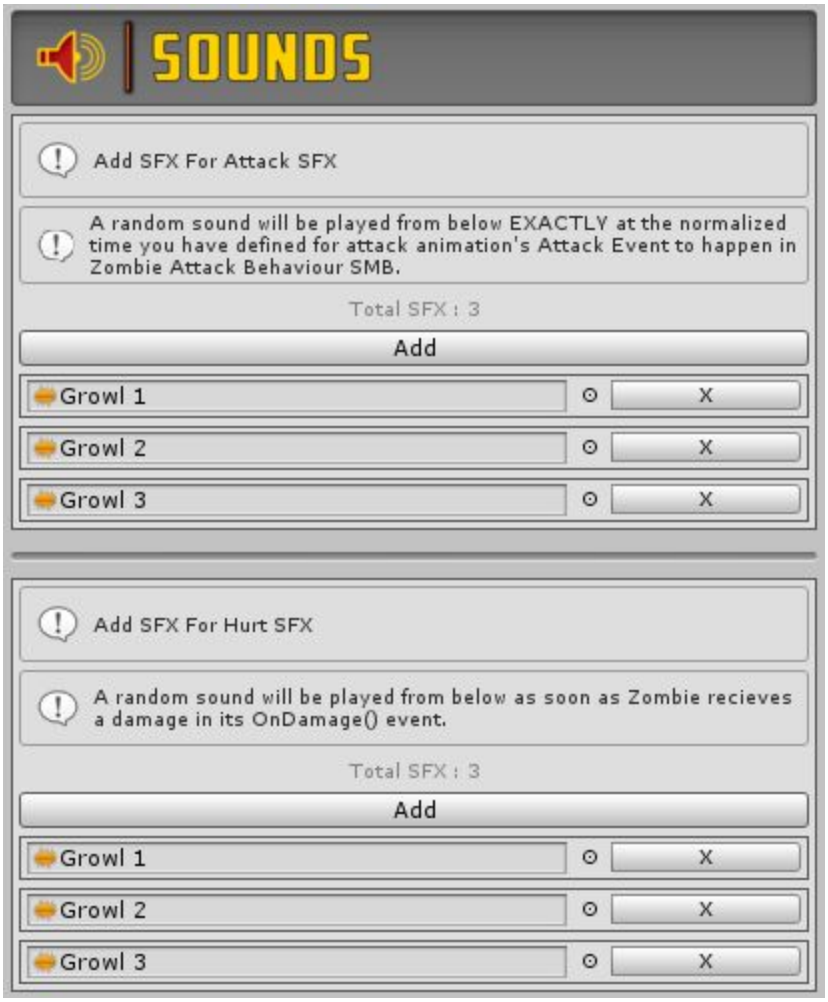
- **Mesh Renderers List** : Just simply assign the mesh geometry of your zombie. If your zombie uses more than 1 meshes, simply add more meshes by clicking **Add Mesh Renderer** Button.

Sounds Toggle

No matter how good a Zombie AI is, it is incomplete without Sounds Effects.

In the sounds toggle you can add SFX for Hurt and for Attack. Add as many as you can by simply hitting the Add Button in the respective section.

From all the sounds added, a random sound will be played every time a zombie gets hit(receive damage) or Attacks.

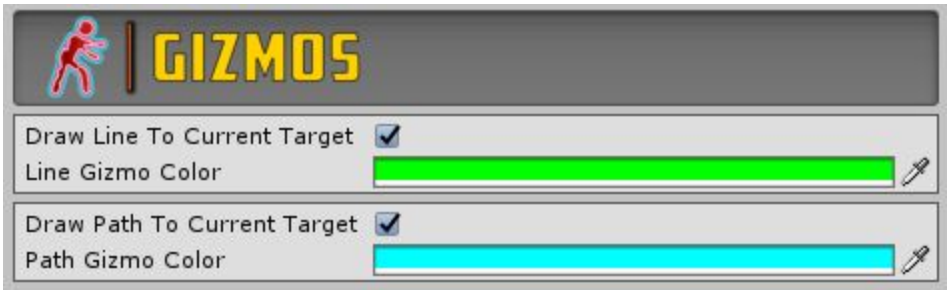


Gizmos Toggle

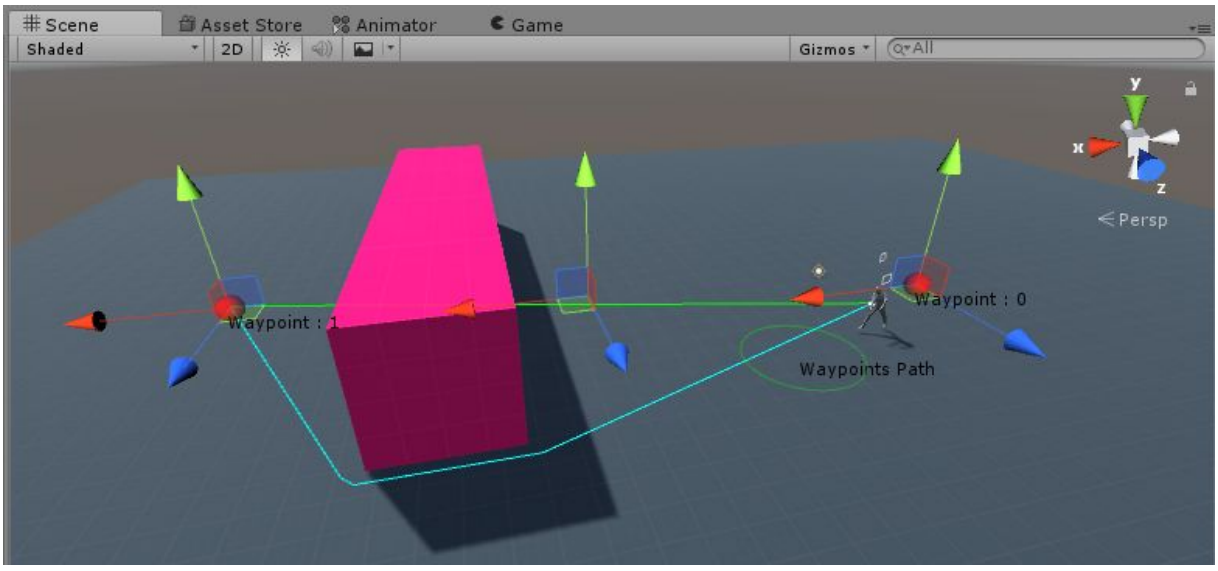
Gizmos Toggle contains 2 types of Gizmos.

Draw Line to Current Target : If true, there will be a straight line drawn from the Zombie to its current Target whose color will be **Line Gizmo Color**. (See fig (b) below)

Draw Path to Current Target : If true, there will be a full path drawn from the Zombie to its current Target whose color will be **Path Gizmo Color**. (See fig (b) below)



(a)



(b)

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