# Evil Bad RAIN AI addon

The purpose of this document is to describe the function of RAIN, it's integration into Evil Bad, and how to use the features(specifically the features that will be used in Evil Bad).

RAIN is an all-in-one AI solution for EvilBad. What this means:

- Use visual and audio sensors, gives the AI eyes and ears so they can seek out their targets in a way that makes sense.
- Easily create waypoints, making it easy to give the AI a patrol route. Keep in mind that the waypoint path is more of a guideline than a direct route. If something is in the way or the AI changes it's mind it can make it's own path.
- Works with Mecanim Animation State Machines - making it simple to add actions to our animations and drive the Animation State Machine with the AI's mind(also known as the "behavior tree")
- The AI's mind is driven by a powerful Behavior Tree system. This system allows developers to create complex logic, and adjust it at any time(even in play mode). This is the most important part of RAIN because it drives the rest of the system(more on behavior trees at rivaltheory.com)
- Add yields to the behavior tree to allow the rest of your game to breathe, making it easy to fix performance hiccups.

Ghoul AI(Enemy)
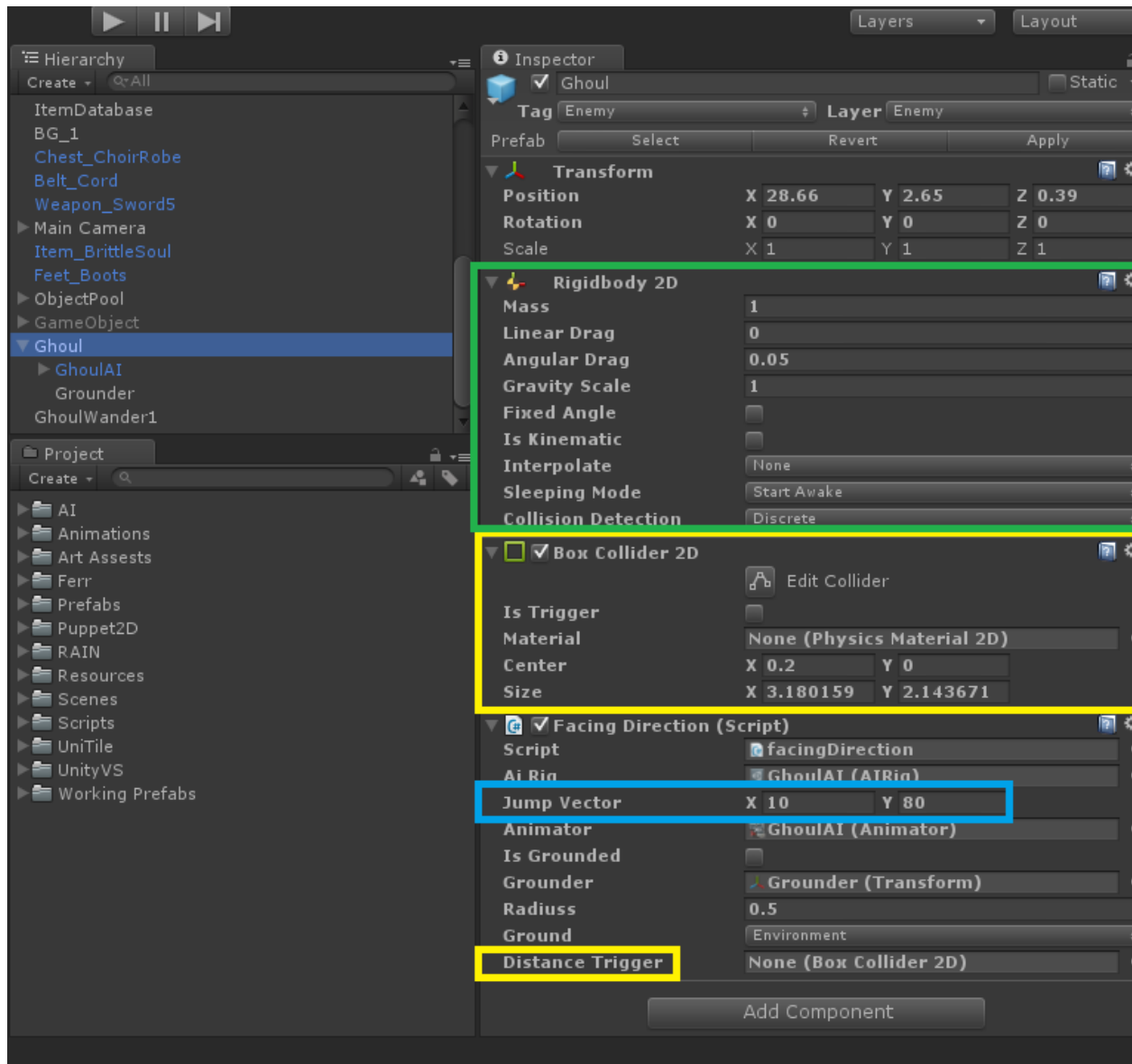
The first thing to note is in the heirarchy I have "ghoul" selected and not "ghoulAI".
"ghoul" is the body that the AI will control.
GreenBox - this is the rigid body, it is how the ghoul will react with physics in the environment. try adjusting the mass, angular drag, or linear drag to see how the ghoul will react differently.
YellowBox - this a Box Collider representing a trigger, if an enemy enters the trigger the AI will begin melee. Make it smaller to make the AI wait until the enemy is closer to use paralyze, make it bigger and he will attempt it at a further distance(note this does not change the ghouls actual reaching distance).
BlueBox - this is the vector(distance and direction) that the AI will attempt to jump.
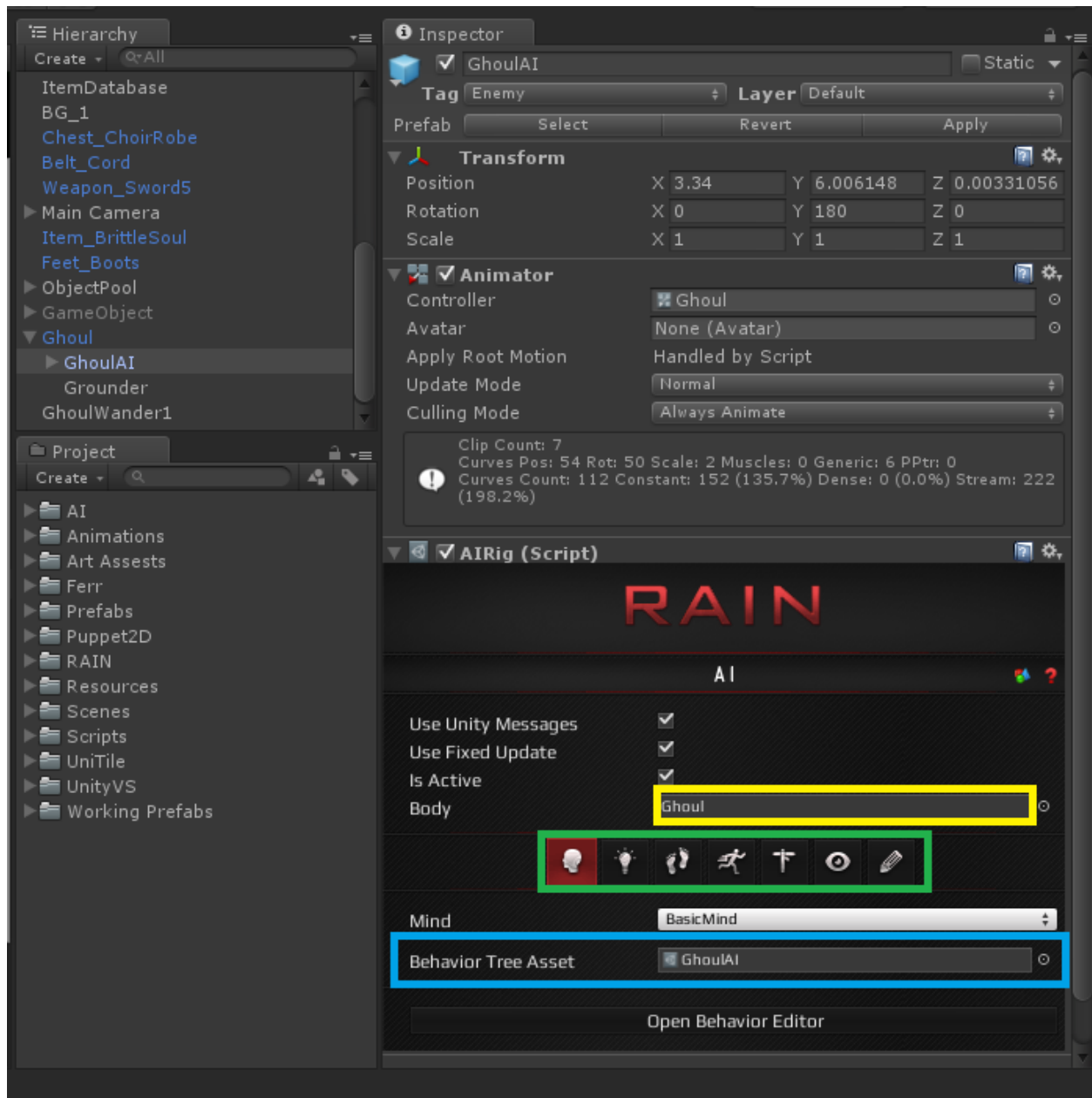
Next thing you should notice is that I now have "GhoulAI" selected in the heirarchy. This is where the AI calculations are performed for the "Ghoul" body.

In the RAIN component(in the inspector on the right):
YellowBox - This is where you select the body for the AI to control
GreenBox - These are the different tabs to control different aspects of the AI. The red box indicates we are on the "Mind" tab.

BlueBox - This is where you select the behavior tree for the Ghoul. I have created one named "GhoulAI" which you will see on the next page.

GhoulAI (BehaviorTree)
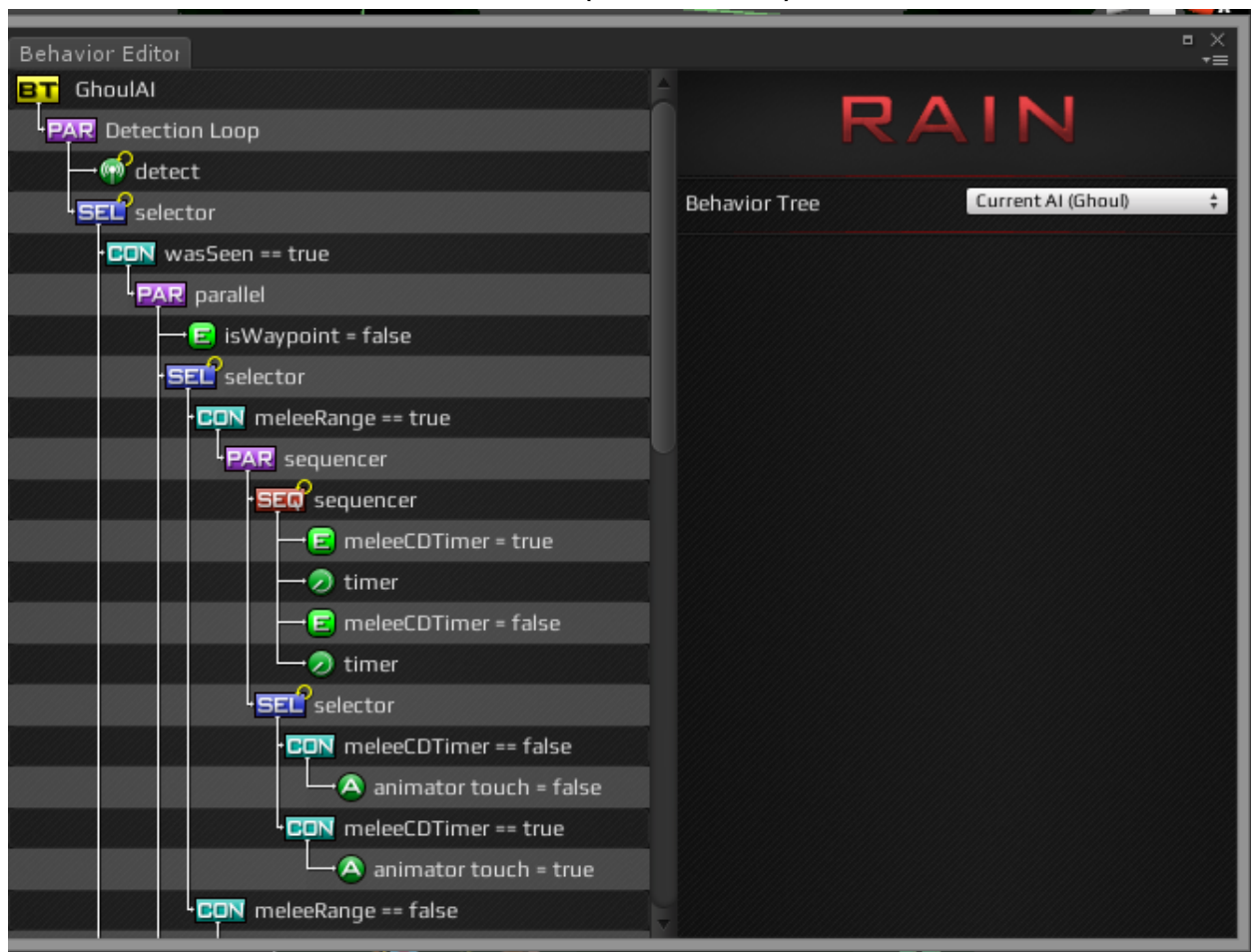
I'm not going to go into detail on this, unless needed. Basically it is a tree of decisions and actions based on those decisions. Some of them loop, others play once then move forward. This is essentially the Ghoul's Mind.

(wouldn't recommend playing with this unless you know what your doing, check out rivaltheory.com for more information)

The second tab(the red box) indicates we are now on the "memory" tab. This stores variables for the AI to access with the behavior tree.

The two important variables right now are the meleeCD and snotCD. these are the cooldown timers for the attacks. Adjust as needed(not in actual seconds but in time steps). Later these will be controlled by the enemy stats script.
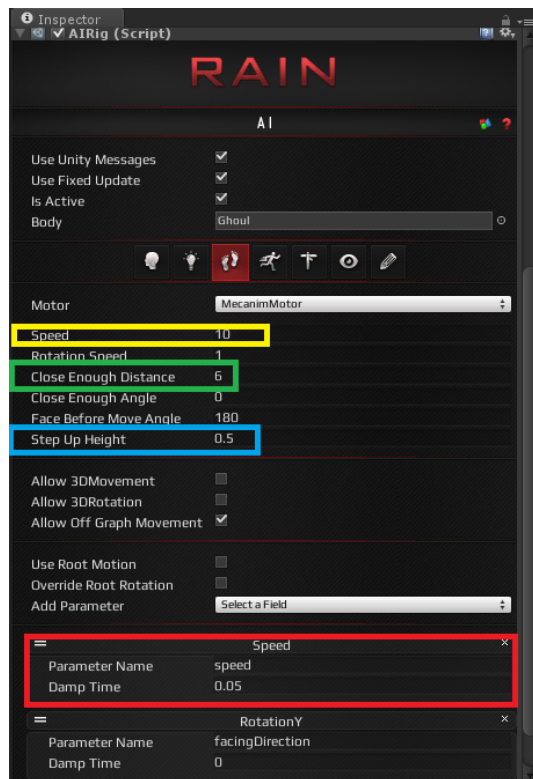
Now the red box indicates we are on the "motor" tab. This section controls the physical movement of the Ghoul.

Notable areas of interest:

YellowBox - Speed, self explanatory adjust this to adjust the Ghoul's movement speed
GreenBox - this is how close the Ghoul will get to his targets.(its set at distance so he can shoot snot!)
BlueBox - this is the height the ghoul will step when walking up inclines or over small(walkable) obstacles.
RedBox - this is an advanced feaure. The way the animaton state machine is set so that the "speed parameter" of the animator drives the movement animations. This "speed" variable ties in the speed of the ghoul with the animator. The damp time can be adjusted to make the animation speed look like its matching the actual movment speed.