John Becker

Functional Minimum Progress Report

The original goal of my project was to make a multiplayer game that allowed for users to find real objects in the world and hide behind them from other players. This was going to allow multiple players to hide behind objects and in retrospect was far beyond the scope of a one semester project.

I have scaled back considerably in my designs and ambitions to a much smaller design. The goal of the game now is pretty simple. Users will open the app and one or more virtual characters will generate in the world. Their goal is to hide from the user. Thus, if the user points the camera at them they will run away to an off-camera position. The user will also be able to occlude real-world objects by drawing a box around them at which point the characters will run for cover behind such objects.

A red box will be created around the occluded objects to let the users know that the object is occluded and if the user so chooses they can click the box and the characters will have nowhere to hide anymore, at which point they will run away from the camera again.

I admit I haven't got very far in this project because I misunderstood the requirements for the project and I was under the impression that we were supposed to have the ability to occlude all objects in the real world. I have only recently, in the last week known that the scope could be narrowed. So far I have a character in the world and I am currently working on getting the character to hide from the camera using AI perceptions. This has proved to be a little harder than it probably should be because every tick the camera's world coordinates must be calculated and given to the AI to decide if it is in the frame or not.

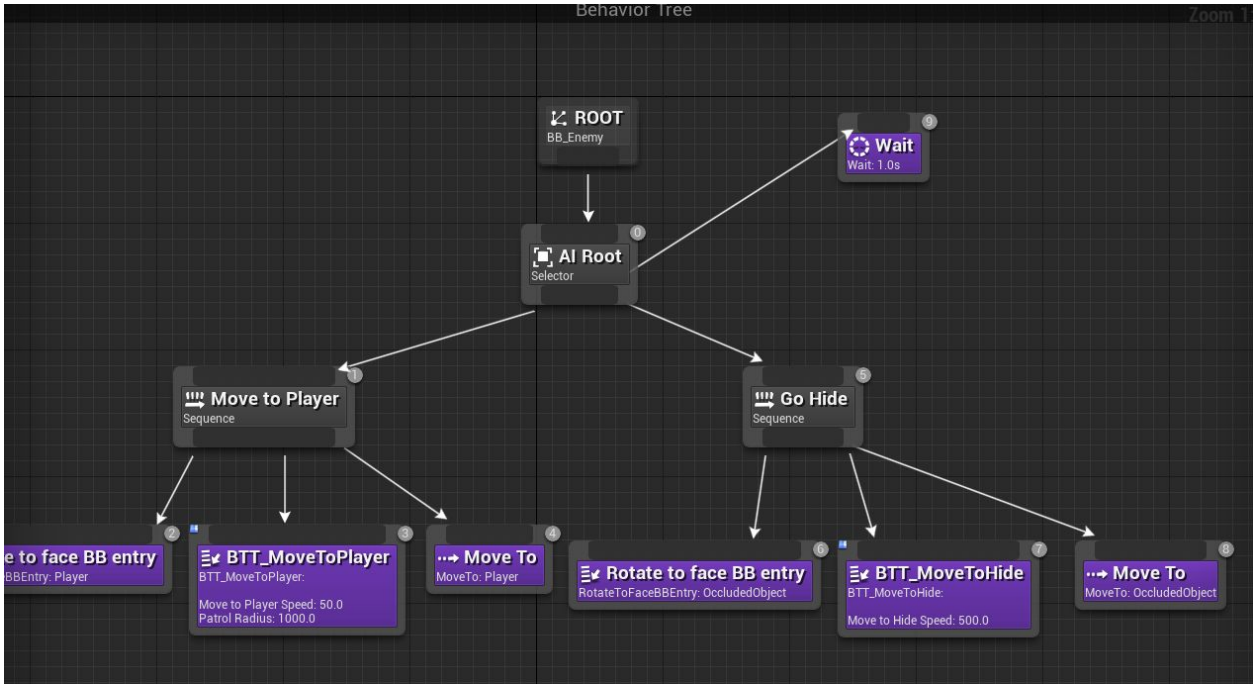
I currently do not have this working yet but should hopefully have it working in the next few days. After that I just need to work on occlusion. I do have a plan for this currently. What will happen is that when a user draws a box on the screen a BP_Placeable object will be generated at that position using AR pins. It will be invisible to the user but it will exist at that position and allow the character to hide behind it.

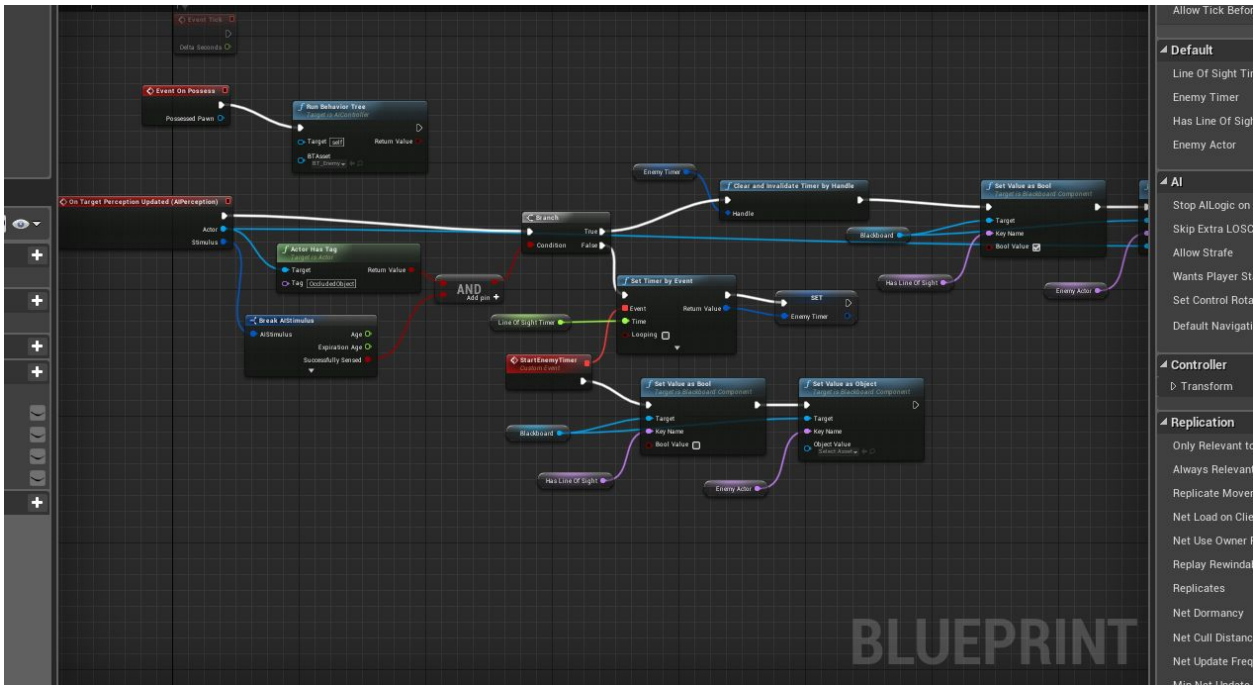
The real struggle is going to be whether the user needs to draw a box in three-dimensions or whether there is a simple way to draw a box and have ARCore detect objects within the square and narrow down the drawn size of the BP_Placeable object to be more accurate. I have spent many weeks trying to get ARCore to detect real world objects and it doesn't work at all. I will be meeting with the professor next week where he will better explain ways to do this.

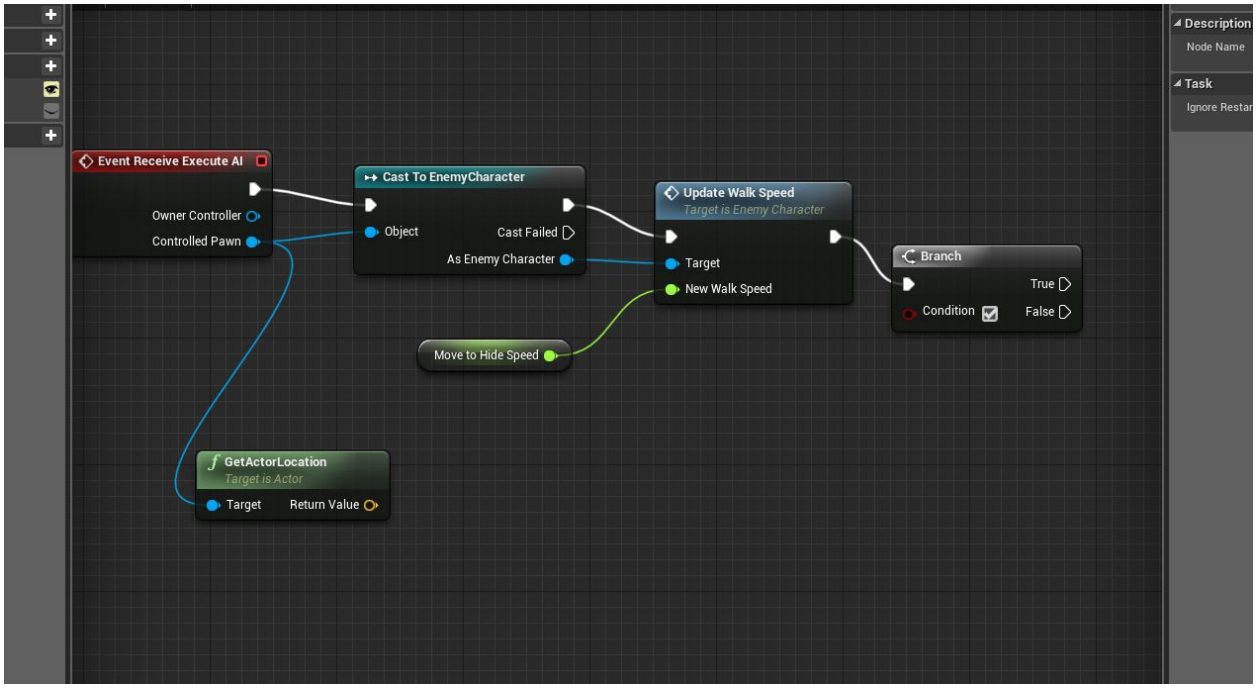
The biggest struggle for me this semester has been on detecting real world objects. I couldn't get it working in ARCore so I moved to ARKit and it also was not very good at detecting anything but people. Also, ARKit requires an Apple Developer license and is pretty limited since it can only be developed on Macs. I have moved back to Unreal Engine.

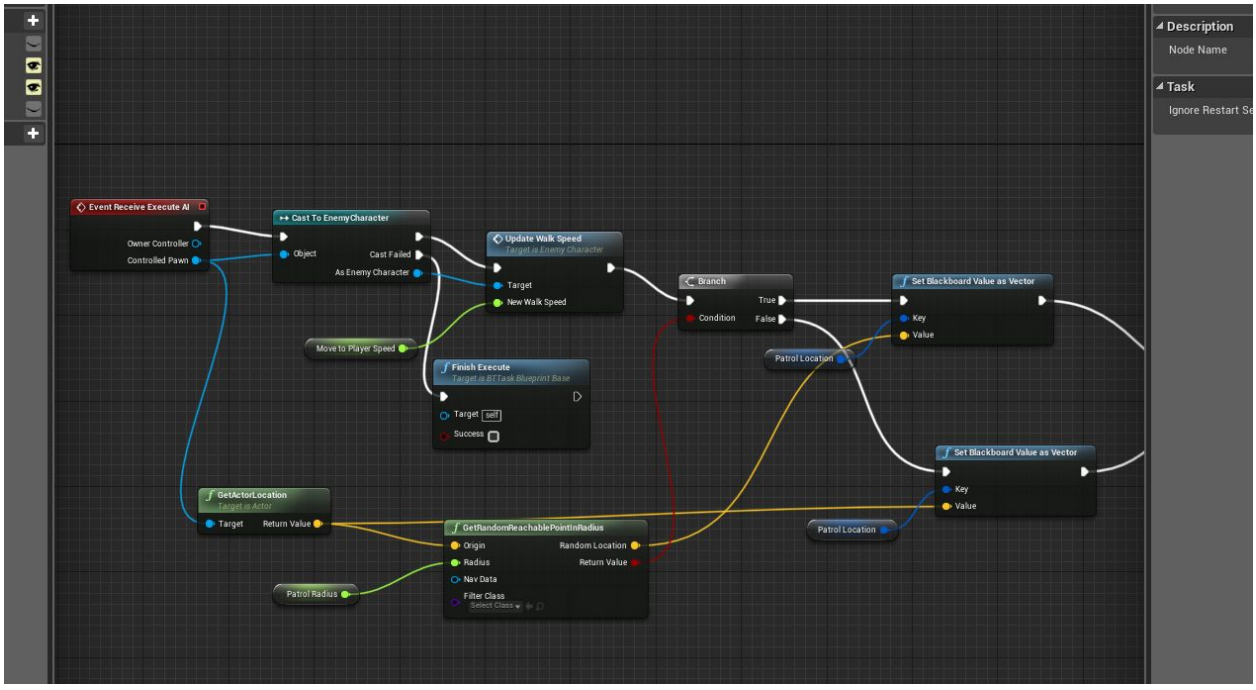
ScreenShots

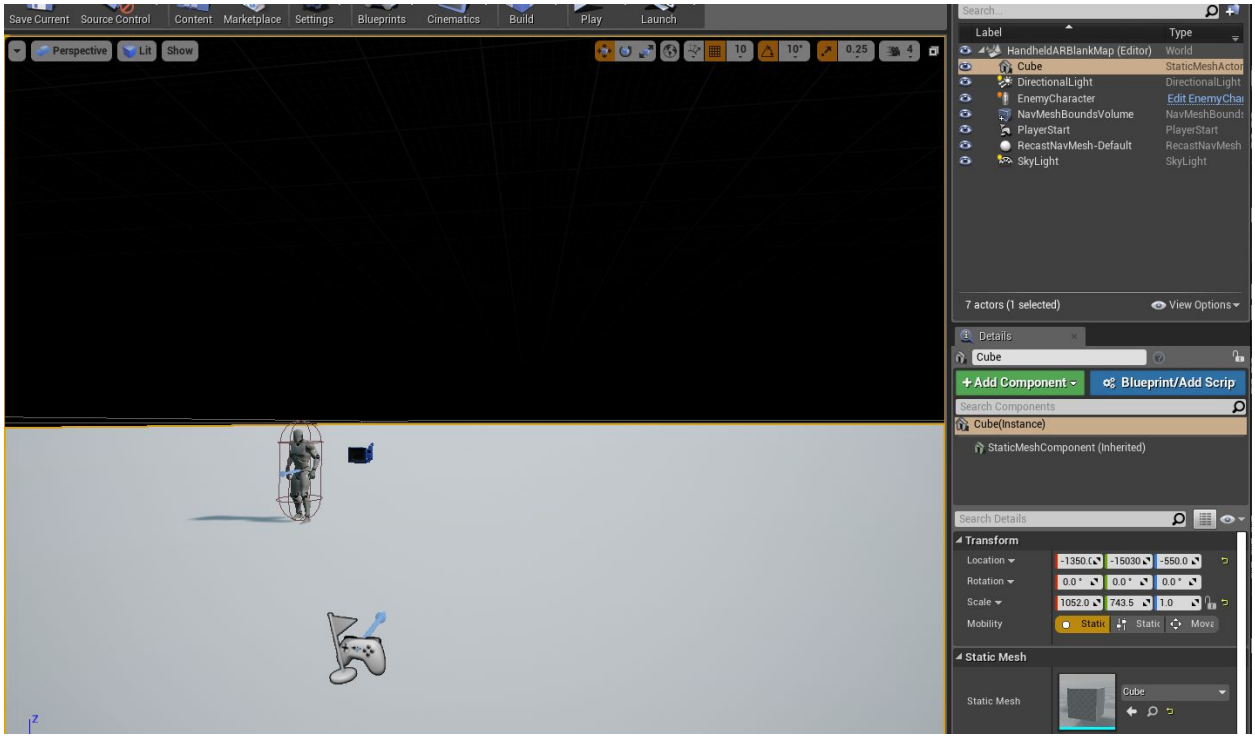
I guess a lot of these screenshots will be more Blueprints than anything.

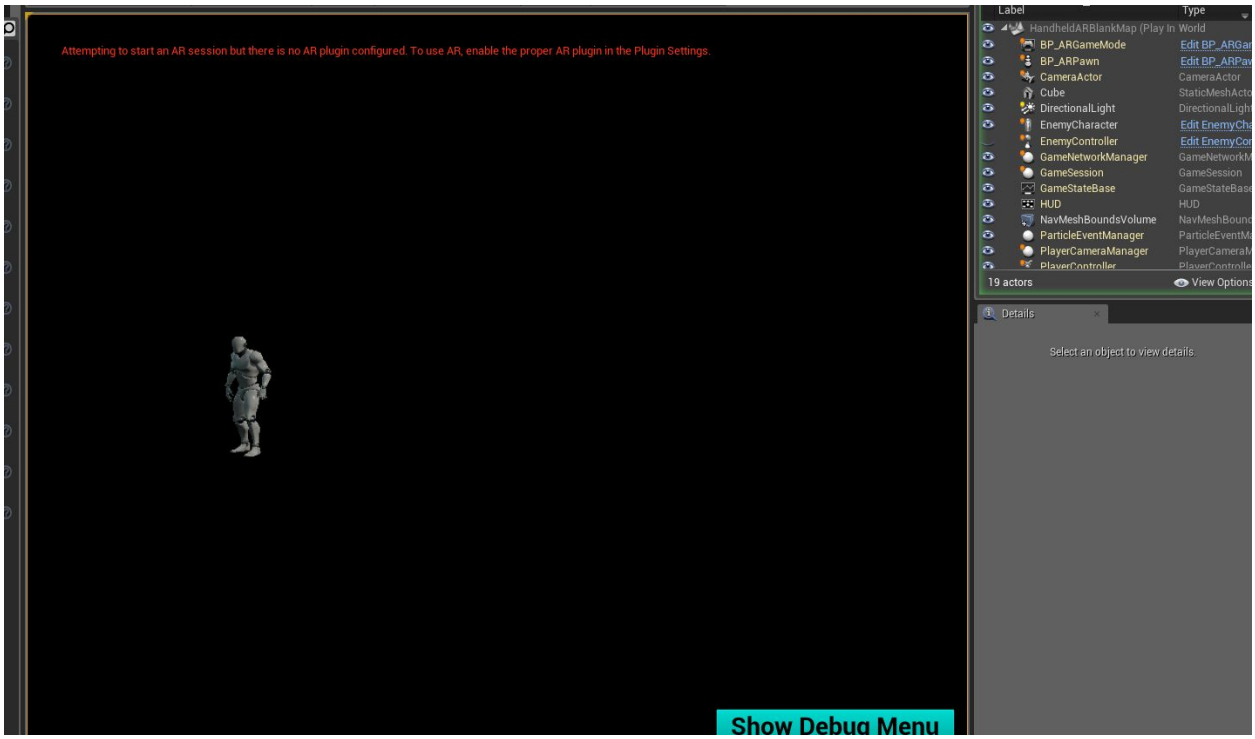





Description
Node Name
Task
Ignore Restar
Event Receive Execute AI
Owner Controller
Controlled Pawn
Cast To EnemyCharacter
Object
Cast Failed
As Enemy Character
Update Walk Speed
Target is Enemy Character
Target
New Walk Speed
Branch
True
Condition
False
Move to Hide Speed
GetActorLocation
Target is Actor
Target
Return Value


Description
Node Name
Task
Ignore Restart Se
Event Receive Execute AI
Owner Controller
Controlled Pawn
Cast To EnemyCharacter
Object
Cast Failed
As Enemy Character
Update Walk Speed
Target is Enemy Character
Target
New Walk Speed
Branch
True
Condition
False
Set Blackboard Value as Vector
Key
Value
Move to Player Speed
Patrol Location
Finish Execute
Target is BTTask Blueprint Base
Target
self
Success
Set Blackboard Value as Vector
Key
Value
GetActorLocation
Target is Actor
Target
Return Value
GetRandomReachablePointInRadius
Origin
Radius
Nav Data
Filter Class
Random Location
Return Value
Patrol Location
Patrol Radius


Save Current
Source Control
Content
Marketplace
Settings
Blueprints
Cinematics
Build
Play
Launch
Perspective
Lit
Show
Label
Type
HandheldARBlankMap (Editor)
Cube
DirectionalLight
EnemyCharacter
NavMeshBoundsVolume
PlayerStart
RecastNavMesh-Default
SkyLight
7 actors (1 selected)
View Options
Details
Cube
+ Add Component
Blueprint/Add Scrip
Search Components
Cube(Instance)
StaticMeshComponent (Inherited)
Search Details
Transform
Location
Rotation
Scale
Mobility
Static Mesh
Static Mesh
Cube


Attempting to start an AR session but there is no AR plugin configured. To use AR, enable the proper AR plugin in the Plugin Settings.
Label
Type
HandheldARBlankMap (Play In
World
BP_ARGameMode
BP_ARPawn
CameraActor
Cube
DirectionalLight
EnemyCharacter
EnemyController
GameNetworkManager
GameSession
GameStateBase
HUD
NavMeshBoundsVolume
ParticleEventManager
PlayerCameraManager
19 actors
View Options
Details
Select an object to view details.
Show Debug Menu