

Task 5: A.I. Game Strategy Report

Star Wars Republic Commando

I wanted to do a look into the different aspects of A.I. found inside this game since I remember it being pretty interesting when I played it when I was younger. I found a video of a dev log about different parts of the A.I. and thought it'd be good to see what I can understand/assume about how some of the A.I. works in the game.

Party Member Commands

In the game you lead a squad of other characters and can give them commands to carry out certain actions. This sounds to me like it would be implemented in some form of Finite State Machine. Where each of the characters has a specific state they are in which defines their behavior and what actions that can carry out. But when you, the leader, give them a task to carry out, it changes their state and causes them to change their behavior.

These characters also have the intelligence to grab health packs or ammo without being told too. This could be some sort of behavior tree existing within the states steering them towards these actions depending on different factors such as; their current health, how far away they are from a health station, etc...

Enemy AI:

The one thing I found most interesting in the dev log is that enemies can perform specific actions when say breaching a door. Entering and throwing grenades out as they move to cover. I'm not exactly sure how this would be built into the A.I. but my best guess would be that all enemies have some form of a decision tree. Different types of enemies would have their own separate trees otherwise I feel it would be too large and complicated to traverse if they used one for all enemy patterns. This decision tree would decide how they would engage a player after being spawned into the game world, taking into account their surrounding environment available to them.

Also referring to the video is that enemies interact with grenades that you throw near them. To me this sounds like another decision tree that is constantly checking whether or not a grenade is close to them and then dictates a following behavior. Either putting up a shield, picking it up and throwing it back towards the player. This would also be a super useful mechanic to have change for a difficulty slider, you could have these actions on a probability scale and enemies could be 100% aware of protecting themselves in the hardest of difficulties but could make mistakes in lower difficulties.

Another part of the enemy A.I. that I found interesting in the video was about the "dwarf spider droid" and it's different states. This again sounds like some form of finite state machine but I liked the concept of how it had a state where it was protecting itself and scanning for enemy characters to target. I'd be curious whether it was actually actively scanning the environment or if it was purely for visual effect and it already had a reference for where every character was.

I also believe that there could be some form of a Blackboard communication system implemented in here for the enemies to use. Since there is such a variety of enemy types they could have the "higher tier" enemies act as *Arbiters* for the blackboard, deciding what all the other enemies should do/focus on when fighting the player squad.