Space Cops - Case Study

Introduction

The narrative of the first-person shooter game *Space Cops* revolves around the storyline of a woman who works as a space cop. While she was out on routine patrol, her spaceship experienced technical difficulties, and she was forced to make an emergency landing on a planet inhabited entirely by robots. These robots do not like visitors. It is imperative that our hero leave the planet as quickly as possible.

How much of your game demo were you able to complete

The game has been finished in the manner it was intended. The game consists of a total of three levels, and I have included some additional game elements such as a weapon system in which the player may pick up weapons and cycle among the available options. Every weapon has its own unique bullet settings, and every weapon in the arsenal deals distinct kinds of harm to the foe. Aside from that, there are a lot of picku up in the game, such as health pick up and ammo pick up, the most important space ship, which acts as a key in the game without it the player cannot move forward in the game and also there is a tape recorder, and when the player interacts with it, it narrates some of the story element, levels goal, and there is a visual attached to it where the player can see the controls of the game displayed on their screen.

The enemies in the game are one of the most important aspects since they have their own understanding of the level and can determine which path through the level will allow them to get to the player the quickest and in the lowest amount of time. Unfortunately, they do not patrol; instead, they remain still in their own location. However, as soon as a player approaches them, the enemies begin to walk toward the player and begin assaulting them.

The player has its basic movement in the game along with that it can also perform a double jump. The player also has the ability to run. It has the upper hand in the game, where the player's movement is faster than the enemies so it can easly get out of the

enemy's range. The player UI/UX also has some good elements, very minimum and very impressive, it has a helmet cutout on the screen where there is a health bar and there is a bullet counter on the screen. There is even a symbol when the player collects the spaceship, it appears on the screen.

Any changes to your final demo compared to your mid-term demo (and optionally initial proposal)

There have been no modifications made to the game's design since the midterm demo; however, there has been one minor adjustment made: the player's movement speed has been sped up. This is the reason why the game now has a greater sense of pace and has become very fast. I altered the pace because the level I designed was a very large level, and at the previous speed, it took the player an interminable amount of time to go through the entire level. Therefore, I adjusted the pace, and now that I've adjusted it, the game is so much more thrilling than it was before.

I also wanted to change some assets in the game, but I was stuck with the assets that I had because it took a lot of time to create assets from scratch, and assets that I liked to use were not free, so I stuck with the previous asset and worked more on the post-processing elements such as bloom, bright and threshold, motion blur, chromatic aberration, and ambient occlusion. These all elements helped a lot to give a game a little bit more of a polished look.

Any challenges you have faced, and/or overcome, since your mid-term progress report.

Since this was my first significant project in Unity, there were a few small issues that I had, but nothing serious. These challenges included the isTrigger not functioning, the player sometimes being trapped in the corner of the map, and the double jump not always working correctly. After some investigation, I determined that the problematic asset was one that I had imported into the scene. Because of some bizarre reason, the

tags and layer of the asset substituted the tags and layer of my scenes, which caused some features, such as the double jump, to cease functioning as intended. But in the end, I did figure out what the issue was, and I got rid of all of the layers and tags. However, up until that point, there were so many layers and tags in the list (Ground, ground, grounds), that I became confused and had to get rid of all of the levels and tags. After removing the tags and layer, I would often create a backup of the project before importing anything. And avoid importing the asset inbuilt scene or code if not required.

Any specific successes you would like to highlight, that were not covered in your mid-term report

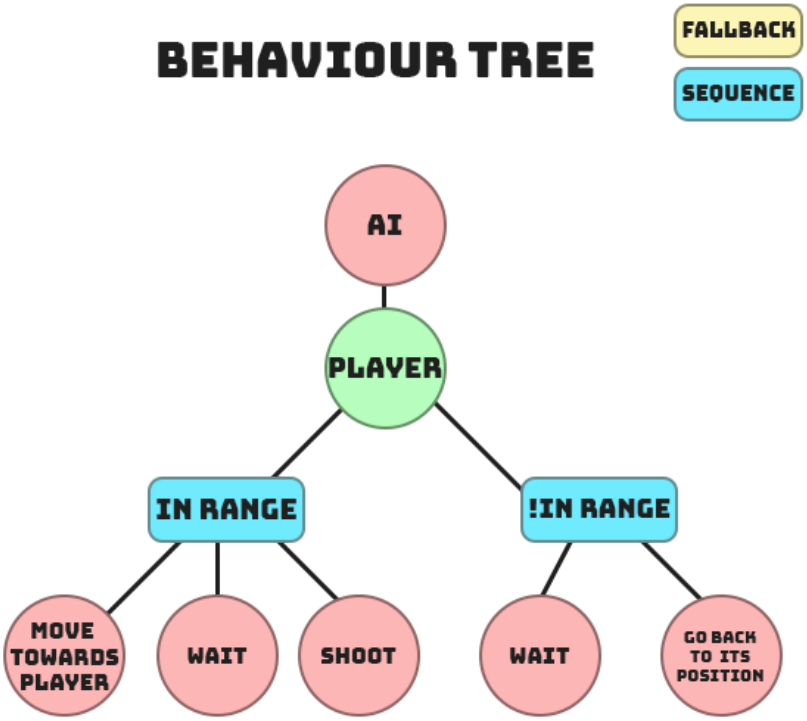
When I first started working on this project, I had no idea how I was going to implement my artificial intelligence system. I did some research on some of the themes, but like before, I'm not certain whether or not I want to include those concepts in the game. But then I referred to the textbook that we were required to use for our AI class, which was titled "Beginning game AI" and was written by Sebastiano M. Cossu. It is a very nice book to refer to, and this has directed me in the proper route, the right and easy method to utilize AI in unity. With the assistance of behaviour trees, I slowly but surely began to construct the AI behaviours that I needed. Along with that, I wanted to highlight a feeling of accomplishment, this was my very first project in big project in Unity and the way it has come out has given me a lot of confidence.

Design elements present in your final game demo

When I was developing a level, I like to include a lot of narrow space and prospect space, and I always make sure to include the reward in such places so that the player will feel like they've accomplished something when they leave those spaces. Narrow places are ideal in terms of size because they are not much larger than the player.

If we take a look at the picture, this is level 1 for me, and it's the best illustration of a narrow space that yet has room for prospects. So when the player enters the narrow space, this point on the map creates a blind spot for the player that he has to peek in to look what is happening, and as soon as the player peeks in, the enemy will rush towards the player locking the player in the narrow space, and now the player has only two options: first, he can stay in the narrow space and fight, or second, he can rush into the prospect space and then fight. Therefore, the player has a lot of room to move around and evade the bullets in the prospect space, so their chances of survival are significantly higher than in the narrow space. And after the battle, when the player will receive the award for successfully completing a challenging and difficult battle.

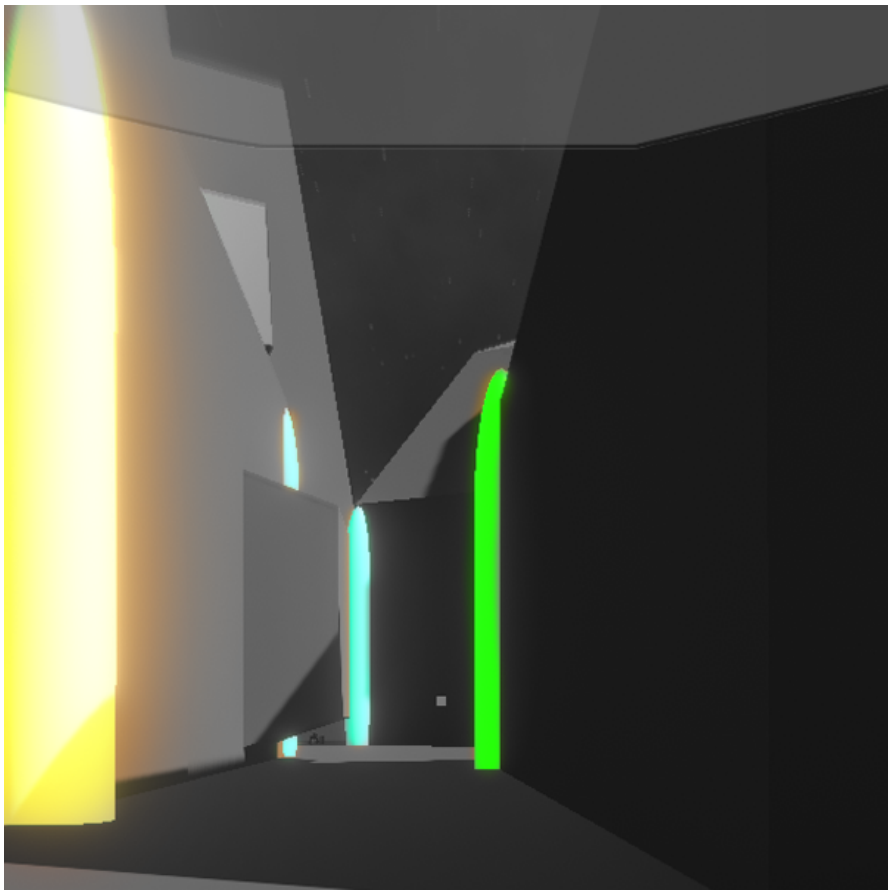
In the above image, I have given two options to the player where they can choose which path they want to go to, way 2 is less risky but there is no reward on that path, but if the player chooses way 1 the risk is high but so are the rewards. (Ch-6 “Building Exciting level with Dangerous Architecture” - An architectural approach to level design)



I have also made the behaviour tree for my AI using the information from our term 3 classes. The first node in the above tree indicates what the AI does when it sees the player. After that, it goes to a sequence node that is called "in rage." This sequence node acts as a "and gate," which means that it will finish all of the actions. When it reaches the "in range" node, it begins to follow a series of sequences. First, it will travel toward the player, then it will wait for a moment before beginning to shoot, and finally, it will return to the first node, which says "move towards the player." Now, if the player is not within range (!in range), then it waits at the player's previous location for a period of time before returning to its place. If the player is not within range, then it returns to its position. The player acts as a fallback node, this node acts as an "or gate." This can be interpreted to mean that the player is either within range OR that they are not within range. (Week 4 of AI for Games), I have also used navMesh for my AI to navigate the level and find the quickest way toward the player. (Week 9 of AI for Games)

Any other points that you'd like to mention about your game demo and design decisions

In the game, when I first designed the levels, they were quite large and complicated, so I added some corner lights. The lights function as symbols that direct the player to items, small spacecraft, and teleporters. The yellow corner light indicated that there is some new weapon in that area; if the player follows the blue light, then it will help them to find the small spacecraft which acts as a key for the player to proceed to the next level; the green light will guide the player to the teleporter; and finally, there are very few red lights in level, but it will just guide the player to the area where the player will find many rewards, but the risk is also very high, and the area is not co-ordinated.



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