SOLAR SIEGE

ARTIFICIAL INTELLIGENCE

Enemy AI

Enemy AI is organized into three distinct behaviors:

Scouts

Search the planet for the player and his towers and flag them for other units to attack, they do this by travelling between pre-designated points on the planet

Sentries

Defend the enemy's points of interest such as their spawn locations, generators, and central hub. These units attack the player and his towers on sight, but are reluctant to stray from their defensive perimeter.

Brawlers

Seek and destroy the units flagged by the scouts, these units will attack the player's units on sight and will follow them across the map until they or their target is eliminated

NAVIGATION

Navigation Mesh

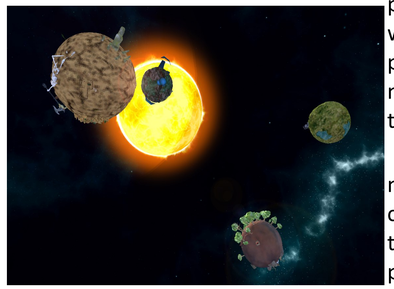
Due to a complication with Unity's built-in NavMesh, due to our spherical levels, we were forced to design our own NavMesh for each planet, this consisted of interconnected nodes which enemies used to navigate along the planet's surface.

Enemy Navigation

In order to navigate this mesh, enemies query an AI manager for a goal node, which the manager returns based on the enemy's archetype. Enemies then calculate a path to their goal using breadth-first search, we considered using A* however because most of our nodes are close to equidistant from each other, breadth first search was a more efficient choice. After obtaining a path enemies travel from node to node.

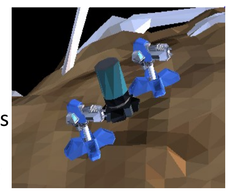
LEVEL DESIGN

Each level in Solar Siege was designed first-hand by our developers, primarily due to a number of factors which eliminated reasonable use of procedural generation, the most significant of which was the spherical nature of our planetoid levels.



Additionally our level designs are more exploration focused, hand-crafting our levels meant we were able to add more landmarks which help players maintain their sense of direction on the planet.

Finally, levels are built around a primary objective, the enemy's center of command, and secondary objectives such as shield generators and spawn locations which facilitate the pursuit of the primary objective.



DEVELOPERS

Ryan Bone
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Chase Plante

TOWER MECHANICS

Placement

The player places towers using a preview mode which displays the desired tower slightly in front of the player, upon confirmation the tower is anchored to the ground and becomes active

Combinations

Our tower system features a combination mechanic which allows you to augment one tower with the effects of another tower, this allows numerous strategic options without overloading the player with information.

This is further simplified by restricting the player to four towers within a level. This means that there are two levels to strategy around towers, which ones you bring into the level, and how to use the towers chosen.

Manual Control

The player can take control of his towers, entering an FPS mode which allows the player to exercise superior precision in the elimination of enemies.

PHYSICS

Using spherical planetoids required substantially more work than if the game had been created in simple flat world.

Planetary gravity

All objects must be oriented relative to the planet. Gravity attractors attract physics bodies to themselves every time step.

Orbiting

Objects are able to orbit freely around designated parents to allow for a more realistic planetary setting. This feature is utilized in the galaxy map and in our skies.

THE OHIO STATE UNIVERSITY

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