

COMP476 Assignment 3: README

MAIN CLASSES

- TankMovement:

Class handling movement player input, and synchronizing it across networked instances.

- TankShooting:

Class handling shooting player input, and synchronizing it across networked instances.

- DroneShooting:

Class handling shooting AI behavior, and synchronizing it across networked instances.

- ShellExplosion:

Class handling sounds for explosions, and enabling bullet bouncing.

- ShellExplosion:

Class handling Powerup Pickup.

- DestroyWall:

Class handling wall destruction.

SECONDARY CLASSES (Imported from A2)

- Tag Game Logic:

Tag game logic is a class that randomly determines which drone units are going to be seekers, and which one will be "IT". Moreover, it allows the viewer of the application to toggle the visibility of waypoint nodes used by the cluster heuristic integrated into the AI navigation behavior.

- Unit Controller:

Unit Controller handles the targeting behavior for each drone in the arena. For the Seekers, it finds nodes located nearby the "IT" player, but uses a hashset to ensure that no two seekers target the same node, and pursues them using the Pathfinding class until the player is visible within their line of sight, at which point it seeks them out directly. For the "IT" player, this class finds the center of mass of the Seekers, and steers the player away from it until a seeker is in the player's line of sight, at which point the seeker flees it directly. All players avoid other seekers to reduce collisions.

- Pathfinding:

Handles all pathfinding requests on the game grid, using A* with either the NULL heuristic or the EUCLIDIAN heuristic. Nodes located adjacent to blocked/non-walkable nodes are given an elevated cost to prevent wall-clipping. Node coordinates are also converted to world positions for the Unit controller to handle navigation.

- Grid:

Generates and holds a game world grid to determine traversable geometry in the game world in addition to a lookup table with every node world coordinate.

- Node:

Individual grid unit used to hold index and coordinate mappings with state of walkability. Also includes CompareTo function used to enable comparisons needed for Heap sorting.

- Heap:

Heap data structure implementation used to automatically sort nodes in the open list during pathfinding.

- Unit Controller:

Unit steering controller used for lookWhereYouAreGoing, Arrive, Steer.