

**GAME ALGORITHMS (TGD3351)**

**TRIMESTER 1 2020/2021**

**Milestone Report #2**

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# Work Done

1. Boss

We have implemented finite state machines on boss where the boss has 3 states which are avoid, attack, attack\_faster. Boss will enter avoid state when the player starts firing. Boss will move to left or right depends on the player position. Boss will enter attack state after player stops firing. In this state, boss will move towards to the player and fire towards the player if the player is within line of sight at fire rate of 150 milliseconds. Boss will enter attack\_faster state once the life is less than 30% and the boss is in attack state at fire rate of 75 milliseconds. Currently, boss will stay in avoid state if the player keeps firing, we plan to change the state to attack if the player fires for more than 10 seconds.

1. Enemy\_1
   1. Line of sight
2. Missile

We have implemented pathfinding using A\* algorithm and Bresenham’s Line Algorithm.

# Upcoming Task

## Coding

1. Pattern Movement
2. User Interface (UI)

## Documentation

1. Final Report

# Problem Encountered

Pathfinding a bit slow

When we firstly implement pathfinding, we considered all the coordinates in the game scene and this had caused A\* algorithm to have many possibilities in exploring the nodes.

# Proposal Revision

1. **Powerup**

We plan to add some powerups such as changing the bullet pattern/invulnerability and such.

1. **Tutorial (pop up)**

The first level will be a super easy level, where we allow the player to learn the mechanics of our game, shoot (space bar), missile (z), move left, right, up, and down.

1. **Pause Scene**

We may also add a pause scene when the player presses the “Enter” key, where the player can choose to continue or quit the game.