

Platformer 3

Due: April 11, 2022

Introduction

In this assignment you will add AI functionality to your engine.

Directions

First, you will create a graph from a navmesh stored in an obj file. Next, you will implement pathfinding on the navmesh with the A* algorithm. You will also implement behavior trees. You can improve your pathfinding by implementing the Funnel Algorithm for extra credit.

Design Check

- What is the purpose of the heuristic function in the A* algorithm? What heuristic function will you use?
- How do the composite nodes in a behavior tree work?
- Give an example of how a blackboard can be used to extend the functionality of behavior trees.
- How will you design your action and condition nodes?

Engine Requirements

- Engine has an A* implementation
- An AISystem/AIComponent using behavior trees
 - BTNode (virtual)
 - BTStatus (enum)
 - Selector
 - Sequence
 - Action (virtual)
 - Condition (virtual)
 - Blackboard (minimally, a map of strings to anything)

Game Requirements

- AI-controlled entity traverses navmesh to some goal (such as the player position)
- Basic behavior tree controlling a gameobject