Wander Behavior

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1 Introduction

This document presents a project on wander behavior. It is implemented using Unity. The agent is an alligator. The agent moves within a predefined circle area.

Figure 1: Preview.

2 Implementation

The agent uses the behavior tree[1] to make decisions and the NavMeshAgent component[2] for navigation in the scene. For animations, it uses the Animator component[3].

2.1 Behavior Tree

The behavior tree consists of the root node, which is a selector, and 3 other nodes: for the idle state, to find a new destination if the current is reached, and to walk.

2.2 NavMeshAgent

For the NavMeshAgent component, a NavMesh on the terrain was created. To find a new destination point, the agent's AI creates a random suitable point and tries to sample it on the NavMesh. A screenshot of the NavMesh is shown in figure 2.

2.3 Animator

The Animator component has 4 states: the idle state and the slow speed, medium speed, and high speed walking states. The states for walking have the same animation, but different speeds. A screenshot of the Animator is shown in figure 3.

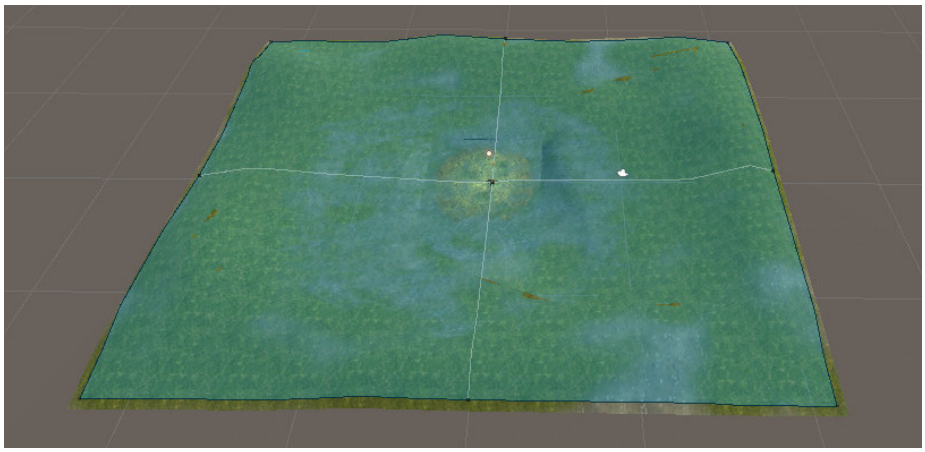

Figure 2: Screenshot of the NavMesh.

[1] https://en.wikipedia.org/wiki/Behavior_tree
[2] https://docs.unity3d.com/ScriptReference/AI.NavMeshAgent.html
[3] https://docs.unity3d.com/ScriptReference/Animator.html

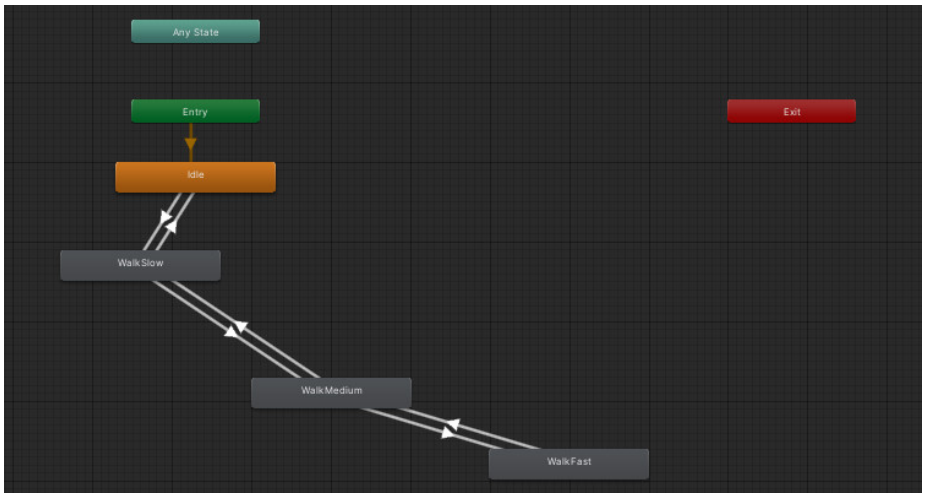

Figure 3: Screenshot of the Animator.

3 Variability

The agent is variable. It is possible to change a number of its parameters. Also, it uses randomness to choose its speed, to choose the time to be idle, and to find a new destination. A screenshot of its variable parameters is shown in figure .

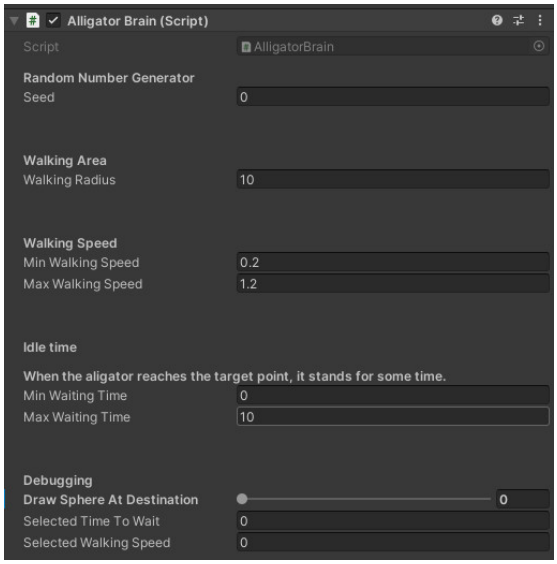

Figure 4: Agent's variability.

4 Multiple Agents

It is possible to have multiple agents in the scene. The NavMeshAgent component deals with it. The agents avoid each other.

Figure 5: Multiple agents.