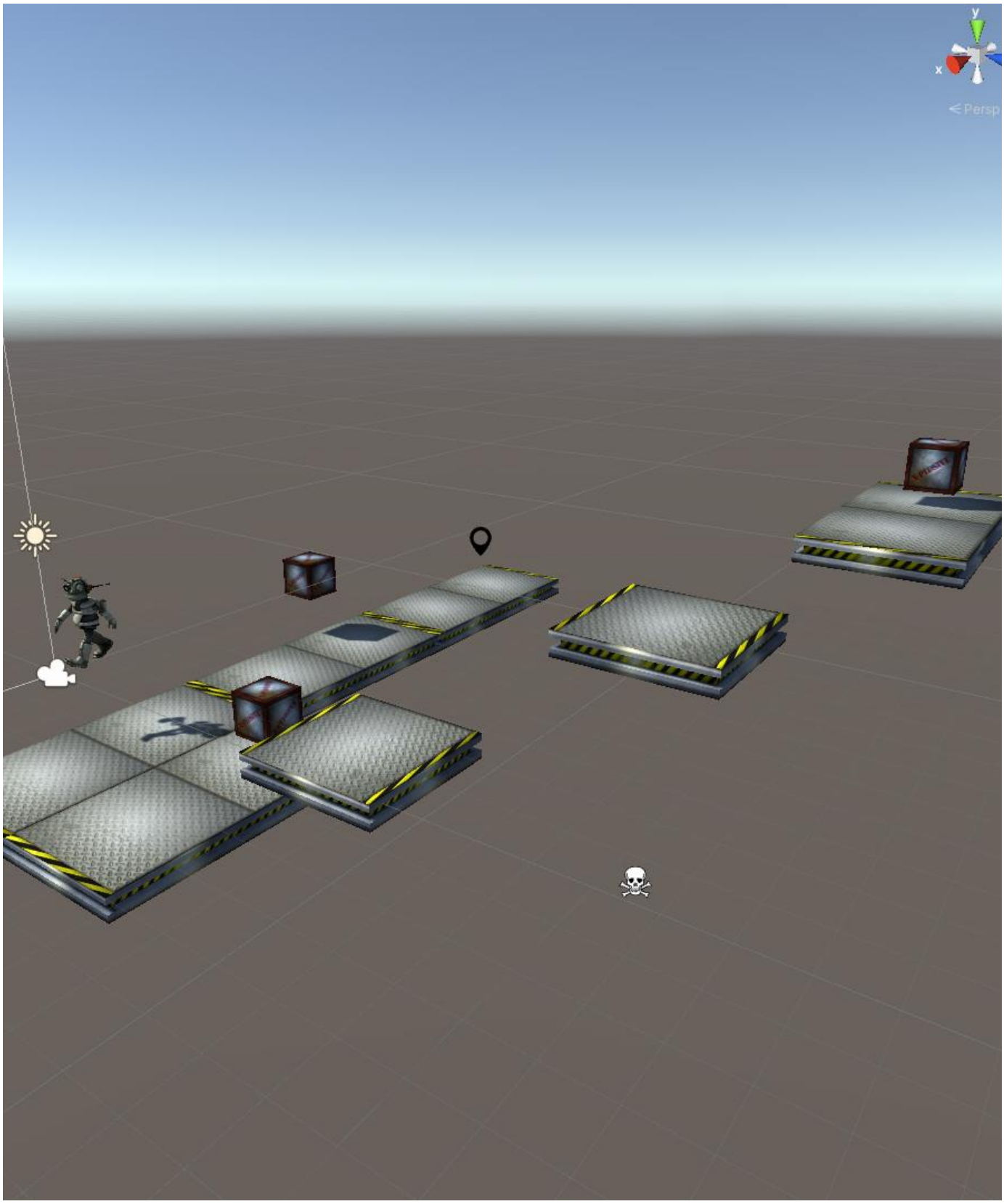
Professur für Erweiterte Realität
Fakultät für Informatik
Technische Universität München

Tutorial & Exercises – Tutorial 10

Platformer



Enemy behavior

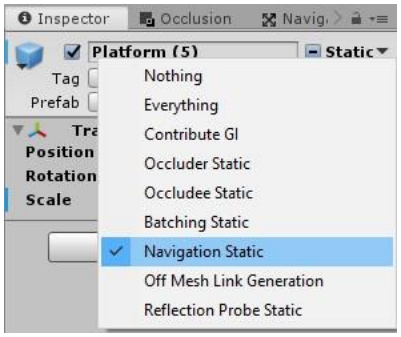
Every game needs some form of enemies. In this tutorial, we will implement a basic form of enemy behavior.

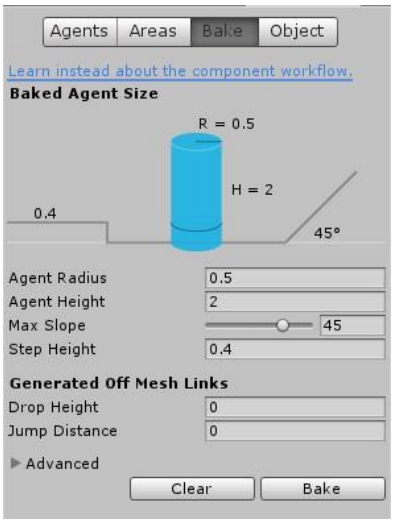
Exercise 5: Pattern Movement with Nav Mesh

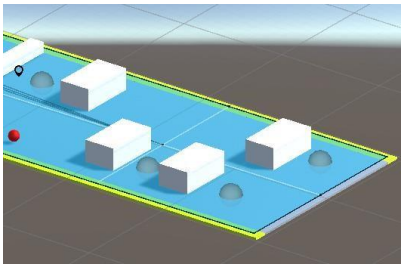
The enemy moves between the waypoints in a straight line. We will now use a NavMesh to have the enemy avoid obstacles and navigate around them. Further reading: https://docs.unity3d.com/Manual/Navigation.html

First, create the NavMesh. Select the platform that you want to be part of the NavMesh. In the Inspector set it to Navigation Static.

Open the Navigation Tab from *Window -> AI -> Navigation*. Click bake to generate the NavMesh. You will see the NavMesh as a blue surface on top of your platforms.







Create some obstacles. Add some cubes to your platform. For each cube, add a Nav Mesh Obstacle component.

In the inspector add a NavMeshAgent component to your enemy. In AdvancedEnemy.cs get a reference to the NavMeshAgent.

```
void Awake() {
    enemyRigidbody = GetComponent<Rigidbody>();
    agent = GetComponent<NavMeshAgent>();
    agent.autoBraking = false;
    agent.destination = wayPoints[currentWayPoint].transform.position;
}
```

Create a new function:

```
private void NavigateToNextPoint()
```

Increment the waypoint index and set the destination of the NavMeshAgent.

```
currentWayPoint = (currentWayPoint + 1) % wayPoints.Count; agent.destination =
    wayPoints[currentWayPoint].transform.position;
```

Create a new State in your Behaviour enum. Add a condition to your switch case.

```
case Behaviour.PatternMovement-
    NavMesh:
    if (!agent.pathPending &&
        agent.remainingDistance < 0.5f)
        NavigateToNextPoint();
    break;
```

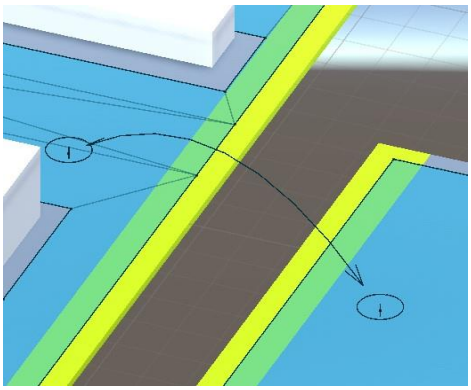
Carving

In the inspector, activate the carve checkbox of the NavMeshObstacle component to cut out an area of the NavMesh around the obstacle. The enemy can now plan a route around the obstacle. Whenever your obstacle is stationary, carving should be turned on.

How does the movement of the enemy change when carving is turned on or off.

Further reading: https://docs.unity3d.com/Manual/class-NavMeshObstacle.html

Exercise 6: OffMeshLink



The enemy can so far only walk on one platform. We will use OffMesh links to have the enemy jump between platforms.

Add another platform near to your existing platform. Add two empty objects. Place one at the edge of the platform where the enemy should start the jump. Place the other where the enemy should land.

Select the first empty object and add an OffMeshLink component. Assign the first cylinder as Start. And the second cylinder as End.

Move one of your waypoints to the new platform and try it out.

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