*About your project*

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Description of World:

My world is a farm environment with sheep grazing together as a flock in the fields while being kept in bounds of the farm house by the fence. The farm also has a little pond full of fish that follow the flow of the water as well as a RoadRunner-esque duck that addictively chases after the seeds along a path, only slowed down by a huge mud puddle.

World Exploration:

There are 9 cameras in my world. One camera overlooks the whole scene. Two cameras watch over the flock with one of them following the center of the flock and the other following a member of the flock.

Three of the cameras look over the flow field followers/underwater environment. One follows one of the flow field followers, another just gives an underwater view of the fish, and the last one gives an above water overview of the flow field following fish.

Two of the cameras overlook the path following vehicle. One follows the path follower and the other overlooks the whole path.

The last camera watches the mud puddle (fluid resistance) force on the path so it’s easy to see where the duck slows down.

*Steering Behavior Description*

Flocking:

My flockers are the flock of sheep (pun fully intended). They simply wander the big open fields and graze together as one flock like real sheep do.

Path Following:

My duck is my path follower. The duck is a resident of the pond but has been lured to a more wooded area in search of some food. There it found an amazing path of seeds and now runs as quickly as it can to peck at as many seeds as possible. The seeds on the path have fallen from the trees in the center of the path being followed.

Flow Field Following:

My fish are my flow field followers. Since it’s a pond, the flow field around the fish is round and has them calmly swimming in circles.

I made a separate class for handling the generation of the flow field to make the flow field a bit easier to work with and read.

Essentially I created an array of cells (defined by columns and rows values) that have a set width and a height (which translate to a planar surface on the x-z plane and therefore have a designated area of affecting the flow field follower). This array stores the direction vector of each individual cell, which is calculated by getting the vector perpendicular to the vector in the center of the cell, then I normalized it.

Using the width and height of the cells I have the fish check to see what cell they’re in, then call for the direction vector from the array.

Area(s) of Resistance:

I have one area of resistance (a huge mud puddle in the middle of the path that the duck (the path follower) follows. The mud causes the duck to slow down as it wades through the thick mud to get to the next seed.

*Resources*

Resources used to guide steering algorithms:

I used the class PowerPoint slides and the Nature of Code.

Asset Resources:

Trees and fence: <https://www.assetstore.unity3d.com/en/#!/content/65375>

Sheep and duck: https://www.assetstore.unity3d.com/en/#!/content/92629

Farmhouse: https://www.assetstore.unity3d.com/en/#!/content/19360

Water: Standard assets

Fish: <https://www.assetstore.unity3d.com/en/#!/content/18880>

Water texture: <http://friendsofsearsisland.org/bk_water2-jpg/>

Mud texture: https://www.sketchuptextureclub.com/textures/nature-elements/soil/mud/mud-texture-seamless-12893

Dirt texture: https://www.colourbox.com/image/cracked-brown-soil-seamless-tileable-texture-image-7969904

Grass texture: http://seamless-pixels.blogspot.com/p/free-seamless-ground-textures.html

*Other*

Other notes:

There was an issue with the camera being fuzzy but it seems to have resolved itself. I am nervous it will start breaking again but I just wanted to let you know…. I didn’t do it.

Also obstacle avoidance was coded but not implemented. Please disregard the obstacle avoidance stuff.

Also, thank you for a great semester!! 😊