Title: Animated grass

Theme: Graphics

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Group: 2?

Summary:

This extension will focus on creating animated grass that sways with the wind. This should be accomplished by creating a shader in Unity. The grass should look good but at the same time should not the shader take too much GPU power otherwise we can't use it in our game.

Specified description:

There is many different ways the shader could work, either it could be using billboards or geometry to represent the grass. The use of billboards is the most common way of doing it. Grass via geometry significant storage and modelling effort. Unity has today the possibility to paint grass with billboards using a pen-tool.

There is some students/researchers in Vienna that have created an animated grass shader (not for Unity) that looks very good (See Figure 1). They are spawning the billboards in a grid which makes the grass look thick and random [1]. Of course there is already a person that has taken their shader and converted it into a Unity shader and sells it for §80 on Assets store (see figure 2). But that doesn't hinder me to try to create something similar. Figure 3 shows a really ugly grass shader (my opinion).

Figure 1: Instant Animated Grass

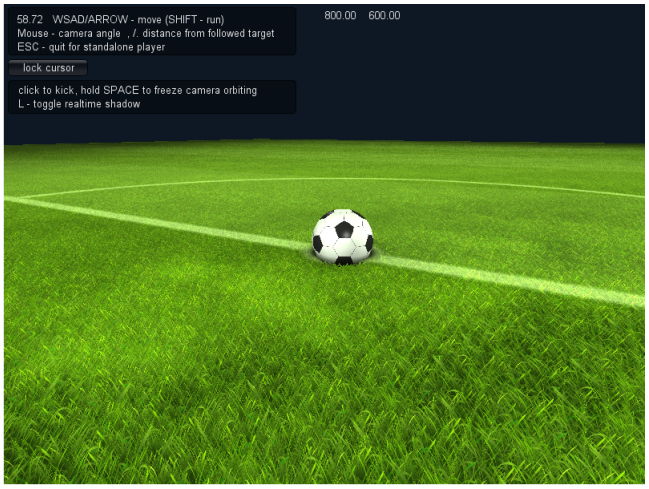

Figure 2: Grass shader in Unity: http://www.stobierski.pl/unity/soccer_MACTEST_A.html Moving grass: http://www.stobierski.pl/unity/meadow.html

Figure 3: Ugly grass shader: http://www.youtube.com/watch?feature=player_embedded&v=9OablKp34M

My plan is to first create a shader that places billboards in a grid according to the Animated Grass shader paper[1]. Then the second step is to make the grass moving. And last make paths in the grass (flattened the grass) after the balls movements.

One of the biggest challengers with this extension is to make the shader optimized and make sure that it not uses too much power. There could be that making the grass into a grid takes too much power then I will have to only place them so that they face the camera more like this example(See Figure 4). Or there will have to not be that thick grass as in some of the examples (bigger grid). Another challenge is that I have never done something similar to this and I have never used Unity before so to estimate how much time this could take and what I can accomplish is really hard.

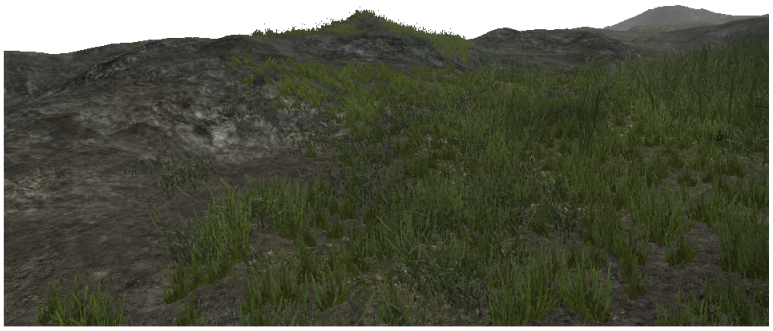

Figure 4: http://dl.dropbox.com/u/2322017/grasstest/grasstest.html

Possible additions:

If the grass shader don't take too much time I would like to play around a bit with particle effects, to create fire, or a fireflies plugin. To create a more mystic feeling to the game.

References:

[1] http://www.cg.tuwien.ac.at/research/publications/2007/Habel_2007_IAG/