Project 2 | Complex Scene

Fireflies

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Houdini Version 19.5.640

**Important Statistics:**

Average render time: 40 mins per frame

Number of lights in scene: Instance lights/Emissive Geometry and a Sky Dome

Complexity of geometry (approximate):

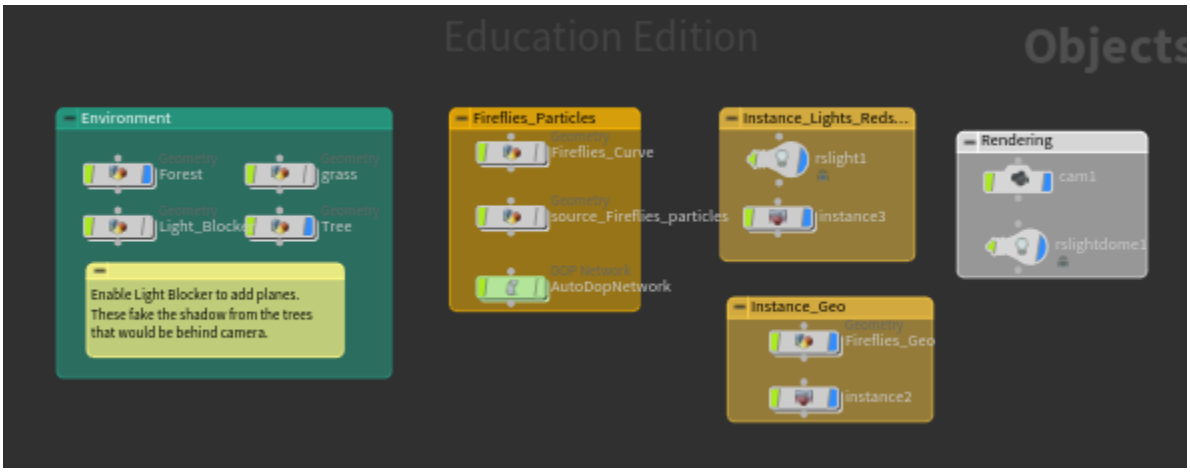
- Instanced Fireflies
- Trees from Tree Generator (Duplicated along a volume)
- Rocks Deformed
- Ground Deformed
- Grass (Phyllotactic Pattern)

**About the Project:**

For my complex scene project, I wanted to take this as an opportunity to enhance particles with a complex lighting scene. I decided to create a magical forest with fireflies following the reference below.

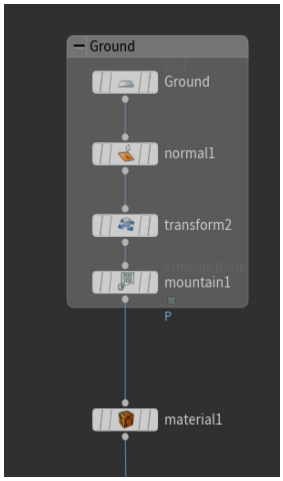
**How the file is organized:**

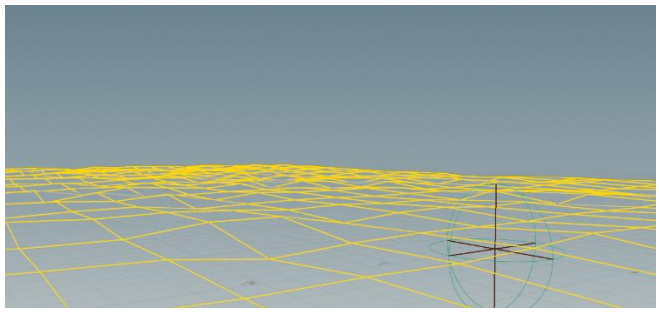
At the top level, we can find the different assets for my environment as well as the firefly particles and instance lights/geometry.



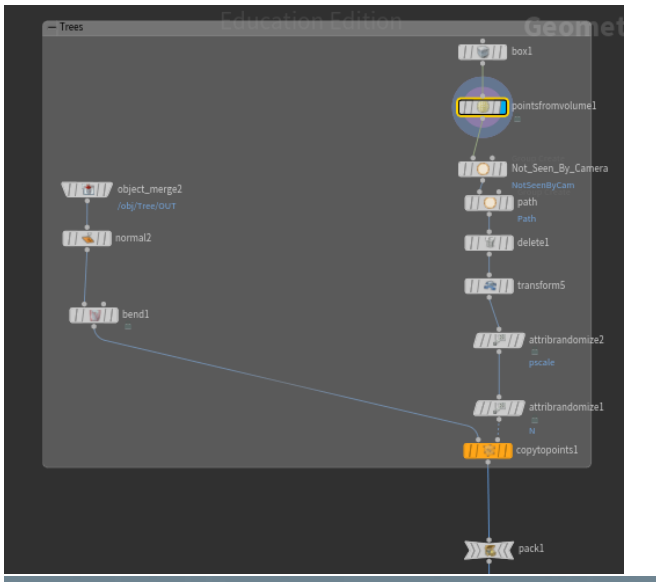

**Creating the Forest:**

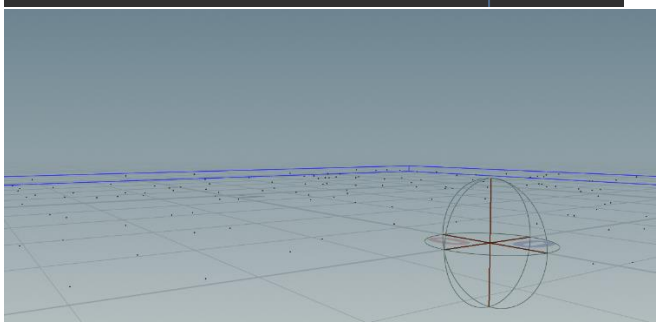
1) Started by creating a deformed ground plane.



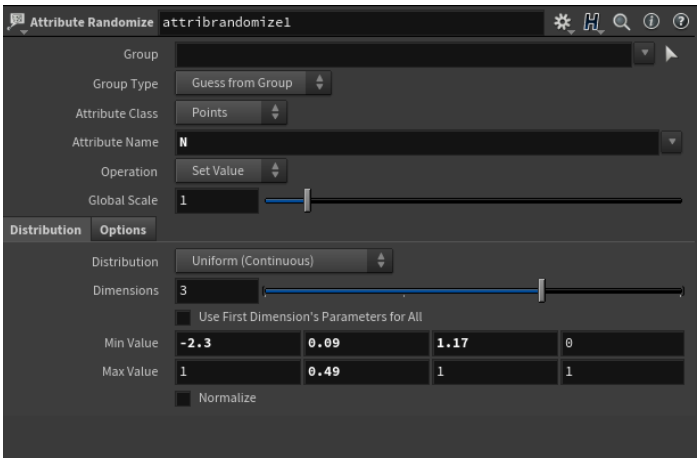
2) On top of that, I made a grid with points from volume to establish where I wanted the trees to be. I deleted with different bounding boxes the points I didn't need (The ones behind camera and along the path). This way, I made the scene more efficient and accurate to the reference.



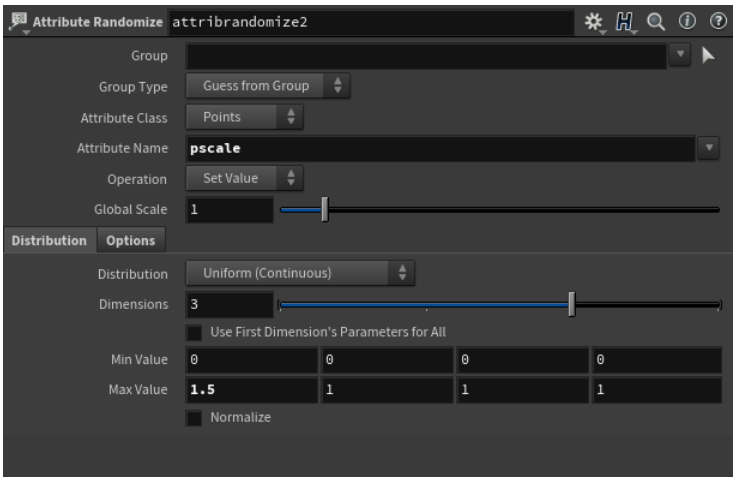



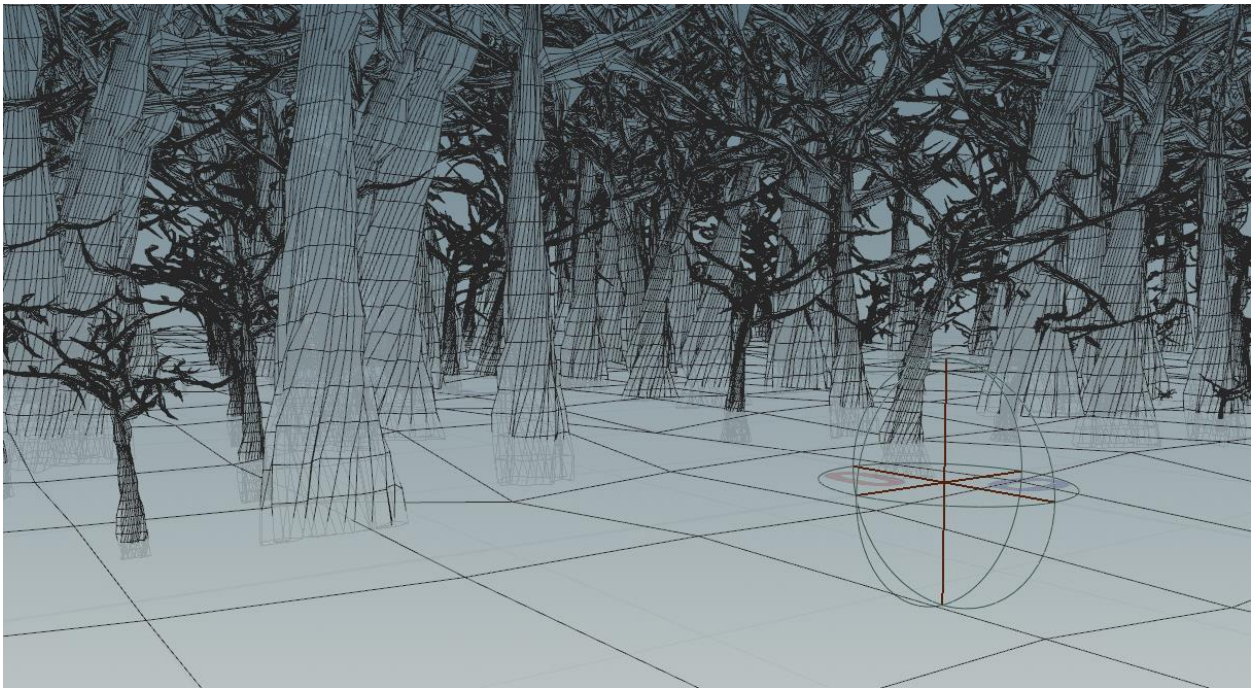
- To randomize the scale and rotation of the trees, I used attribute randomize and moved the point normal according to the random rotation/scale established in the settings.
- In addition to this, I added a bend node after the Object Merge of the trees to add a more organic look to the forest.

Rotate Randomize:

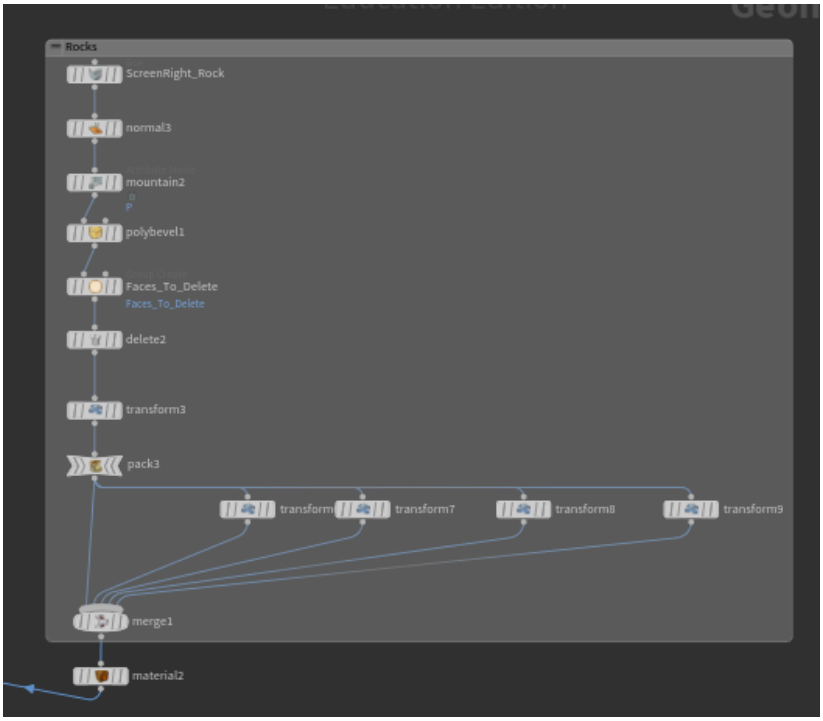


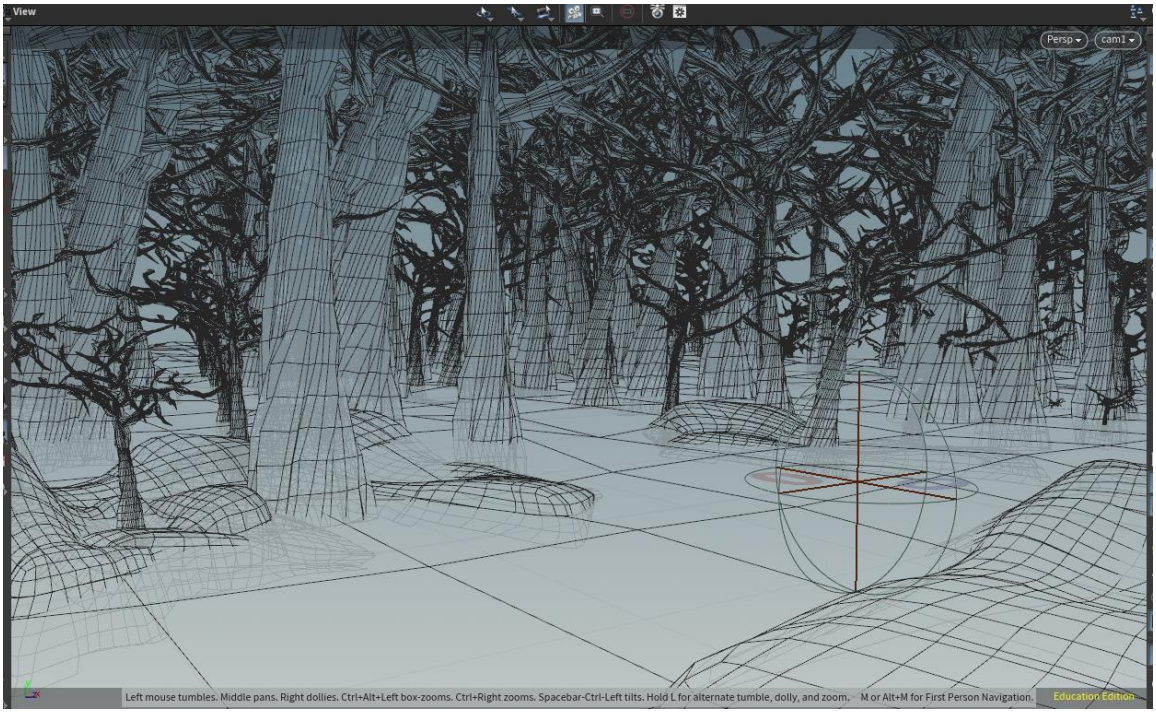

Scale Randomize:



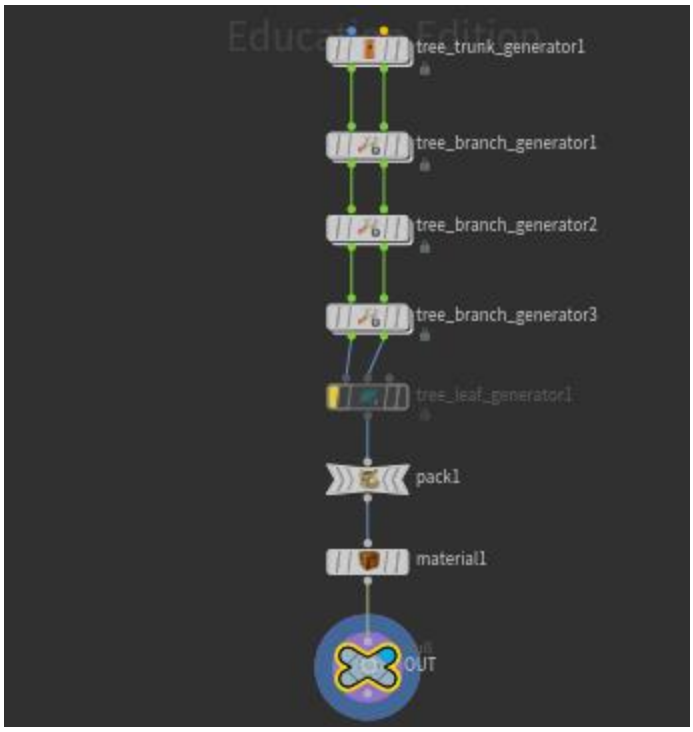
3) Besides the Ground and trees, for my environment I decided to make rocks. Making the environment more interesting. These, instead of instancing them or randomly copying them, I decided to place them myself so I could have more control of where I wanted them in the scene.



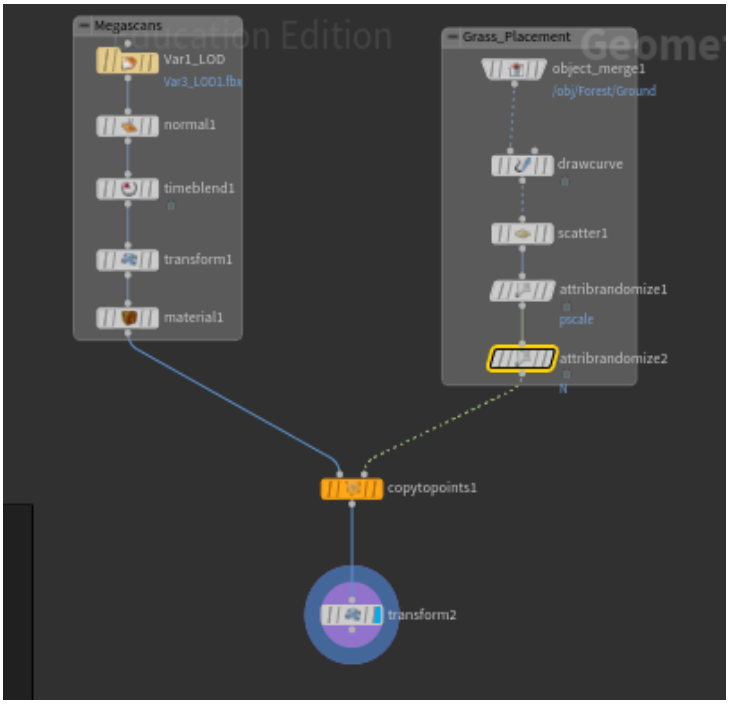

**Modeling the Tree:**

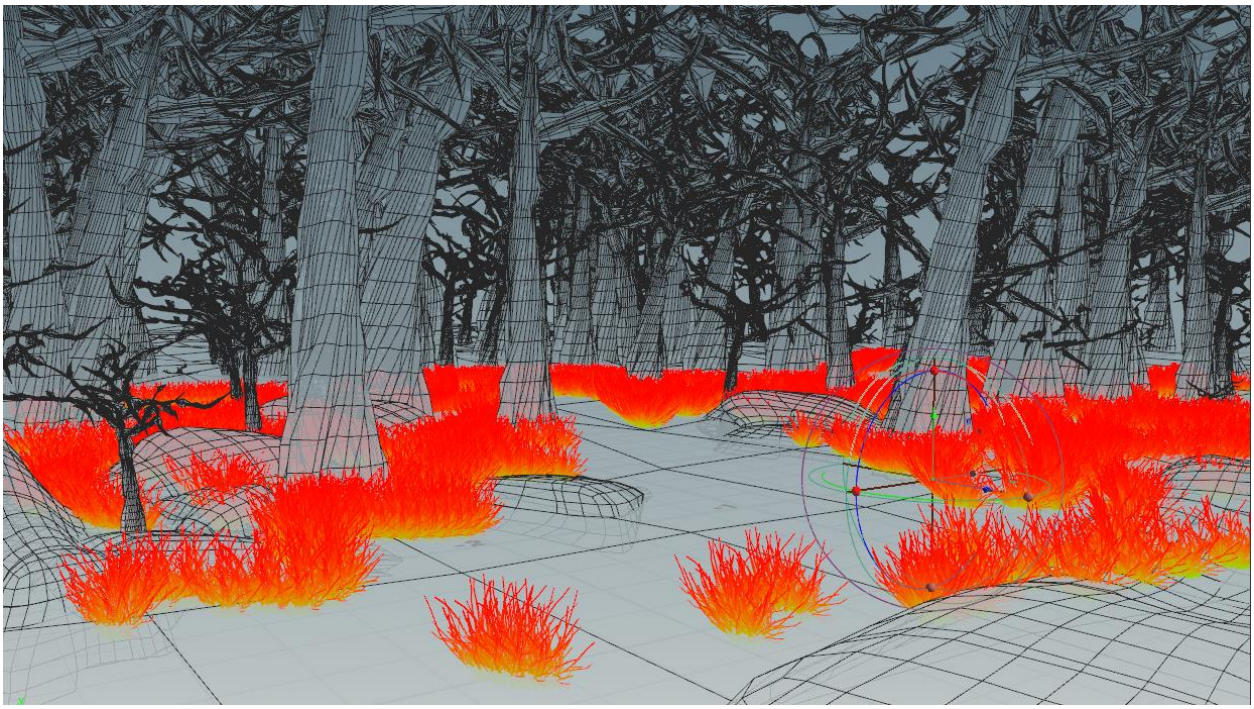
1) I used the Tree Generator tool from SideFX




- Included the leaf generator in case the user wants to add leaves to the forest. However, I left it disabled for my render to match the reference better.

**Modeling Grass:**

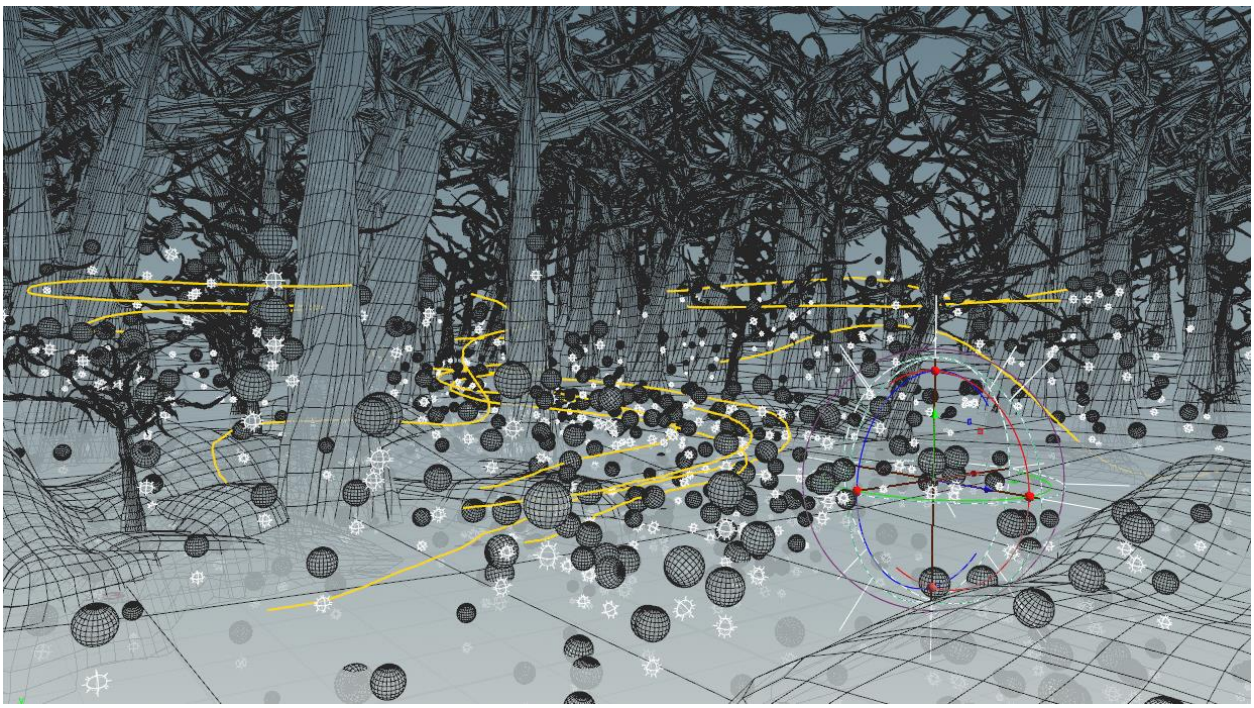
- To create the grass, I decided to use a quixel megascan and drew a curve along the area where I wanted the grass to be.
- After Making the curve, I copied to points the asset.
- 



**Creating the Fireflies:**

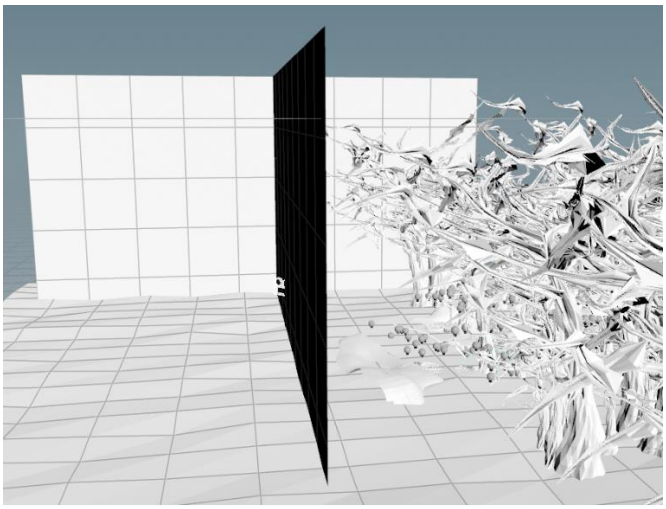
1) To create the source of my firefly's particle simulation, I drew curves along the environment previously created, where I wanted the fireflies to be.
2) I added a point jitter and attribute randomize (scale) to randomize the position and scale of the fireflies.


- I filed cashed the simulation and instanced the point lights to create the light that fireflies emit.
- In addition to the lights, I also instanced emissive spheres so it would resemble the fireflies on my reference.
- I translated the Point lights slightly lower in the YAxis so they would not be covered by the geometry sitting on top.



**Lighting:**

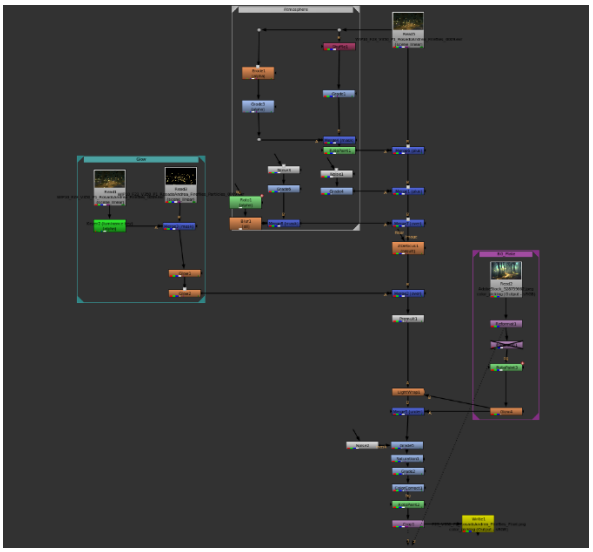
- Along with the Pointlight, I used an HDRI with a foggy environment to match my reference
- To enhance the lighting within the scene and fake the tree shadows from behind the camera, I made ground planes that serve as “light blockers”



**Effects in Nuke:**

To push the render forward and make it look as close as possible to my reference, I added volumetrics and an additional glow effect in Nuke. Apart from this, I did some minor color correction.

Nuke Script:



Render from Houdini:

Render from Nuke: