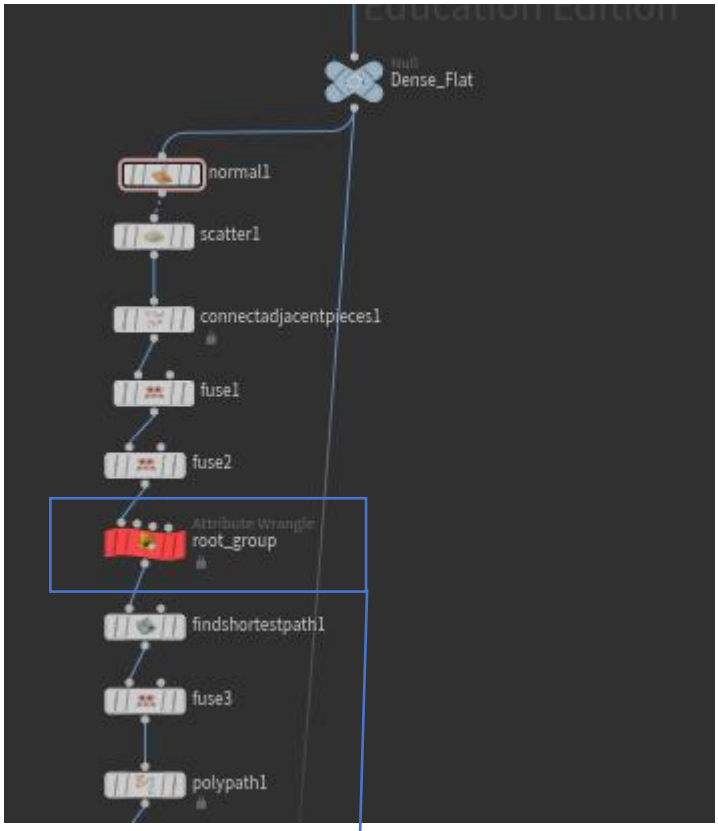
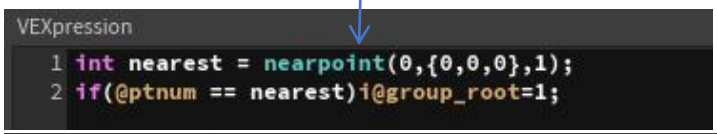
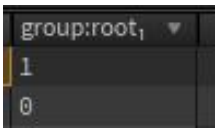
Breakdown | Growing - Procedural Plant growth
Houdini Version: 19.5.605

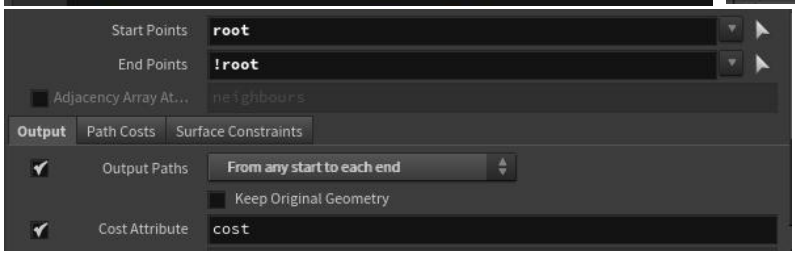
The project aims to utilize Houdini's KineFX to create procedural growth effects for plants, coupled with the height field function to generate procedural landscapes and distribute vegetation.

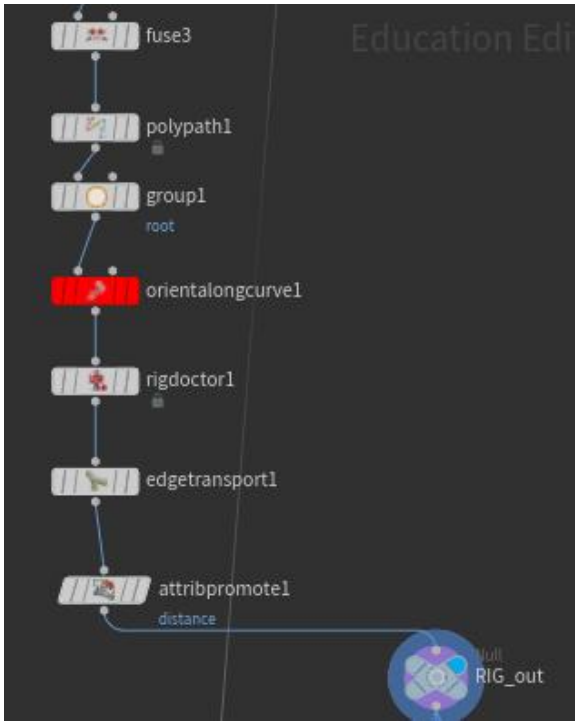
1. Rig

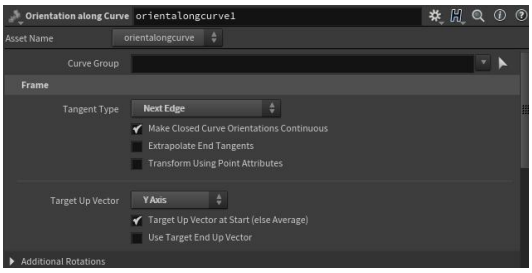


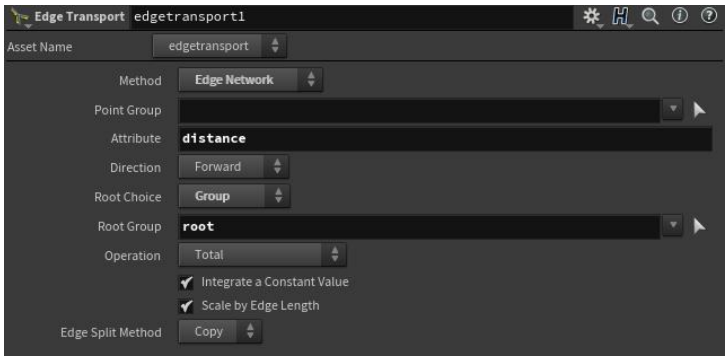


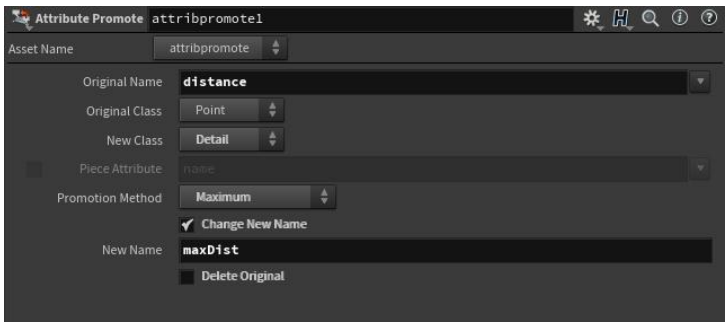




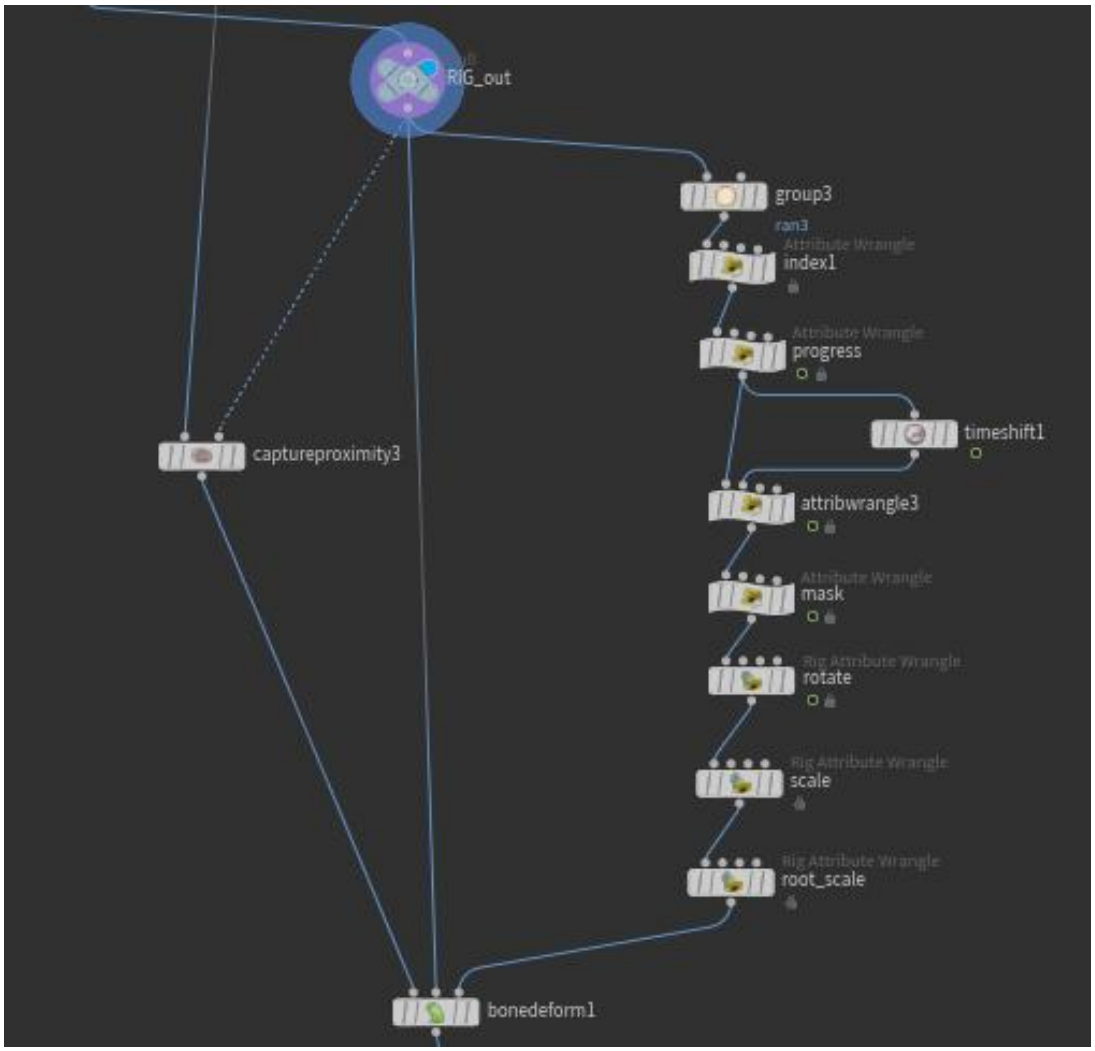

fuse3
polypath1
group1
root
orientalongcurve1
rigdoctor1
edgetransport1
attribpromote1
distance
Null
RIG_out


Orientation along Curve orientalongcurve1
Asset Name
orientalongcurve
Curve Group
Frame
Tangent Type
Next Edge
Make Closed Curve Orientations Continuous
Extrapolate End Tangents
Transform Using Point Attributes
Target Up Vector
Y Axis
Target Up Vector at Start (else Average)
Use Target End Up Vector
Additional Rotations


Edge Transport edgetransport1
Asset Name
edgetransport
Method
Edge Network
Point Group
Attribute
distance
Direction
Forward
Root Choice
Group
Root Group
root
Operation
Total
Integrate a Constant Value
Scale by Edge Length
Edge Split Method
Copy


Attribute Promote attribpromote1
Asset Name
attribpromote
Original Name
distance
Original Class
Point
New Class
Detail
Piece Attribute
name
Promotion Method
Maximum
Change New Name
New Name
maxDist
Delete Original

2.Growth Animation



VEXpression

```
f@progress=chf("progress");
```

VEXpression

```
float width=chf("wdith");

@mask=fit(@distance,0,detail(0,"maxDist"),width,1);
@mask=fit(@mask,@progress,@progress*width,0,1);
```

VEXpression

```
prerotate(4@localtransform,radians(chramp("mainAngle",(f@mask))),{1,0,0});
```

VEXpression

```
prescale(4@localtransform,(1-@scale));
```

This node combination can be assembled onto any plant model to achieve growth effects, providing diversity through parameter adjustments.

Tutorial Reference:
https://www.sidefx.com/houdini-hive/houdini-hive-paris-2023/#massive
Flower Garden by Carl Krause