Jared Kengla / VSFX 350 / Fall 2017 / 14 November

Project 2 - Ladybug Procedural Animation / Houdini 16.0.671

Average render time: 3 min/frame local
Samples: 3:3
Noise Level: 0.01
Diffuse Quality/Limit: 2/2
Reflection Quality/Limit: 2/4
Resolution: 740 x 405
Min/Max Rays: 2/9
Lights: 1 point, 1 grid, 1 envlight
Refraction Quality/Limit: 1/4

Complexity of Geometry: 29,000 points; 105,000 vertices; 24,000 primitives & polygons; 8 packed geos

Description:

This procedural animation was inspired by this wonky robotic ladybug sculpture by Igor Verniy.

Challenges:

It took me longer than expected to offset the legs in a believable way for the walking motion. I needed to offset the forward and backward rotation as well as the up and down motion based on the leg copy number.

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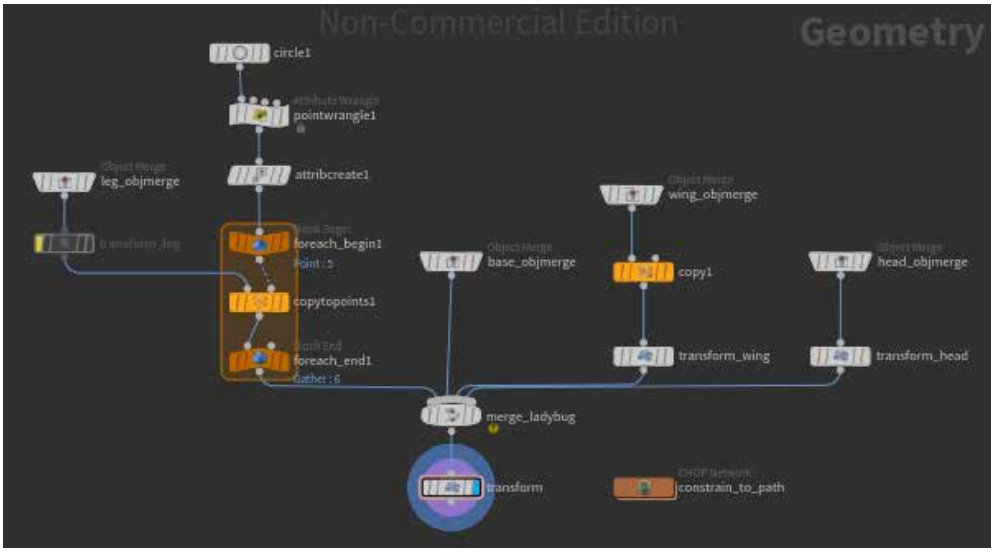
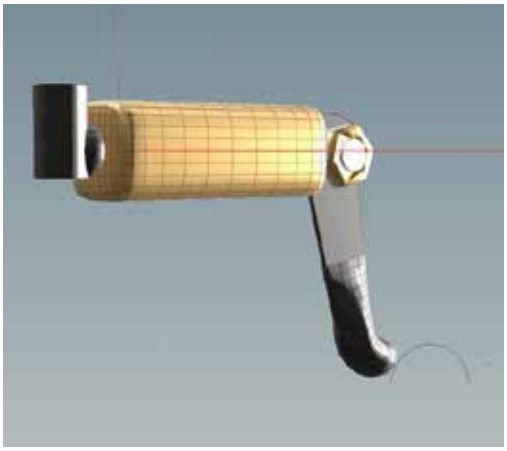
Method:

I constructed different main parts of the ladybug in separate geometry containers, with their own animation expressions, and merged them together later as shown below. The legs were copied to points using a foreachloop, and I referenced their point numbers to control their motion offsets.



The expression for the legs uses a spinning arc to drive the up and down step motion based on the pythagorean theorem of the triangle formed by the leg and the dot product to get the angle between the legs. They also rotate forward and backward on a sine wave.



The wings are on sine waves with offset pivots based on its hinges. The gears inside rotate continuously and properly mesh together by multiplying the speed of the driving gear by the tooth ratio of both gears.

To move the entire ladybug, I used a followPath CHOP to reference the leaf path. I also used a lookAt CHOP for the camera and expressions to have the camera move after 120 frames.