

Advanced Rigging tools in Maya- CGMuscle Tutorial

CGMuscle by Judd Simantov (www.cgmuscle.com)

Tutorial by Jerry Kalkhof (www.jerryartist.com) using cgmuscle2.0, Maya 7.0 for windows

1. Install cgmuscle by copying the following files:

CgmMuscleCreator.mel

To

C:\Documents and Settings\user\My Documents\maya\7.0\scripts

CgMuscle.mll

To

C:\Program Files\Alias\Maya7.0\bin\plug-ins

Copy cgMuscle_logo.bmp file

To

C:\Documents and Settings\user\My Documents\maya\7.0\prefs\icons

Load the cgmuscle.mll using the plugin manager

2. use the cgm Muscle Creator to create a muscle

In the script editor run:

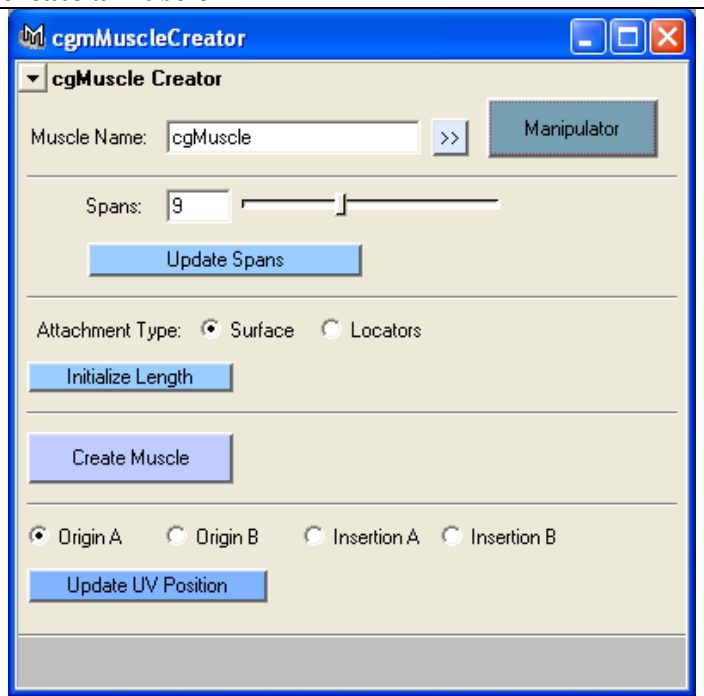
```
cgmMuscleCreator()
```

```
set muscle name to cgMuscle
```

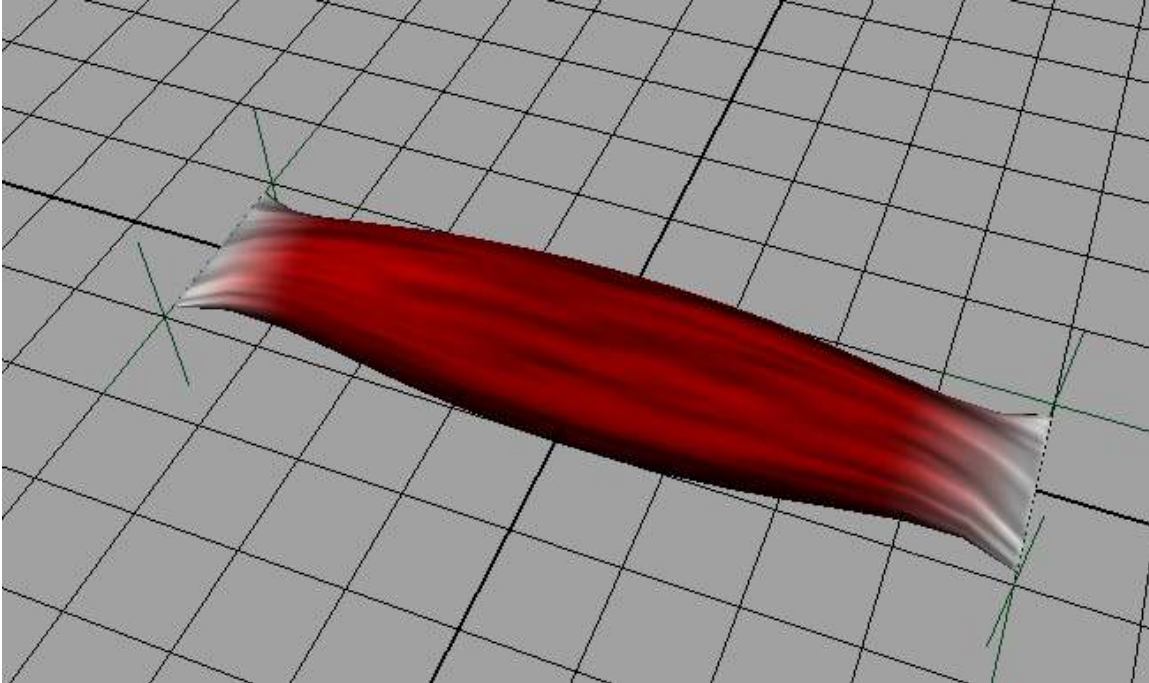
```
set attachment type to
```

```
locators
```

```
set spans to 6
```



press "Create Muscle" and you should see a muscle below:



notes:

I think surface attachment only works for nurbs surfaces
reduce spans to get the thing to update faster
Press "Manipulator" to adjust origin and insertion points of muscle

Press ">>" to access the cgMuscle and its attributes

Flex inflates/ deflates muscle

Bend A0 side to side bend

Bend A1 vertical bend

Bend A2 muscle belly towards locators a or locators b

Bend B0 side to side bend

Bend B1 vertical bend

Bend B2 muscle belly towards locators a or locators b

Spans

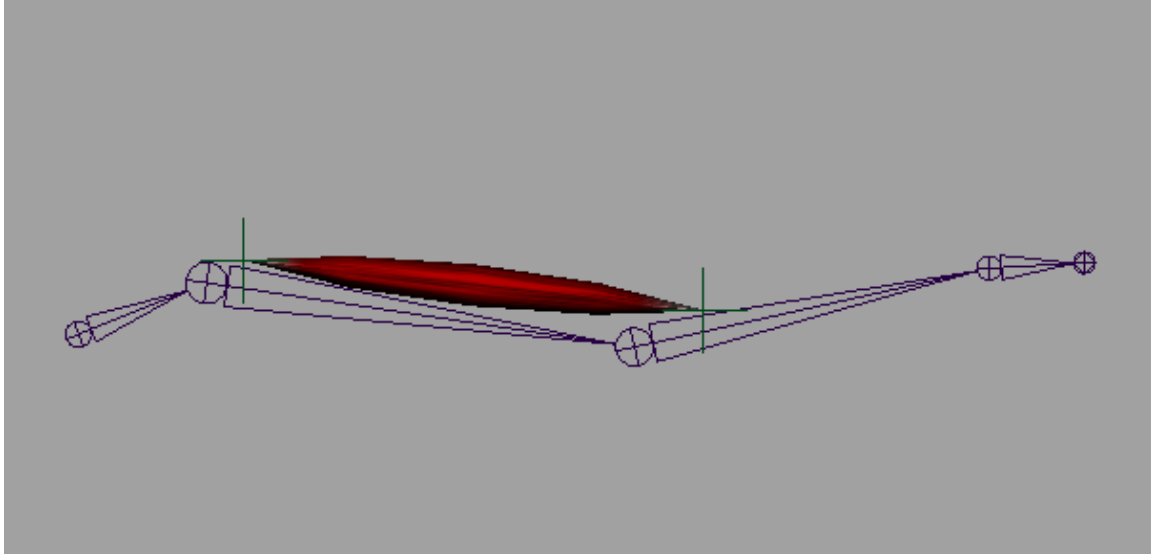
3. Create arm bones for muscle simulation

We will be using bones to parent to locator, and then use rotation of joint to drive flex value of a cgMuscle.

Build an arm

Clavicle -> upper arm -> lower arm -> hand -> hand end

Position locators of muscle to insertion and origin points on the arm for a bicep muscle
Note that the position of the muscle so that it has leverage (see Bridgeman)

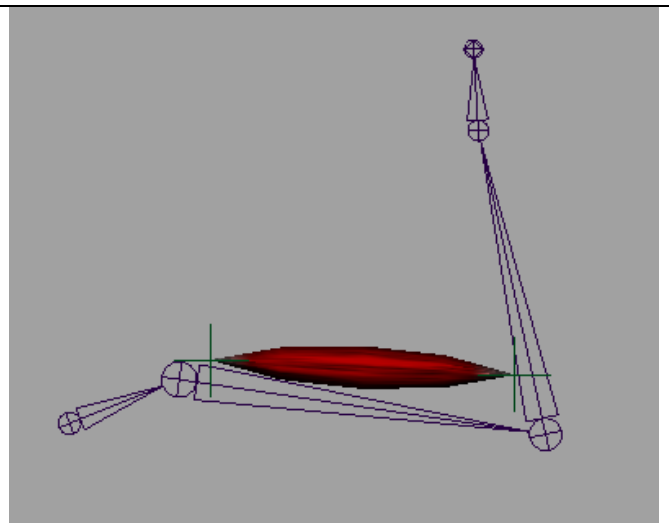


4. Attach muscle to bone by using parent constraints

Parent from lower arm joint to lower muscle locators

Parent from upper arm joint to upper muscle locators

Test by rotating the lower arm – the muscle should follow

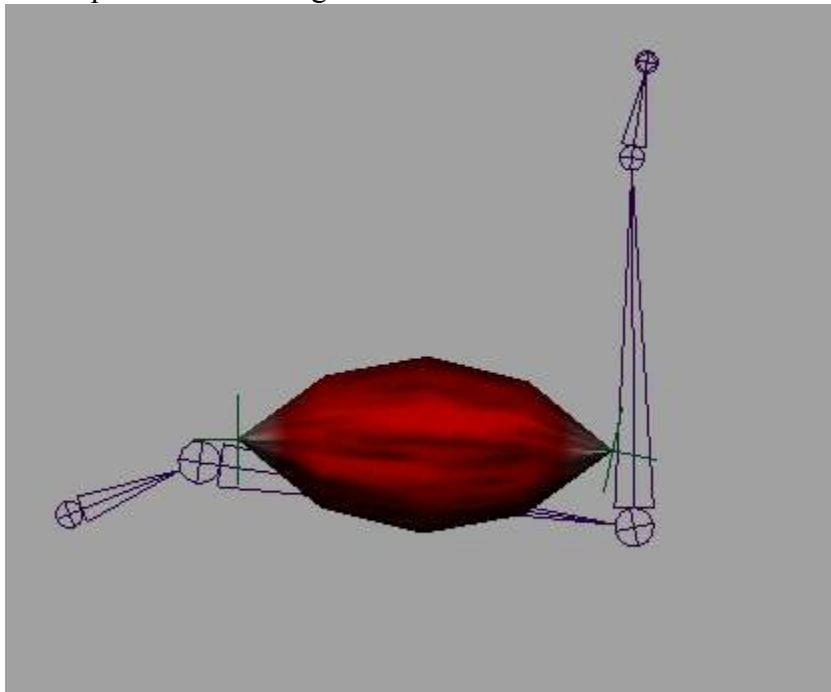


5. Create muscle flex using driven keys

next, we need the muscle to flex as we rotate the arm
create a driven key from lower arm rotate z to flex value of muscle

animate -> set driven key -> set[] dialog

we now have a simple muscle flexing as the arm moves:



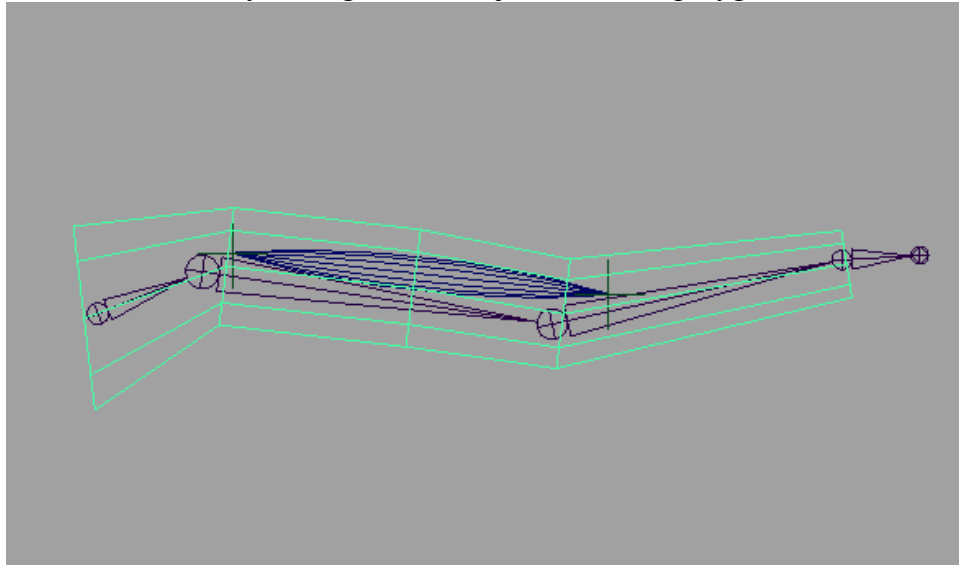
(you may also want to key to bend a1 as well)

note: flex doesn't return to zero when rotation z of arm returns to zero? Did I screw up here? Is this a bug??

6. Have the nurbs muscle deform a polygon mesh

The next step is to have a skin polygon mesh wrapped around the muscle and bones, and have the muscle deform the skin.

To do this, we are basically having a nurbs object deform a polygon mesh.



Create a polygon cylinder to act as a skin mesh to be deformed by bones and the muscle
10 spans around axis
3 or more spans height
name it arm mesh

Manipulate the “arm_mesh” vertices so it follows the bones roughly.

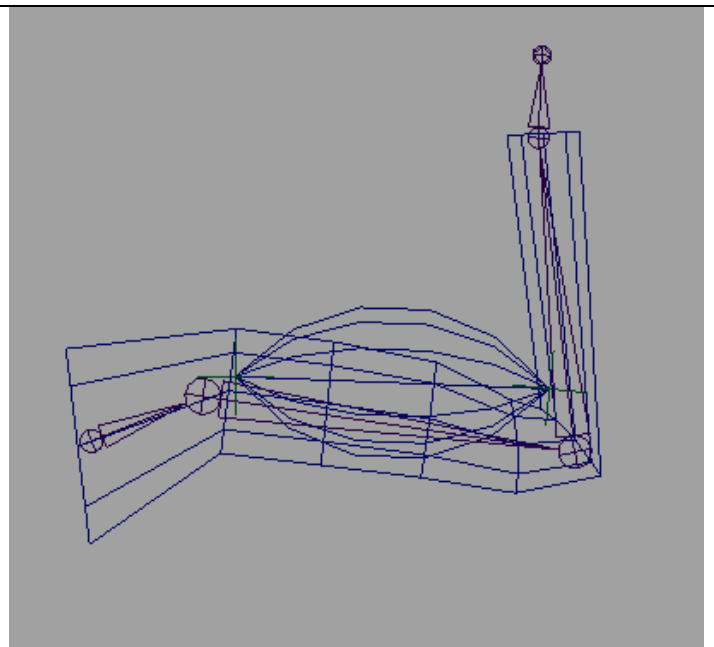
Bind arm mesh to the bones

Animation -> skin -> bind skin -> smooth bind

Test the animation by rotating the arm.

Notice how the muscle pokes through the mesh as the arm bends

We want the cgmuscle to influence the skin mesh.



7. Add cgmuscle to skin as influence objects.

Select mesh, and cgmuscle nurbs object
Skin -> edit smooth skin-> add influence

Geometry: use geometry

Dropoff 2.0

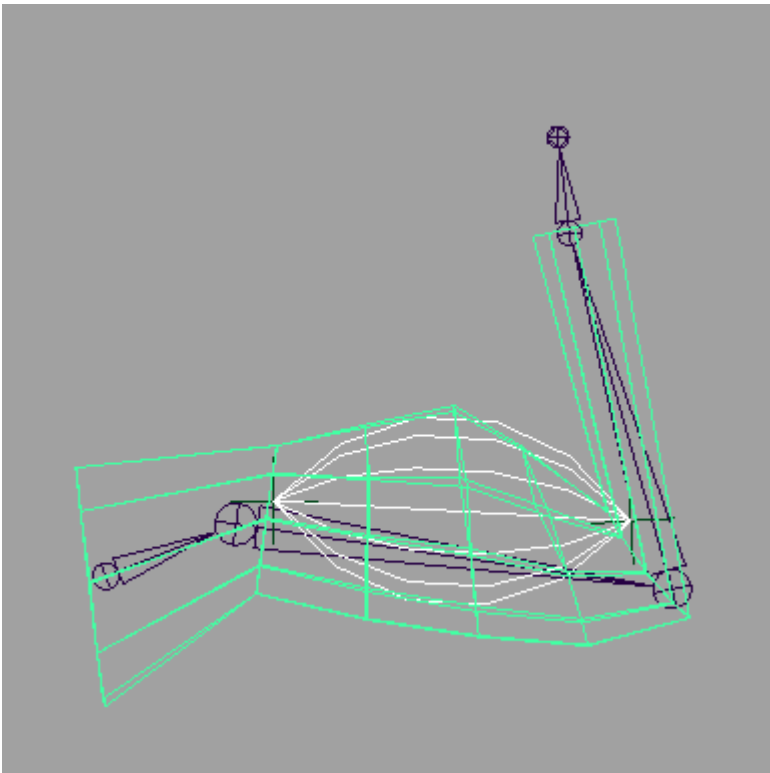
Polygon smoothness: 3.0

Nurbs samples: 5

Weight locking: none

Add

Paint your skin weights, and viola! The muscle influences the skin along with the bones like a real muscle should!



Thanks you Judd for supplying the art community with a wonderful rigging tool!