

NORMALIZING CURVES FOR CAMERA VECTORS IN MAYA 2016

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OBJECTIVE:

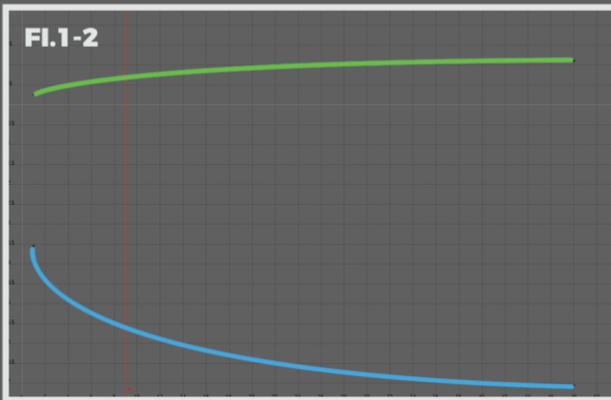
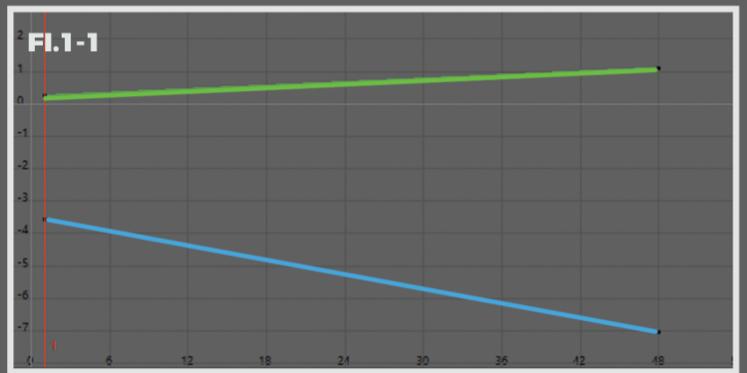
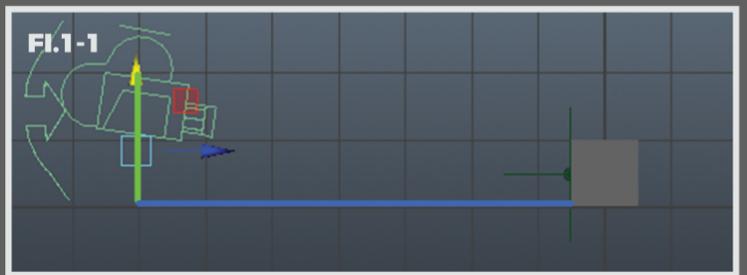
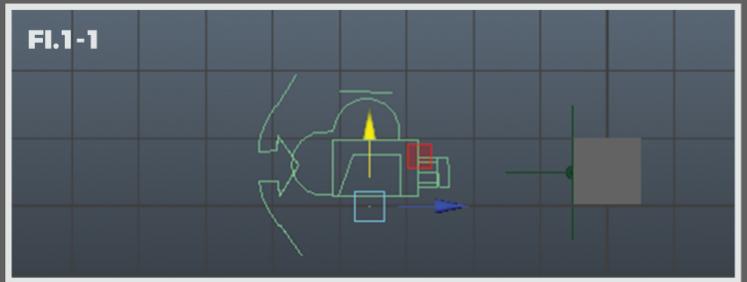
A vector is a direction plain and simple. X, Y, and Z are all Vectors. Using Normalizing Curves allows you to get a 1:1 ratio for curve or spline values between two vectors. I will explain what this means. Using this technique is probably useful for more than just cameras.

PROBLEM:

Let's say I want a camera to look at a box and I want the camera to dolly back(Z) and Pedestal up(Y). I key the start and end positions making sure my curves are linear. This creates two separate curves in the graph editor for the camera that are straight from the first key to the last(FI.1-1) Great! Now what If I want to make the camera movement start fast and end slow? Well we just go into the graph editor and edit the curves so that the value increases over time (FI.1-2).

The problem in doing it this way is that you have to toggle the handles individually for both the Z curve and the Y curve separately. When you start messing around with the curve handles it offsets the original linear 1:1 ratio between the curves.

Note: The camera being presented is the JoshCam_v3.

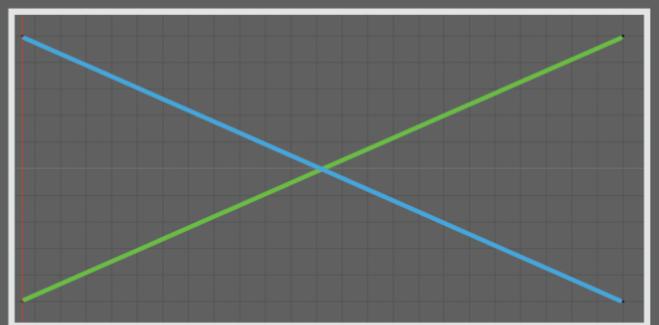


When you offset the 1:1 ratio between the Z and Y then you will never get a camera movement where the camera is moving along both vectors at the same rate and it will always look weird or "off" in some sense because the camera is moving at a different speed along the Z or the Y at different times. I can't show you in a document like this but if you experiment for a few minutes you will understand what I mean. You can get close but it will never be perfect.

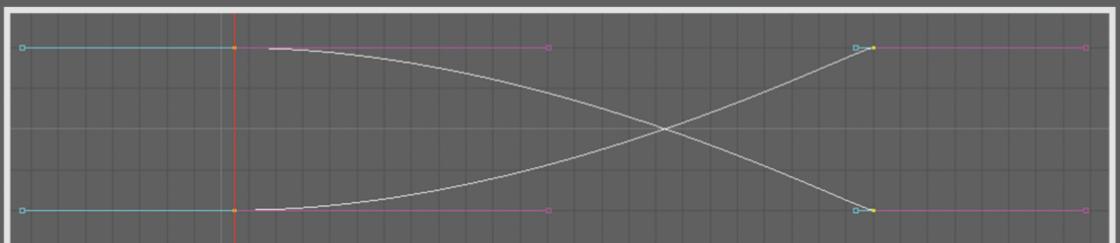


SOLUTION:

- This is a pretty easy fix and it is extremely effective. In the Graph editor, there is a button at the top called Enable normalize curve display.
- All you have to do is select your two curves (in our case Z and Y) and Click Enable normalize curve display.
- In the Graph Editor go to Tangents and select Free Tangent Weight. (With curves selected)
- You should have two curves stacked on top of one another that are relatively similar. Sometimes they are right on top of one another but here's what they look like in my case.



- Now you can select the handles and set the curve how you want. This changes both the Z and Y spline values together!



- Checking Disable normalize curve display button will separate the curves but they both have the same ratio and have a 1:1 movement between Z and Y and it gives a smooth camera movement. Try it out!



EXPLANATION:

From what I can see we have two curves (Z,Y). Normalizing the curves seems like it takes an average of the start and end keyframe values between the two curves and creates an average curve or stacks them on top of one another. You can do this with as many curves as you need like zooms and focal shifts as well.

Thank you so much! I hope you have found this helpful with all your camera fanciness!