Making an ease script for Davinci Fusion: Part 1

Table of contents

- Making an ease script for Davinci Fusion: Part 1
  - Table of contents
  - Intro
  - The issue at hand
    - What is "easing"
    - Easing in Davinci Fusion is pretty terrible
  - Figuring out what I want to make
  - Conclusion

Intro

Aside from programming, one of my main hobbies is motion graphics. I've used After Effects from 2017 to 2022, Davinci Fusion from mid 2022 to late 2023, and Autograph ever since. Davinci Fusion (inside of Davinci Resolve) is the tool we'll be interested in for this article.

Davinci Fusion is a software embedded inside of the larger Davinci Resolve software, it is a node-based compositor used for special effects, but can also be wrangled to do motion graphics.

It has a rich set of features, but the ones we are mainly interested in are its scripting capabilities.

This series of articles will describe why and how I made the ease-copy script, it can serve as a nice starting point for people willing to dive into Fusion Scripting.

The issue at hand

You may skip this section if you already know what easing is, and are aware of the shortcomings of Davinci Fusion when it comes to this topic.

Davinci fusion is fairly good in what it does right, the node system is a breath of fresh air for former ae users and allows you to do a lot of advanced compositing fairly intuitively. However, it falls short of mediocrity in many aspects due to a lack of polish, but thankfully, unlike After Effects, Davinci Fusion has a scripting console that allows you to much more easily experiment with the scripting language. Thanks to that, I was able to make the software more pleasant to work with with additions such as:

- Setting BPM and navigating through the timeline via beats instead of frames ;
- Improving the "play" button to put you back at the starting point once you pause it ;
- Navigating by one/multiple frames.

Overall, my experience with Fusion could be summed up as: it is pretty unpolished, but for most cases, you can make it more agreeable to use with simple scripts. But one issue in particular was still causing me a lot of grief, an issue that wouldn't be so "ease-y" to tackle.

What is "easing"

First of all, easing (in video editing) is the process that lets you make a movement smoother/faster/snappier/bouncy/etc... An easing function is applied to a value to define how it evolves from one "keyframe" (a point in time defining a property's value) to the next. You can see an example of different easing functions here.

All advanced editing software provides the user with a "graph editor", allowing you to define a custom curve by yourself using handles:

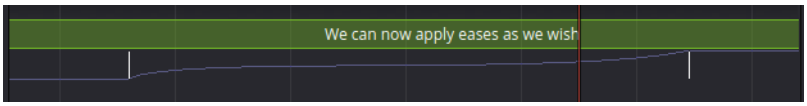
Here, you can see me setting a custom easing curve for the "size" parameter on the left pane.

Easing is a fundamental part of motion graphics, so much so that most editing software either gives you a quick access to easing functions from a simple keyBind (Blender for example), or via a third party script (After Effects with the "Flow" extension... yes, after effects is the leading motion graphics software and it has **no built-in easing helper**). I said "most" software, and herein lies the issue with Davinci Fusion.

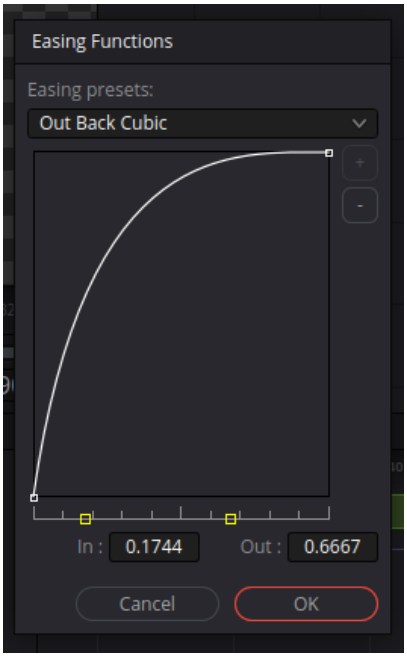
Easing in Davinci Fusion is pretty terrible

The lack of polish when it comes to keyframes and easing is by far my biggest gripe with this software.

First of all: keyframes are tiny and very hard to select.

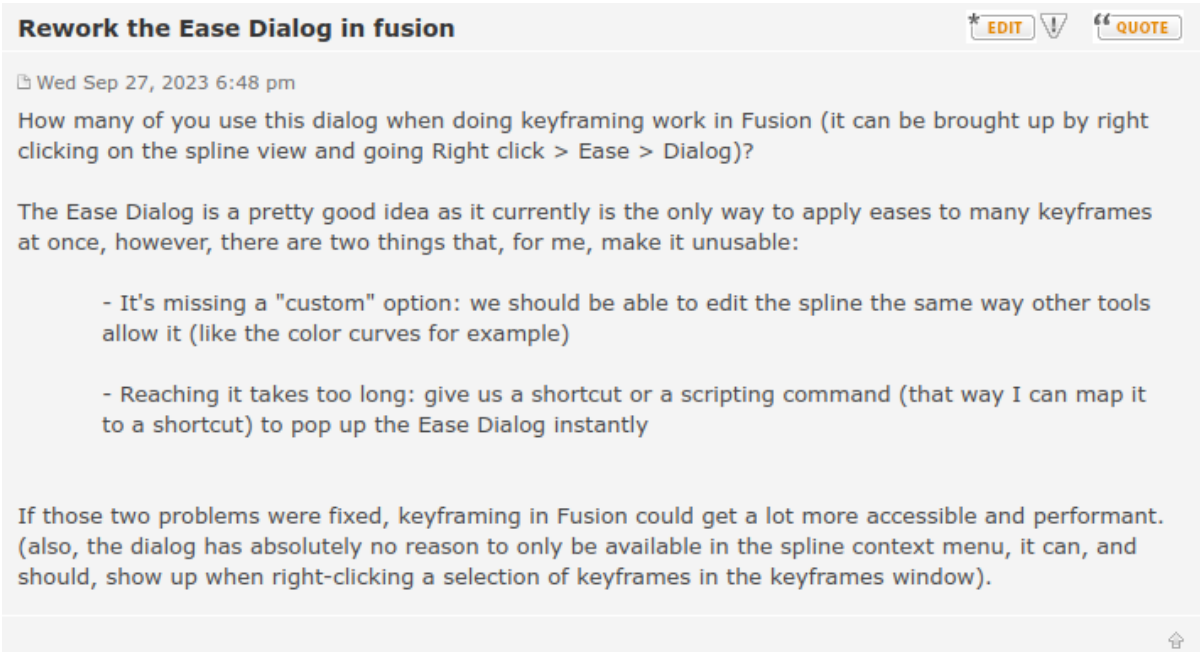


While Fusion does offer an "easing" dialog, it is also a very underwhelming one.



- The menu has no state, every time you apply an ease, no value changes are saved;
- You cannot add custom eases to it, only a few predefined ones are available;
- There is no shortcut key to open this menu;
- The menu is only accessible via the "spline/graph editor" tab, and is hidden deep inside a contextual submenu, meaning that it is almost always faster to use the already-open graph editor instead of bothering to fetch the ease menu.

It is something I brought up in the official Blackmagic (the company behind Davinci Resolve) forums, but to no avail.



Rework the Ease Dialog in fusion

EDIT QUOTE

Wed Sep 27, 2023 6:48 pm

How many of you use this dialog when doing keyframing work in Fusion (it can be brought up by right clicking on the spline view and going Right click > Ease > Dialog)?

The Ease Dialog is a pretty good idea as it currently is the only way to apply eases to many keyframes at once, however, there are two things that, for me, make it unusable:

- It's missing a "custom" option: we should be able to edit the spline the same way other tools allow it (like the color curves for example)

- Reaching it takes too long: give us a shortcut or a scripting command (that way I can map it to a shortcut) to pop up the Ease Dialog instantly

If those two problems were fixed, keyframing in Fusion could get a lot more accessible and performant. (also, the dialog has absolutely no reason to only be available in the spline context menu, it can, and should, show up when right-clicking a selection of keyframes in the keyframes window).

Since easing was not going to get better any time soon, I decided to see if I could fix it on my own with a bit of scripting. That is when I started working on an ease-copy script for Davinci Fusion.

Figuring out what I want to make

Before I got to scripting, I had to figure out what exactly I was trying to do so that I could know how to best implement my script. I wanted a script that would be able to:

- Save keyframes easing curves as presets;
- Apply those presets to any other set of keyframes;
- Delete presets.

I had to make something better than what Blackmagic provided, so I had to take quality of life into account:

- The script must keep in memory custom configurations even after closing the script panel/window;
- The script window must be small and compact enough so that I can always stay open and sit on one side of the screen without obstructing other parts of the software, it needs to be a handy floating panel;
- The script should make it obvious as for what keyframes specifically are being targeted via the save/apply operations.

With all of that in mind, I had a clearer vision of what I needed to do.

Conclusion

In this article, we briefly introduced some fundamental concepts of motion graphics and saw how different software handled them. We saw the limitations of Davinci Fusion when it comes to easing, and elaborated a plan for a script that could solve said issue.

In the next article of this series, we will explain some of the fundamentals of LUA scripting, and some of the fundamentals of LUA scripting inside Fusion.