

SpeedX

Vimager

SpeedX is an advanced time remapping plugin with AI technology, it is designed to speed up, slow down videos by interpolating additional images between frames intelligently.

The plugin adopts the sophisticated AI-based optical flow method to calculate the object motions in the video sequence. Moreover, thanks to the intelligent AI technology, SpeedX can perceive the occlusion around the motion boundaries. And then it fuses the image pixels adaptively under the guidance of accurate pixel-based optical flow and occlusion information, therefore, generates high quality and more realistic intermediate frames.

SpeedX is a professional and affordable tool for time remapping, always with visually stunning results. It is ideal for video frame rate conversion, super slow motion, speed change, variable reverse playback and many more creative video effects.

Moreover, SpeedX plugin is GPU accelerated for Adobe After Effects and Adobe Premiere Pro, and available for Mac and Windows.

Installation

There are two ways to install plugins:

1. Using the manager app

The easiest way to install the plugin is using the manager app, for more information please check:

<https://aescrpts.com/learn/the-best-way-to-install-plugins-into-after-effects>

2. Install manually for After Effects & Premiere Pro:

For Windows:

Copy the unzipped file '**SpeedX.aex**' to the folder:

C:\Program Files\Adobe\Common\Plug-ins\7.0\MediaCore\

For Mac OS:

Copy the unzipped file '**SpeedX.plugin**' to the folder:

Macintosh HD/Library/Application

Support\Adobe\Common\Plug-ins\7.0\Media Core\

GPU Requirements

- ❖ GPU with at least 3GB memory. GPU with 4GB memory or more is recommended for processing footage with higher resolution.
- ❖ GPU which supports Vulkan 1.0. For more information, please check [Vulkan wiki](#), refer to Linux part for macOS Vulkan supporting.
- ❖ If the GPU is not supported, SpeedX will return a green frame.
 - For MacBook Pro, if there are an integrated graphics processor and a discrete graphics processor, and you see a green frame, it is suggested to [disable "automatic graphics switching"](#).

Panel & Controls

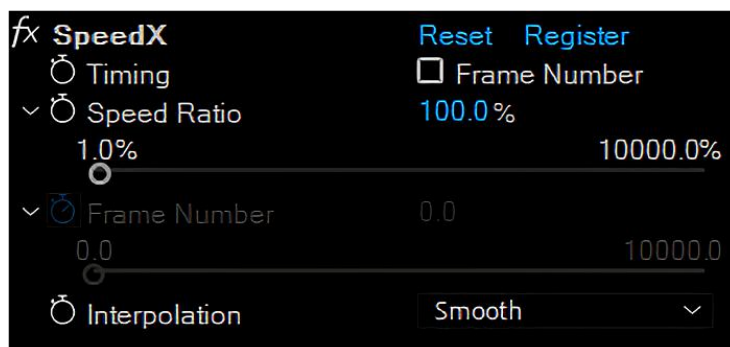


Fig.1 Panel and Controls

❖Timing

The Timing checkbox enables you to select the required retiming mode: “Speed Ratio” when it is unchecked (by default), otherwise “Frame Number”.

❖Speed Ratio

Retime a layer using the Speed Ratio value. Increasing the Speed Ratio value increases the playback speed of the clip and vice-versa. For example, a value of 50% is to play with half speed, 100% to the same as the original, and 200% to double its normal rate.

❖Frame Number

Retime a layer in terms of Frame Number. With this mode, you can describe the retiming using direct frame numbers specification. The Frame Number parameter tells the plugin which source frame is to play at which time, and the plugin will interpolate the images between the keyframes. In case that the Frame Number value is fractional, the keyframe will be obtained with the interpolation method.

Usually, you need to set at least two keyframes to retime a layer using Frame retiming, otherwise the plugin returns the same image for the whole clip.

Let's say there is a clip with 200 frames, and you want to speed slow down with 0.5x speed. First, make a keyframe with the value 0 on the first frame, and make a keyframe with the value of 100, i.e. the half of the number of total frames on the last frame. With Frame Number mode, you can make some creative speed effects, such as playing backwards: make a keyframe on the first frame with the value 200, i.e.

the number of frames in the whole clip, and then make a keyframe with value 0 on the last frame.

❖ Interpolation

Interpolation mode. There are 4 interpolation modes: Smooth, Sharp, Nearest, and Blend.

Smooth and Sharp modes are with the AI based frame interpolation. Smooth mode tends to generate smoother motion vector when the motion is ambiguous, the ambiguity in motion estimation can be introduced in many cases such as the blur object boundary, the object deformation, reflection and occlusion.

Nearest and Blend are traditional frame interpolation methods. Nearest mode duplicates its nearest source frame. Blend mode create new frame by linearly interpolating two nearest source frames.

- Note: Generally, the Smooth and Sharp modes produce very similar results in most of cases. For some challenge cases, it is recommended to try Sharp mode firstly, if there are artifacts, then try the Smooth mode.

Quick Start

Make sequence longer

For some applications, such as slow motion, it is expected to make sequence longer than the source sequence. SpeedX can generate more frames than the source sequence length, however it can not extend layer or sequence by itself under the constraint of host applications. For this purpose, users need to extend the layer to expected length before applying SpeedX, then it will generate required frames.

The following describes how the host applications make sequences longer:

After Effects

- 1) Choose [Composition > Composition Settings > Basic > Duration](#) and set the [Duration](#) value. And then click OK.
 - 2) Right click on the selected layer and navigate to [Time > Enable Time Remapping](#). Zoom out on the Timeline to show the entire composition, and drag the last frame to the end of the layer.
- Note: When the Time Remapping is enabled, After Effects places two keyframes on the layer, one at the first frame and another at the last frame of the footage. It is not recommended to adjust these keyframes as they may have an adverse affect on SpeedX since SpeedX may not obtain the correct source frames.

- Beside the method of Enable Time Remapping, there is another way: Right click on the selected layer and navigate to [Time > Time Stretch](#), and set the [Stretch Factor](#) or [New Duration](#). It is recommended to set the Stretch Factor as integer multiple such as 200% and 300%.

Premiere Pro

The idea is to make a sequence with the expected length, usually longer than the footage, the sequence consists of the original footage, followed by some other frames.

An easy way is to append the same footage at the end of the sequence. For example, we want to make sequence longer to 3 times of the footage:

- 1) Put the footage into sequence.
 - 2) Copy the footage (click on the footage in sequence and press [Ctrl + c](#) or right click on the footage and click copy) .
 - 3) Move playhead to the end of the footage and paste the footage twice (press [Ctrl + v](#)), now we have 3 copies of the footage on the sequence.
 - 4) Select the 3 copies of the footage and right click and press [Nested...](#)
 - 5) Then you will get a nested sequence in the timeline with the length of 3x time of the footage.
- Note: Alternatively, you can create a subsequence instead of a nested sequence. Please refer to [this](#) to know more about the difference between nested and subsequence.

Retiming

One of the most fundamental functions of SpeedX is to retime layers. You can accomplish this with one of the two retiming modes:

1. Speed ratio mode

With speed mode, you can simply altering the [Speed Ratio](#) value to retime layers:

- 1) Make sure the [Frame Number](#) is unchecked.
 - 2) Make sequence longer if necessary, (Please check “Quick start -> Make sequence longer” for more details).
 - 3) Set the required [Speed Ratio](#) value.
- Tips: For low-end GPU card, you can first set the interpolation mode as blend, and adjust the speed ratio, once you are satisfied with the ratio, then change the interpolation mode to smooth/sharp.

2. Frame Number Mode

With this mode, you can describe the retiming using direct frame numbers specification.

- 1) Enable the *Timing > Frame Number*.
 - 2) Make sequence longer if necessary.
 - 3) Select the frame in the timeline where you want the retiming to begin. And set the *Frame Number* value to the frame you want to appear at that output position, and make sure it is a keyframe for *Frame Number*.
 - 4) Select the frame in the timeline where you want the retiming to finish. And set the required *Frame Number* value.
- Tips: You can add more keyframes for *Frame Number* or *Speed Ratio* to obtain variable speed change effects. *Speed ratio* can not be negative, so you can not obtain the reverse playback with it. However, it can be achieved with *Frame Number* mode, e.g. Set it as *Frame Number* of the number of the last frame, and move to the end of the footage and set *Frame Number* as 0.

Frame rate conversion

The frame rate determines the number of frames displayed/sampled per second. With SpeedX, you can convert the frame rate of the original source footage to other required frame rate by the following steps:

- 1) Select the footage in the project panel.
- 2) Choose *File* (Or Right click on selected footage) > *Interpret Footage > Main*.
- 3) Select *Conform To Frame Rate*, enter the expected frame rate, and then click OK.
- 4) Add the footage to a layer. Please check the frame rate in composition settings is the same as the frame rate in step 3 .
- 5) Make sequence longer if necessary.
- 6) Set the required *Speed Ratio* value in SpeedX tool.
- 7) Render out the composition.