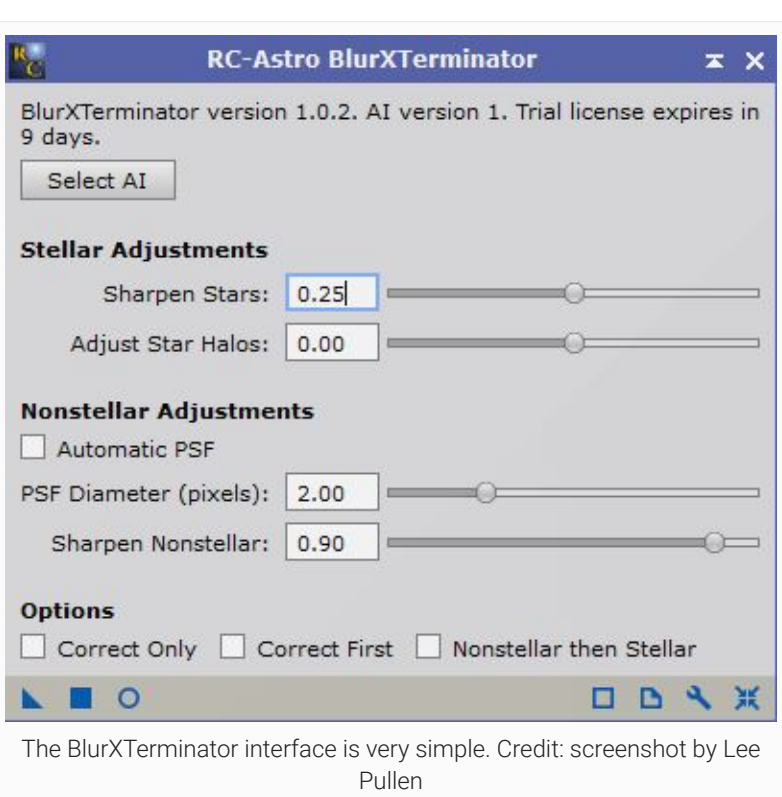
BlurXTerminator Review: A New Era for Astroimaging?

By: Lee PullenPublished: Jan 25, 2023

BlurXTerminator is a new plugin for PixInsight. It greatly simplifies the processing step of deconvolution, sharpening images with a minimum of effort. But its greatest benefit may be its ability to quickly and easily correct a number of issues and optical aberrations. When used carefully, BlurXTerminator could be a game-changer.



The BlurXTerminator interface is very simple. Credit: screenshot by Lee Pullen

Deconvolution made easy

The process of deconvolution is a dark art in astrophotogrpahy. The idea is to analyze stars in an image and calculate their point spread function, which in simple terms is how blurred they are due to atmospheric turblence. The software can then apply this information to the rest of the image, for example a nebula or galaxy, resulting in a sharper view with more visible detail. This process can be complex and time-consuming, to the extent that many astroimagers skip it altogether.

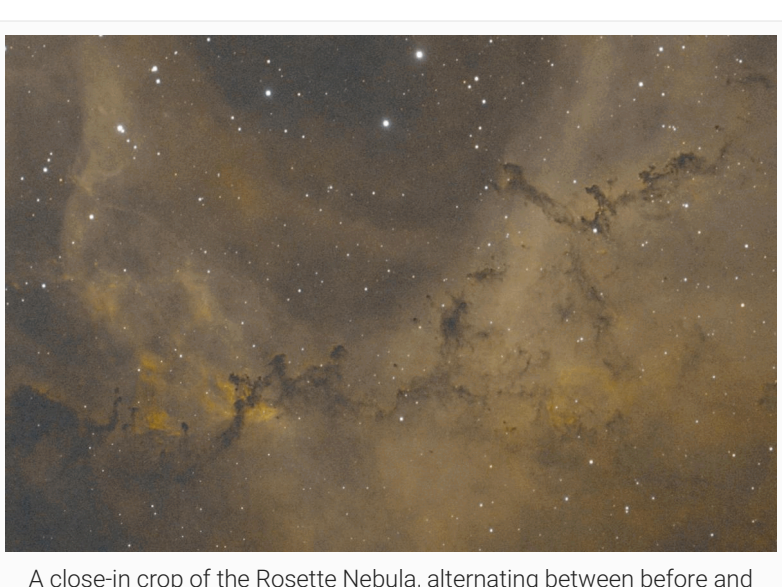
Hoping to address these challenges is BlurXTerminator ($99.95), a new plugin for PixInsight (MSRP $260, review for AGT here) by astrophotographer and software developer Russell Croman. Unlike other deconvolution tools, BlurXTerminator uses artificial intelligence based on a neural network trained on high resolution astronomical images. This isn't to say that it cheats by simply making your image look like it was taken by Hubble or superimposing a professional picture over your data. Rather, BlurXTerminator's neural network training helps it squeeze your data for every drop of usefulness, filtering away blurriness and other issues. Whether you think this is an innovative approach or sounds like marketing spiel, the proof is in the results it gives. Since BlurXTerminator's release in December 2022, astrophotography forums have become awash with examples of its effectiveness, so I was keen to try it on my own data.

My initial tests with BlurXTerminator were very underwhelming, and I was wondering what all the fuss was about. I was then pointed toward a video on the YouTube channel VisibleDark that outlines how some users may get better results by unchecking "Automatic PSF" and then using an additional (but free) plugin called PSFImage to calculate the PSF number. Once I began doing this, I obtained much better results. BlurXTerminator is still very new and I hope future updates will improve its automatic PSF function.

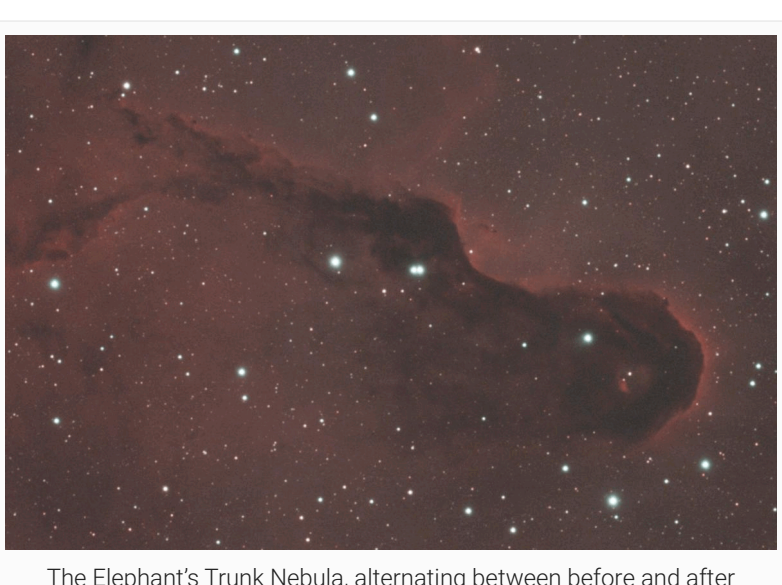
Testing BlurXTerminator

BlurXTerminator is best used very early in the processing workflow, with data still in a linear (i.e. non-stretched) state before any noise reduction. The following examples don't show finished images, but simply the difference BlurXTerminator has made.

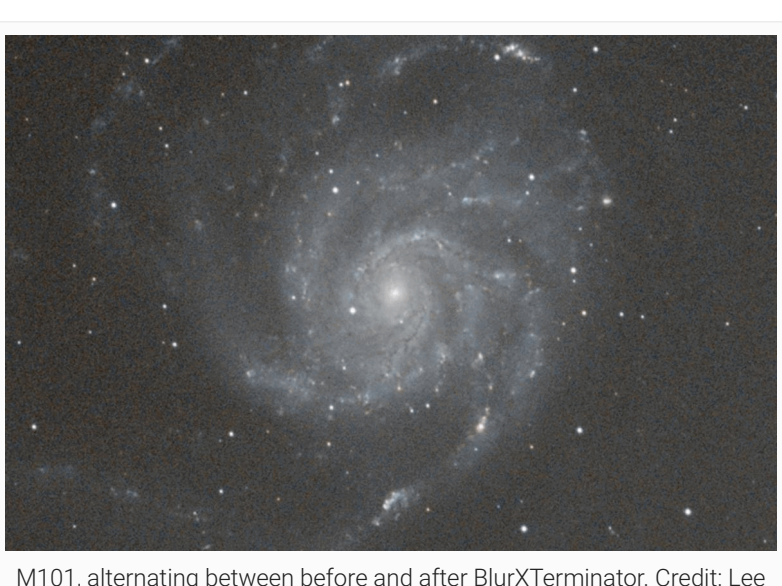
First is a close-in crop of the Rosette Nebula. BlurXTerminator took around a minute to run. BlurXTerminator did a good job of refining the dark structures within the Rosette, giving extra definition and helping them to stand out. It was also very effective at tightening the stars.


A close-in crop of the Rosette Nebula, alternating between before and after BlurXTerminator. Credit: Lee Pullen

My next test subject was the Elephant's Trunk Nebula. The most striking difference was in the stars, which were sharpened to such an extent that no star reduction algorithms needed to be run at any other stage during processing. The benefits to the nebulosity are marginal at best, though.


The Elephant's Trunk Nebula, alternating between before and after BlurXTerminator. Credit: Lee Pullen

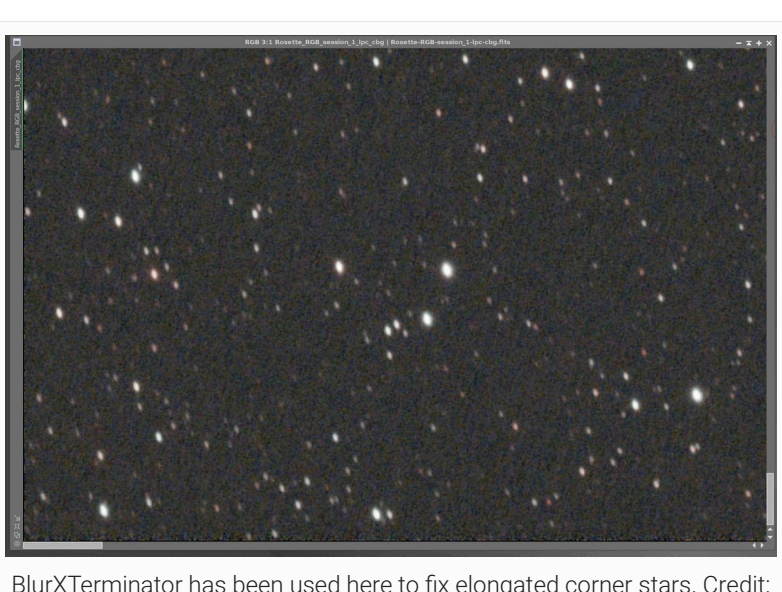
This close crop of M101 benefitted greatly from BlurXTerminator. The galaxy's dust lanes became more pronounced, and the entire image is sharper. Again, the stars look much better as well.


M101, alternating between before and after BlurXTerminator. Credit: Lee Pullen.

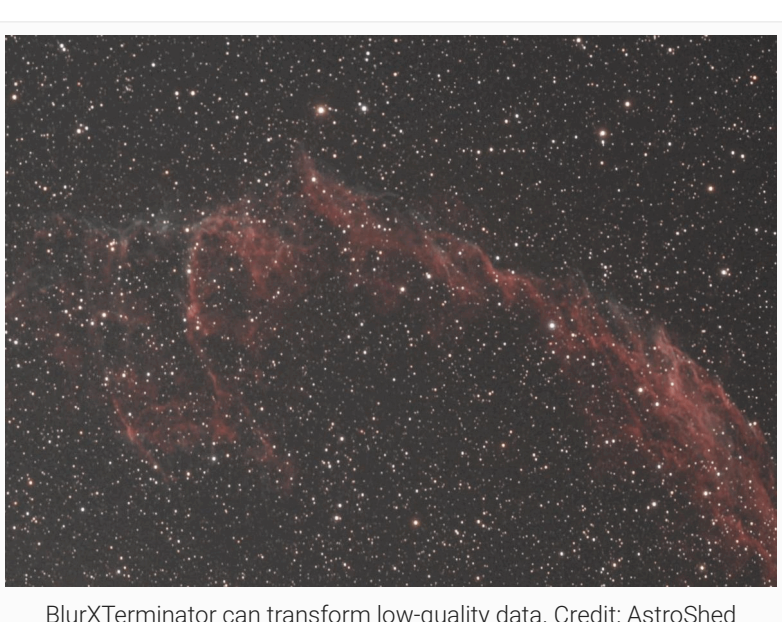
Added bonuses

In addition to deconvolution, BlurXTerminator makes an incredible claim: its AI algorithm can use point spread function data to automatically fix a number of issues that plague astrophotographers. These include guiding errors, astigmatism, primary and secondary coma, chromatic aberration, and varying star diameter and halos. Note that if you want these benefits but are manually inputting your PSF, you need to click the "Correct First" checkbox.

YouTuber Astroshed has kindly lent me some examples of this in action. Here are elongated corner stars, the bane of many astrophotogaphers' lives, fixed by BlurXTerminator:


BlurXTerminator has been used here to fix elongated corner stars. Credit: AstroShed

This image of the Veil Nebula was made with unguided subframes and poor polar alignment. The original result is unusable, but BlurXTerminator made a dramatic improvement. Remember, all this is with just a few clicks and a short amount of computer processing time.


BlurXTerminator can transform low-quality data. Credit: AstroShed

These added bonuses may be the most exciting aspects of BlurXTerminator. Perhaps it's overly dramatic to say that BlurXTerminator could herald a new era in astrophotography, but consider the implications. Are field flatteners still essential to get crisp corner stars? Do we need to spend so much time getting tilt worked out of an imaging train? Can we be more lenient on letting subframes with poor guiding into our integrated stacks? If BlurXTerminator can fix all these issues with the click of a button, astrophotography just got a lot cheaper, easier, and more accessible. It does raise questions about the legitimacy of astroimages that include an element of AI in their processing, but that borders on a philosophical debate that's certainly beyond the scope of this review! My opinion is that BlurXTerminator is a very powerful tool for deconvolution and fixing a number of issues, but isn't "cheating".

Miraculous results – up to a point

As good as BlurXTerminator is, it isn't magic. As with all deconvolution tools, you need to feed it data with a good signal-to-noise ratio to see tangible benefits. Don't expect it to make very short integrations suddenly look like they're a multi-week project taken from the Atacama Desert! My tests show definite improvements, but not as "day and night" as some other examples online.

You also need to be careful with the sliders and resist the temptation to push things too far; keep your view zoomed in to check you're not introducing issues rather than solving them. And remember that BlurXTerminator is but one step in your processing workflow. It's certainly not a "one click" solution to take your integrated stack to an image worthy of framing on your wall. It does, however, provide you with an excellent foundation to build upon. You may find that you end up reprocessing old data with BlurXTerminator as part of your workflow.

BlurXTerminator is only available as a plugin for PixInsight, and the developer has no plans to port it over to other processing software If you use PixInsight already, then no problem. But if you've spent years mastering another processing package then you may be a little irked. Sure, you could use PixInsight just for BlurXTerminator before continuing with other software, but you'd still need to buy a full licence for PixInsight. This will be a fly in the ointment for many. Note that PixInsight and BlurXTerminator both have free trials, so you can at least give it a go without putting any money on the table.

Is the best yet to come?

The developer has an excellent track record of releasing updates and improvements, so I expect that BlurXTerminator will be an even stronger product in the future. In fact, as I'm typing these words an email just popped into my inbox informing me that a new version of the AI neural network has been released!

Still, BlurXTerminator is very new, and it will take time to see whether it really does shake up astrophotography. Is this the beginning of an AI-assisted era of astrophotography? Only time will tell. Meanwhile, I encourage all astrophotographers to download the trial and give it a test with your own data.

Plus:
* Easy to use
* Gives excellent deconvolution results
* Can correct for numerous aberrations and issues

Minus:
* Only available as a plugin for PixInsight

MSRP: $99.95 ($10 discount if you own a licence for another RC Astro product). A free trial is available.

Website: https://www.rc-astro.com/resources/BlurXTerminator/index.php

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About Lee Pullen

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Lee Pullen is a science writer and communicator from the city of Bristol, UK. He has a degree in Astronomy and a master's in Science Communication. He began his career writing for organisations including the Hubble European Space Agency Information Centre and the European Southern Observatory, as well as becoming Staff Writer for the International Year of Astronomy 2009, the world's largest ever science outreach initiative. Lee runs the website UrbanAstrophotography.com

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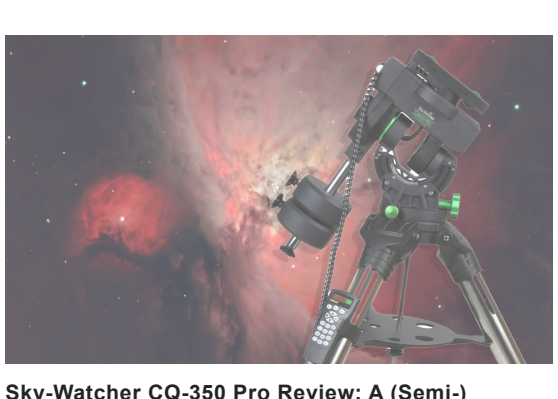
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