FOCUS STACKING

I became interested in Focus Stacking after a program presented by Thomas Strahan on "Jumping Spiders" and later at a seminar by George Lepp a few years ago.

The definition from Wikipedia reads as follows:
Focus stacking (also known as focal plane merging and z-stacking or focus blending) is a digital image processing technique which combines multiple images taken at different focus distances to give a resulting image with a greater depth of field (DOF) than any of the individual source images.

FOCUS STACKING is accomplished in two steps:
1. CAPTURING THE IMAGES: Accomplished manually or by the use of hardware/software to control the camera.

     A. Manually focusing at different focal planes. (Not recommended).

     B. Using a focus rail and manually advancing the focus of the camera through the different focal planes. (Better).

     C. Using Helicon Remote, *Camranger* (http://camranger.com/) hardware and software, Nikon Wireless Mobile Utility or Nikon Camera Control Pro. I don't know what software is available for the other brands of cameras. (Best).

     D. Stackshot automated focusing rail. (Best for macro).

     Things to remember when using the automated systems:
     A. Start with fresh batteries, live view uses a lot of battery power.
     B. Both camera and subject <u>MUST</u> be stationary.
     C. Take plenty of pictures, you can always delete the unneeded ones.

     Helicon Remote Software. Set the nearest and farthest points of focus.
     http://www.heliconsoft.com/heliconsoft-products/helicon-remote/ Tethered shooting for Windows, Mac, Android versions (4.0.3+) and iOS. Free download with 30-day trial. $48 to purchase for Android and iOS. Windows, Mac, iOS and Android version, $75. The license allows to use the program up to 4 computers + up to 2 Android/iOS devices at the same moment. This is advertised as being able to connect by WiFi to cameras with WiFi or an adapter, but my experience with it are not good and it is not "user friendly", although this may be peculiar to my camera model. Your experience may differ.

     The Camranger system. https://camranger.com/ Start at the nearest point of focus of the subject. Hardware is $369-$458 for Camranger II and $180-$209 for Camranger Mini, software for Windows, Mac, iOS and Android is free.

     Stackshot Automated Macro Rail. May be used as "stand-alone" or interfaced through either Camranger or Helicon Remote. https://www.cognisys-inc.com. $639 for the 100mm standard unit and $879 for the Extended Rail 300mm unit. When interfaced through the Helicon Remote or Camranger software, control of the unit resides with the computer. When used as a "stand-alone" system, the rail movement is controlled by the Stackshot controller. Resolution of rail movement is from 100mm to 2 um (0.02mm).

2. STACKING THE IMAGES: For this I use *Zerene Stacker.* Images can be stacked in Photoshop or other software, but the Zerene software is much quicker and easier, with added benefits of multiple outputs and live editing. ***Zerene Stacker***: http://zerenesystems.com/cms/stacker/softwaredownloads, available for Windows, Mac and Linux. Free trial. Professional Edition: $289 USD, Prosumer Edition: $189 USD, Personal Edition: $89 USD, Student Edition: $39 USD

There is a free stacking program, for Windows only, CombineZP. It produces output images in JPG, TIF, BMP32bpp, BMP24bpp, GIF, and PNG formats and also produces movies using the captured images. http://alan-hadley.software.informer.com/

Another software product for stacking images is Helicon Focus.
http://www.heliconsoft.com/heliconsoft-products/helicon-focus/, available for Windows and Mac. Lite version: 1 year-$30, Unlimited: $115, Pro Package: 1 year $55, Unlimited: $200 Premium Package Unlimited $240.

Photoshop CS3 and above: Import images as layers, select all layers, then Auto-align and Auto-merge the images in Edit function.

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