How to generate a surface image with contour lines

This tutorial will show you how to generate a rendered surface image with isoelevation lines from a single image containing range data such as you might get from an AFM or profilometer. Note: the following procedure can easily be made into an Action for routine use.

1. Start with a grey scale image whose values are to be interpreted as elevation or range (this could be an image from an AFM or interference microscope, or one generated by stereo pair fusion, or something entirely different such as fluorescence intensity or a cross- or autocorrelation result).

It is often desirable to make the first step in the procedure to scale the image up to a larger size [Image->Image Size].

Depending on the contrast of the image it may also be useful to invert it so that the "high" parts are white [Image->Adjustments->Invert], and to maximize the contrast [Filter->IP*Adjust->AutoLevel Contrast].

2. Place the image into the second image memory [Filter->IP*2nd Image-> Setup]. Apply Phong shading to the image [Filter->IP*Graphics->Render (Phong Shading)]



3. Convert this to a perspective corrected surface rendering by using Filter->IP*Surface Processing-> Reconstruct Surface with Overlay. Convert this image to color [Image->Mode->RGB Color].

4. Generate another blank image of the same size as the original by **[Image->Duplicate, Select->All, Edit->Clear]**. In this blank image create a surface rendering using **Filter->IP*Surface Processing -> Plot Second as Surface** (using Elevation mode).

5. Convert this image to contour lines using **Filter->IP*Surface Processing->Isolines**, choosing a White Background and Grey Scale values for the lines.

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6. Convert the image to color [Image->Mode->RGB Color] and apply a color look up table with Filter->IP*Color->Apply Color Lookup Table (the file 2ColorC.act was used in the example).





