Subject: A Contour Tracking Problem
Posted by jgrimmond on Wed, 02 Jun 2010 13:04:16 GMT
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I would very appreciate if I could get help on this problem. It is mostly an imaging problem, but may involve some mathematical issues. Hence the crosspost. Rather than be very general, I will explain the actual example I am confronted with to keep things simpler and clearer.

I have an image (digitally acquired), that represents the contours of an unknown function. In this particular case, the contours are interference fringes of a thin film and hence represent contours of constant film thickness. I now wish to get a map of the actual thickness, given that I know the real thickness at some reference point and I can somehow differentiate between going 'uphill' vs 'downhill'. This is just the reverse of the usual plotting problem where one *knows* a function z = z(x, y) and then gets a contour plot of z. Assume that we can process the image to the point that we have just black or white regions and so we can clearly determine when a fringe is crossed while moving along a particular direction.

While one can keep track of contour crossings as one moves along a straight line, the part that I cannot get a handle on is how to keep track of the contours and know when one is back at a contour that one has already crossed. In my case, the contours are closed and there are multiple local maxima and minima to deal with.

Any pointers will be appreciated.

Thanks.

J. Grimmond